
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

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

**“B1” CATEGORY – MINOR MINERAL — NON-FOREST LAND-PATTA LAND-
LEASE PERIOD-10 YEARS**

CLUSTER EXTENT – 12.37.85 Ha

(3 Proposed Quarries+ 3 Existing Quarries)

THIRU.S. SAKTHIVEL ROUGH STONE AND GRAVEL QUARRY

PROJECT PROPONENT	PROPOSED PROJECT	PROPOSED PRODUCTION
Thiru.S. Sakthivel S/o Subramaniyam No.20, Panchayat Office Road Sulur Taluk Coimbatore District, Tamil Nadu – 641 402	Extent: 1.64.0 ha S.F. Nos: 334/1D & 334/2A Pachapalayam Village, Sulur Taluk, Coimbatore District	Rough Stone= 2,15,015m ³ Peak Production =34,510m ³ Gravel =26,536m ³ Proposed Depth=37m bgl
ToR obtained vide File No. 11521 TOR Identification No. TO24B0108TN5825060N Dated:11.01.2025		
Environmental Consultant GEO EXPLORATION AND MINING SOLUTIONS Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, Tamil Nadu, India Accredited for sector 1 Cat ‘A’, sector 31 & 38 Cat ‘B’ Certificate No : NABET/EIA/2225/RA 0276 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com	 	Laboratory  EHS 360 LABS PRIVATE LIMITED, NABL Accredited laboratory 10/2 Ground floor, 50th street, 7th Avenue, Ashok Nagar, Chennai – 600 083.
Baseline Monitoring Period December 2024 to February 2025		
APRIL 2025		

UNDERTAKING

I, S. Sakthivel given undertaking that this EIA & EMP report prepared for our Rough Stone and Gravel Quarry situated in S.F. No 334/1D & 334/2A over an extent of 1.64.0 Ha in Pachapalayam Village, Sulur Taluk and Coimbatore District based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025

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

Signature of the Project Proponent



Thiru.S.Sakthivel

Place: Coimbatore

Dated:

DECLARATION

I Dr. M. Ifthikhar Ahmed – EIA Co Ordinator declare that the EIA & EMP report for the Rough Stone and Gravel Quarry in S.F. No 334/1D & 334/2A over an extent of 1.64.0 Ha in Pachapalayam Village, Sulur Taluk and Coimbatore District has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

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

Signature of the EIA Co-ordinator



Dr. M. Ifthikhar Ahmed

Managing Partner

M/s. Geo Exploration and Mining Solutions

Place: Salem

Dated:

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

PROPOSED QUARRIES					
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
P1	S. Sakthivel	Pachapalayam	334/2B, 334/3B,334/4A &334/4B	1.64.0	File No.11521 TOR No. Identification TO24B0108TN5825060N Dated: 11.01.2025
P2	G. Thangavel		333/3	2.62.5	EC Granted
P3	A. Natarajan		342/7E(P)	1.04.0	Application in process
	TOTAL EXTENT			5.30.5	
EXISTING QUARRIES					
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
E-1	M.Muralikrishnan	Pachapalayam	343/2A,343/2B1,3 43/3A & 343/4A	2.35.85	13.12.2022 to 12.12.2027
E-2	Maheshwari		344/4,344/6A & 344/6B1	1.61.5	27.08.2024 to 26.08.2029
E-3	Ram Mohan		337/4A,337/4B	3.10.0	23.08.2024 to 22.08.2029
	TOTAL EXTENT			7.07.35	
EXPIRED QUARRIES					
Ex-1	Meiyyarasu	Pachapalayam	333/1	2.61.5	12.08.2017 to 11.08.2022
Ex-2	S.Sakthivel		334/2B,334/3B,334 /4A& 334/4B	2.28.5	24.11.2018 to 23.11.2023
Ex-3	A.Selvaraj		342/7D	1.33.5	22.01.2019 to 21.01.2024
	TOTAL EXTENT			6.23.5	
	TOTAL CLUSTER EXTENT			12.37.85	

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

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru.S. Sakthivel

File No.11521 TOR Identification No. TO24B0108TN5825060N Dated:11.01.2025

SPECIFIC CONDITIONS		
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 statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.	Noted and agreed Affidavit of cluster management committee (CMC) Will be submitted during the appraisal meeting.
2	The PP shall erect the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds and submit the photographic/video graphic evidence along with the EIA report.	Noted and agreed. PP agreed to erect DGPS reference pillars as per MCDR Rules,1988 and Concerned photographs will be submitted during the appraisal meeting.
3	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & up to 1km 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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations	Noted and agreed The structure study has been carried out within the radius of 300m. There is no habitation within the radius of 300m from the project site the details of the structures is given in the EIA report, Chapter No.III
4	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Noted and agreed. Greenbelt development and Fencing photographs furnished. The Barbed Wire fencing has been erected all around the boundary. No trees within the project site, hence transplantation not required.
5	The PP shall ensure that the material dumped within the leasehold area is removed before submitting the EIA report and the video/photographic images shall be furnished during the appraisal without fail.	Noted and agreed.
6	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report	Noted and agreed. Biodiversity study has been carried out by Functional Area Expert by the NABET accredited consultant. The detailed study is given in the Chapter No.3
7	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Noted and agreed The EMP has been prepared for the entire life of the mine i.e., upto the lease period (10 Years) and the affidavit will be submitted
8	The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures.	Noted and agreed
9	The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability	Noted and agreed.

	of the working benches to be constructed and existing quarry wall.	
2.SEAC STANDARD CONDITIONS		
1	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	Noted and agreed It is a Fresh lease
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Noted & agreed. The PP obtained VAO Certificate regarding the location of habitations within 300m radius from the periphery of the site and enclosed with as annexure.
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	Noted and agreed The structure study has been carried out within the radius of 300m. There is no habitation within the radius of 300m from the project site the details of the structures is given in the EIA report, Chapter No.III
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Noted and agreed The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	Noted and agreed Biodiversity study has been carried out by Functional Area Expert by the NABET accredited consultant. The detailed study is given in the Chapter No.3
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Noted and agreed DFO letter will be submitted along with the Final EIA/EMP report
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and	Noted and agreed Proponent requested as will be carrying the slope stability Plan after commencement of quarrying operation and ensure that the reports will be submitted along with HYCR.

	possible mitigation measures during the time of appraisal for obtaining the EC.	
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Noted and agreed Proponent requested as will be carrying the slope stability Plan after commencement of quarrying operation and ensure that the reports will be submitted along with HYCR.
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Noted and agreed Proponent given affidavit stating that the blasting will be carried out under the supervision of Competent person.
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and 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.	Noted and agreed
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences	Noted and agreed. There is one quarry except this proposal operated by Proponent Thiru.S.Sakthivel, But that quarry lease has expired.
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	Noted and agreed Fresh Lease
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Noted and agreed Fresh Lease
14	Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Noted and agreed Fresh Lease
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Noted and agreed Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 2, Figure No.2.2, Page No.11. Geomorphology of the area is given in Chapter No 2, Figure No.2.10, Page No.23 Land use pattern of the project area is tabulated in the Chapter No.2. Table no 2.4, Pg.No.18
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	Noted and agreed. PP carried out the drone video survey and will be submitted during the appraisal while obtaining the EC.
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Noted and agreed The area has been fenced and plantation activities carried out within the project site.
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production	Noted and agreed

	capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	The details of mineral reserves have been provided in Chapter No 1, Mineable reserves– 2,15,015 m ³ Peak Production – 34,510m ³ Depth – 37m bgl
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Noted and agreed. The PP provided Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	Noted and agreed The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3,
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study	Noted and agreed Baseline Data were collected for One Season (Winter) December 2024 to February 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Noted and agreed The Cumulative impact study due to mining operations is explained in chapter - 7
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted and agreed
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Noted and agreed Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.

	Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Noted and agreed Part of the working pit will be allowed to collect rain water during the spell of rain will be used for greenbelt development and dust suppression. The Mine Closure Plan is prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
28	Impact on local transport infrastructure due to the Project should be indicated.	Noted and agreed Transportation details mentioned in Chapter -2
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	Noted and agreed Details of the trees in the buffer zone given in Chapter No.3&4
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Noted and agreed After the completion of mining operation, the part of the quarried-out land will be utilized as temporary storage reservoir. The details are given in the Chapter No.4
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible	Noted and agreed Details are given in the Chapter No.3
32	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the Appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Noted and agreed Noted & agreed. It is proposed to plant a 1000 nos of trees in the 7.5m safety barrier and village roads.
33	Taller/one-year-old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Noted and agreed No trees within the project site. it is proposed to plant 820 Nos of Trees in the safety barrier and Village roads.
34	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period	Noted and agreed Disaster management Plan details in Chapter-7
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period	Noted and agreed A Risk Assessment and management Plan Chapter- 7
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures	Noted and agreed Occupational Health impacts chapter- 10

	with required facilities proposed in the mining area may be detailed.	
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Noted and agreed No Public Health Implications anticipated due to this project. Details of CER are discussed under Chapter 8
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Noted and agreed It is explained in Chapter -3
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	Noted and agreed No, Litigation against the project
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Noted and agreed Chapter-8 discussed about benefits of projects.
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Noted and agreed.
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Noted and agreed The EMP prepared for the life of the mine and discussed in chapter 10.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted & agreed.

SEIAA STANDARD CONDITIONS		
Cluster Management Committee		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Noted and agreed Cluster management committee has been formed with mutual agreement with the proponents including Proposed quarry at present are framed.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	Noted and agreed As per the committee agreement proponents will coordinates for the Greenbelt development, Water sprinkling and tree plantation activities combined.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Noted and agreed The formation of committee with list of members has been submitted to the AD mines office, Coimbatore and the same will be update in every year.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	Noted and agreed As per the committee agreement the blasting frequency will be discussed and carryout by the Mines Manager appointed by the proponents and the same will be updated in the committee minutes. Transport details in chapter-2
5	The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural	Noted and agreed Details discussed in chapter 7 of Draft EIA report

	calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.	Noted and agreed Details discussed in chapter-6 of Draft EIA report
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Noted & agreed
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Noted and agreed Details discussed in chapter 10.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	Noted and agreed Detailed discussed in chapter 4.
10	Impact on soil flora & vegetation around the project site.	Detailed discussed in chapter 4.
11	Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.	Noted and agreed The area is proposed Lease & Few trees present with in lease.
12	The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Details in Chapter 3
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock	Noted and agreed The project area is dry barren land no agriculture activities carried out. This is a proposed lease area.
Forests		
15	The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife	Noted and agreed. Nearest Reserve Forest is Bolampatti R.F – 14.5km-NW
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Noted and agreed The area is surrounded by Barren land. Details of flora and fauna studies given in the Chapter No.3.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection	No major trees within the project area.
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site	Noted & agreed. Indira gandhi (Anamalai) Wildlife Sanctuary – 41km – South
Water Environment		
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect	Noted and agreed There are 8 open wells and 7 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method

	groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period	
20	Erosion Control measures	Noted & agreed
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	Noted & agreed Details in Chapter 2
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir	Noted & agreed Details in Chapter 2 and 4 impact of bio diversity
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Noted & agreed
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Noted & agreed. Detailed under Chapter 3.
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components	Noted & agreed Details in Chapter 3 Soil environment.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites	Noted & agreed Details in Chapter 3 Water environment.
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	Noted and agreed There are 10 open wells and 10 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Noted and agreed Details in Chapter 3 environmental monitoring details.
Climate Change		
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities	Noted and agreed Details of carbon emission and mitigation activities are given in the Chapter No.4
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features	Noted and agreed Details in Chapter-3 for meteorological and climate/weather data representation of graphs.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Noted and agreed Details of GHGs emissions and mitigation activities are given in the Chapter No.4
Mine Closure Plan		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Noted & agreed Details in Chapter 2 mine closure plan
EMP		
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope	Noted & agreed Detailed under Chapter 10

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

Standard Terms of Reference for (Mining of minerals)		
S.No	Terms of Reference	Reply
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA) operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Noted & agreed Peak Production – 34,510m ³ Depth– 37m bgl (As per ToR) Mine Lease area – 1.64.0 Ha
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for.... MTPA of mineral production based on approved project/Mining Plan for.... MTPA. Baseline data collection can be for any season (three months) except monsoon.	Noted & agreed Peak capacity of 34,510m ³ operation to cover the impacts and environment management plan in chapter- IV and Chapter 10 covered in project specific activities. Baseline Data were collected for (Winter Season) December 2024 to February 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Noted & agreed Noted, Google earth image showing lease

1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also.	Land use and land cover of the 10km Radius of study area is discussed in Chapter No. III. Geology map of the project area covering 10km radius Figure No. 2.9, Page No. 22. Geomorphology of the area is given in Chapter No 2 Figure No 2.10, Page No. 23 There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Noted & agreed Land use and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc.,
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	Noted & agreed DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted.	Noted & agreed Drainage pattern around 10km radius showing streams and lakes etc., is discussed in Chapter No. 3.
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	Details in chapter-2 showing the land features. And also enclosed Approved mining plan in annexure.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The height and width of the bench will be maintained as 5m with 90⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.

1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.							
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channeling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	Not Applicable. The details of waste dump management are given in the Chapter No. 4							
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights				Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2,				
	Sno	ML. project Land use	Area under Surface Rights(ha	Area Under Mining Rights(ha)	Area under Both (ha)	Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
	1	Agriculture Land				Area Under Quarry	Nil	1.28.00	1.28.00
	2	Forest Land				Site Services	0.02.00	Nil	0.02.00
	3	Grazing Land				Roads	Nil	0.02.00	0.02.00
	4	Settlements				Green Belt	Nil	0.22.31	0.32.00
	5	Others (Specify)				Unutilized Area	1.62.00	0.11.69	Nil
						Grand Total	1.64.00	1.64.00	1.64.00

1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	Baseline Data were collected for Winter Season December 2024 to February 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air) / downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	Details in chapter-3 showing the various sampling stations As per CPCB guidelines.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10km buffer zone i.e., dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring	Noted and agreed Air Quality Modelling and wind rose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model. Details in Chapter No. 4.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	Noted and agreed Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter-II.

1.18	The socio-economic study to be conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need-based survey for CSR activities to be followed.	Noted and agreed Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area. The study should also include the status of infrastructural facilities and amenities present in the study area CSR are discussed under Chapter 8.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	Noted and agreed Detailed Ecology and biodiversity study in chapter-3
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Detailed in chapter-4 population in the impact zone and measures for occupational health and safety and proposed occupational health in chapter-X
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.	Noted and agreed
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	The ground water table is at 65-70m below ground level. ultimate depth is 37 m Bgl It is inferred the quarrying activities will not intersect the Ground water table.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Noted and agreed Detailed in Chapter-IV Anticipated and mitigation measures of in the study area.
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Noted and agreed Total Water Requirement: 1.5 KLD Discussed under Chapter 2, The required water will be met from rainwater accumulated in mine pit (when available) and from the approved water vendors.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Noted and agreed Methodology And Instrument Used for Air Quality Analysis in chapter-3 and Air Pollution control equipment (APCEs) in chapter-10 sub 10.2 Environmental policy.
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored.	Details in Machinery and equipment details in Chapter-2 Table No 2.16

1.27	PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.	Noted and agreed
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	A Risk Assessment and Disaster Preparedness and management Plan Chapter-7
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Detailed in Machinery and technology used Chapter-3. Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2. Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	Detailed in chapter-2 for mineral transportation route with approach roads etc., and impacting air quality detailed given chapter-4
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	Discussed under Chapter 2. Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Noted and agreed Greenbelt Development Plan is discussed under Chapter 4,
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	Noted and agreed The total cost and the details are given in the Chapter No. 10
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc. and costs along with the schedule of the implementation of the R&R Plan should be given.	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.

1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR are discussed under Chapter 8. And specific budgetary provisions (capital and recurring) for specific activities over the life of the project in chapter-10
1.38	Corporate Environment Responsibility:	CER are discussed under Chapter 8.
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Detailed in chapter-10 The Environment Policy
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	The Environment Monitoring Cell discussed under Chapter 6
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large	The Environment Monitoring Cell discussed under Chapter 6
1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP report	The Environment Monitoring Cell discussed under Chapter 6
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	The Environment Monitoring Cell discussed under Chapter 6
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	No litigation is pending in any court against this project
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Indira gandhi (Anamalai) Wildlife Sanctuary – 41km – South DFO Letter will be Submitted final EIA/EMP report
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable	Noted and agreed
1.48	Details on the Forest Clearance should be given as per the format given: Total Mine lease area (ha): Total Forest Land (Ha) : Date of FC : Extent of Forest Land : Balance area for which FC is yet to be obtained: Status of application for diversion of forest Land: If more than one provides details of each FC	Noted and agreed Bolampatti I RF – 14.5km – North West Total Mine Lease area 1.64.0ha Details on the Forest Clearance will Submit final EIA/EMP report.
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report.	Enclosed Approved mining plan in Annexure volume-I
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same. should be provided.	The outcome of public hearing will be updated in the final EIA/AMP report.

1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes.	Noted and agreed
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	Fresh lease
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Noted and agreed As per detailed in front page of Draft EIA/EMP, NABET, NABL certification detailed given in the report.
1.54	The compliances of Tor must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.	As per Tor compliance each chapter wise page and table, figure no given in the EIA/EMP report.

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1.INTRODUCTION

1.0 PREAMBLE

Project History

The project proponent Thiru.S. Sakthivel has applied for Rough Stone and Gravel quarry over an extent of 1.64.0 Ha in S.F.Nos. 334/1D & 334/2A, Pachapalayam Village, Sulur Taluk & Coimbatore District.

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 11.05.2023
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 554/Mines/2023, Dated: 09.10.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 554/Mines/2023, Dated: 12.11.2024.
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/508671/2024 dated: 27.11.2024.and the ToR Was Granted vide Letter No File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025
- The proposal was placed in 523rd SEAC meeting held on 27.12.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 787th SEIAA meeting held on 08.01.2025 and issued ToR vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025
- As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries – 3 proposals, 3 Existing quarry forming Cluster Category {Total Extent of the Cluster is 12.37.85 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Based on the ToR Baseline Monitoring study has been carried out for one season (Winter) i.e., **December 2024 to February 2025** and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

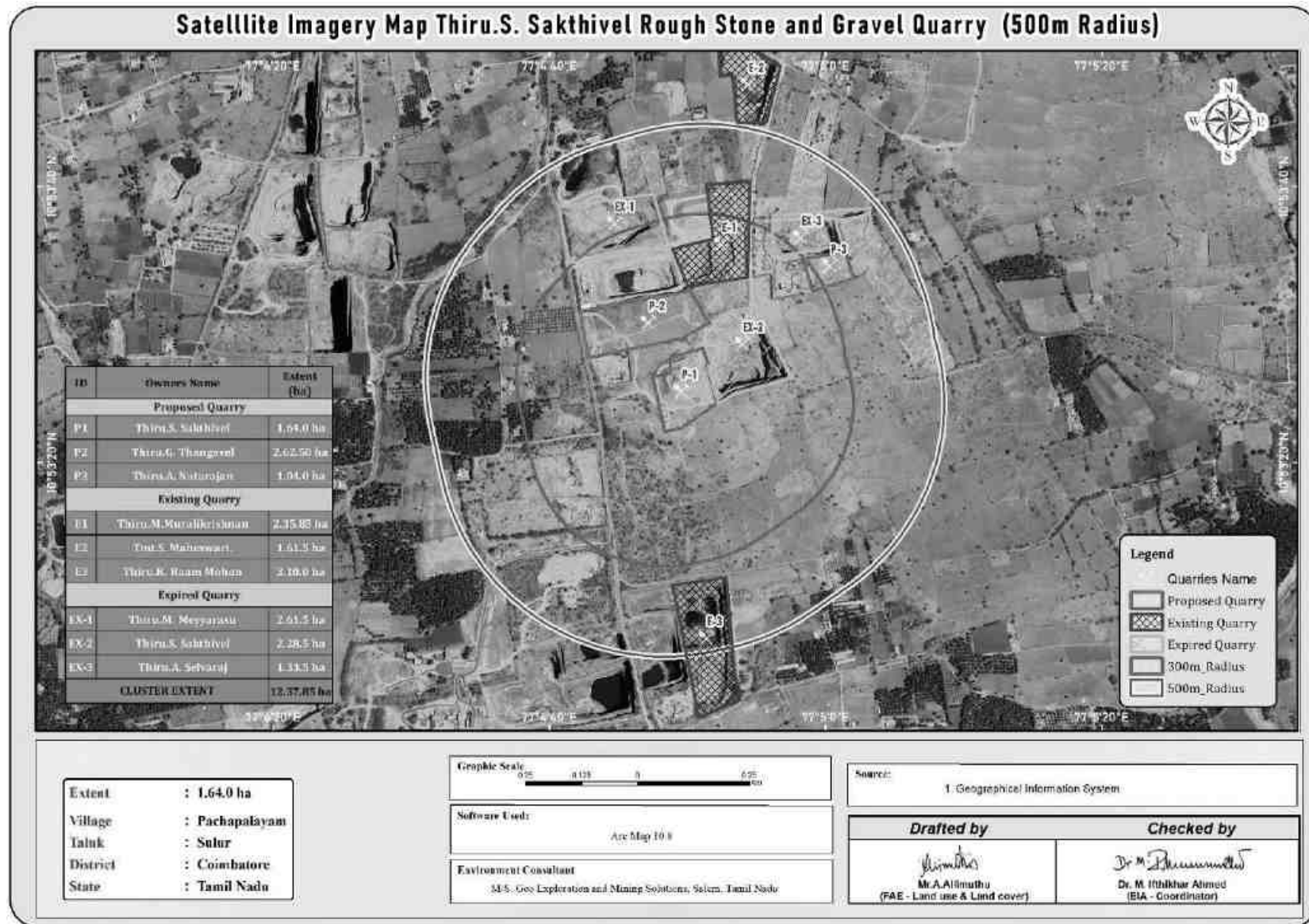
1.1 PURPOSE OF THE REPORT

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

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

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

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

FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES

1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project

TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Project	Thiru.S. Sakthivel Rough stone and Gravel quarry
S.F. No.	334/1D & 334/2A
Extent	1.64.0 ha
Land Type	Patta Land
Village Taluk and District	Pachapalayam Village, Suler Taluk, Coimbatore District.

Source: Approved Mining Plan

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Project Proponent	Thiru.S. Sakthivel
Address	S/o. Subramaniam, No.20, Panchayat Office Street, Suler Taluk, Coimbatore District – 641 402
Mobile	+91 98422 13206
Status	Individual

Source: Approved Mining Plan.

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

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

TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT

Name of the Project	Thiru.S. Sakthivel Rough Stone & Gravel Quarry	
Land type	It is a Patta land (Barren land)	
Land owner details	It is a Patta land, registered in the name of the applicant Thiru.S. Sakthivel vide Patta no.1374	
Toposheet No	58 - F/01	
Latitude between	10°53'22.23"N to 10°53'28.24"N	
Longitude between	77°04'47.52"E to 77°04'52.13"E	
Highest Elevation	418m AMSL	
Mining Plan period	5 years	
Proposed Depth of Mining	37m below ground level.	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	6,11,940	34,968
Mineable Reserves	Rough Stone in m ³	Gravel in m ³
	2,15,015	26,536
Yearwise Production 1 st Five Years	Rough Stone in m ³	Gravel in m ³
	1,22,900	26,536
Yearwise Production 2 nd Five Years	Rough Stone in m ³	Gravel in m ³
	92,115	-
Ultimate Pit Dimension	124m (L)*107m(W)*37m(D)	
Water Level in the surrounding areas	65-70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards Western side. The altitude of the area is 418m (Max) above Mean Sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits.	
Machinery proposed	Jack Hammer	4 Nos
	Compressor	1 Nos

	Excavator with Bucket and Rock Breaker	1 No
	Tippers	2 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	24 Nos	
Project Cost	Rs. 72,28,000/-	
EMP Cost	Rs. 15,14,000/-	
Total Project cost	Rs. 87,42,000/-	
CER Cost	Rs. 5,00,000/-	
Nearby Water Bodies	Odai	490m NW
	Odai	1.2km East
	Kothavadi Lake	8.5km SW
Greenbelt Development Plan	As per Mining plan it is Proposed to plant 820 trees in the 7.5 m Safety Zone, approach road and panchayat roads.	
Proposed Water Requirement	1.5 KLD	
Nearest Habitation	900m – North West	

Source: Approved Mining Plan, PFR.

1.3.2 Location of the Project

- The proposed quarry project falls in Pachapalayam Village, Sulur Taluk and Coimbatore District. The lease applied area is located about 20km Southeast of Coimbatore, 15km Southwestern side of Sulur and 1km Southeastern side of Pachapalayam Village.

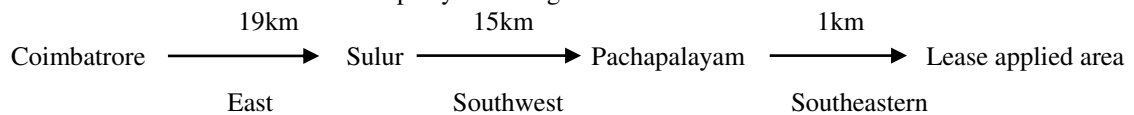
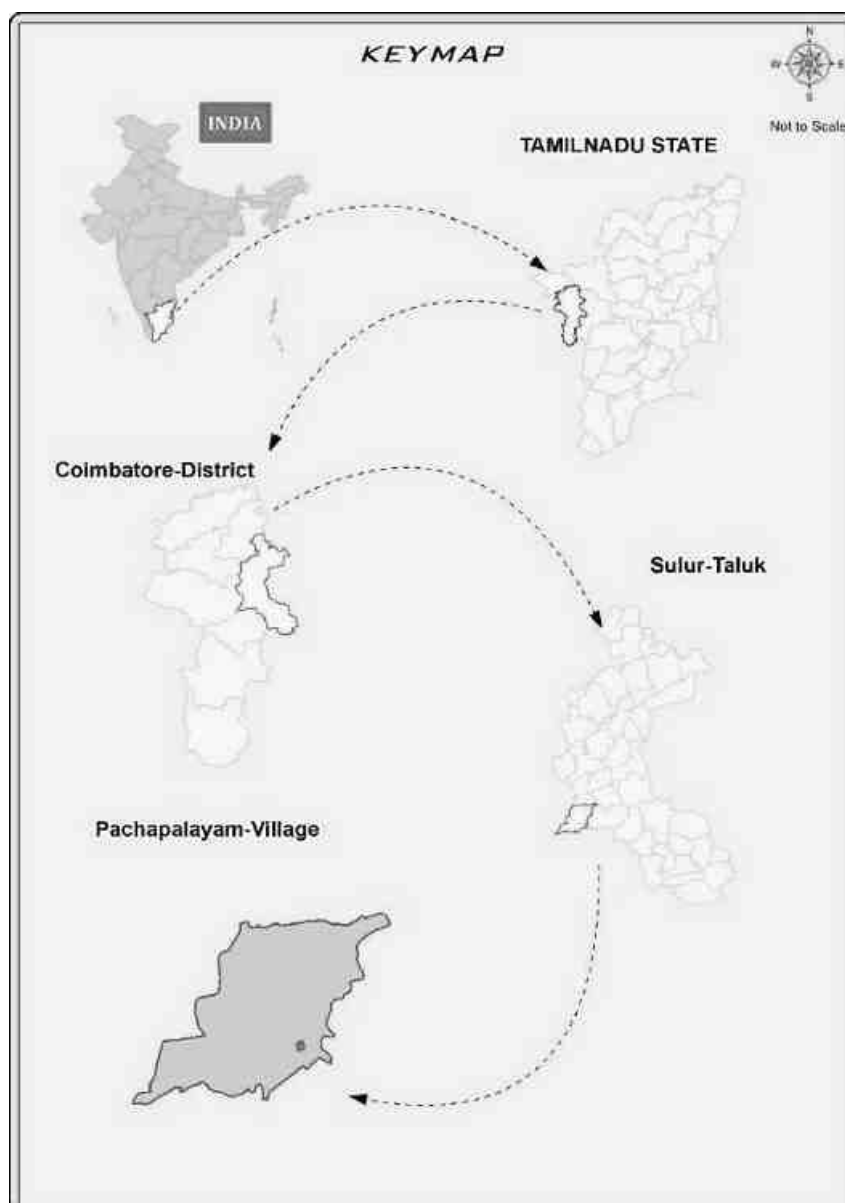
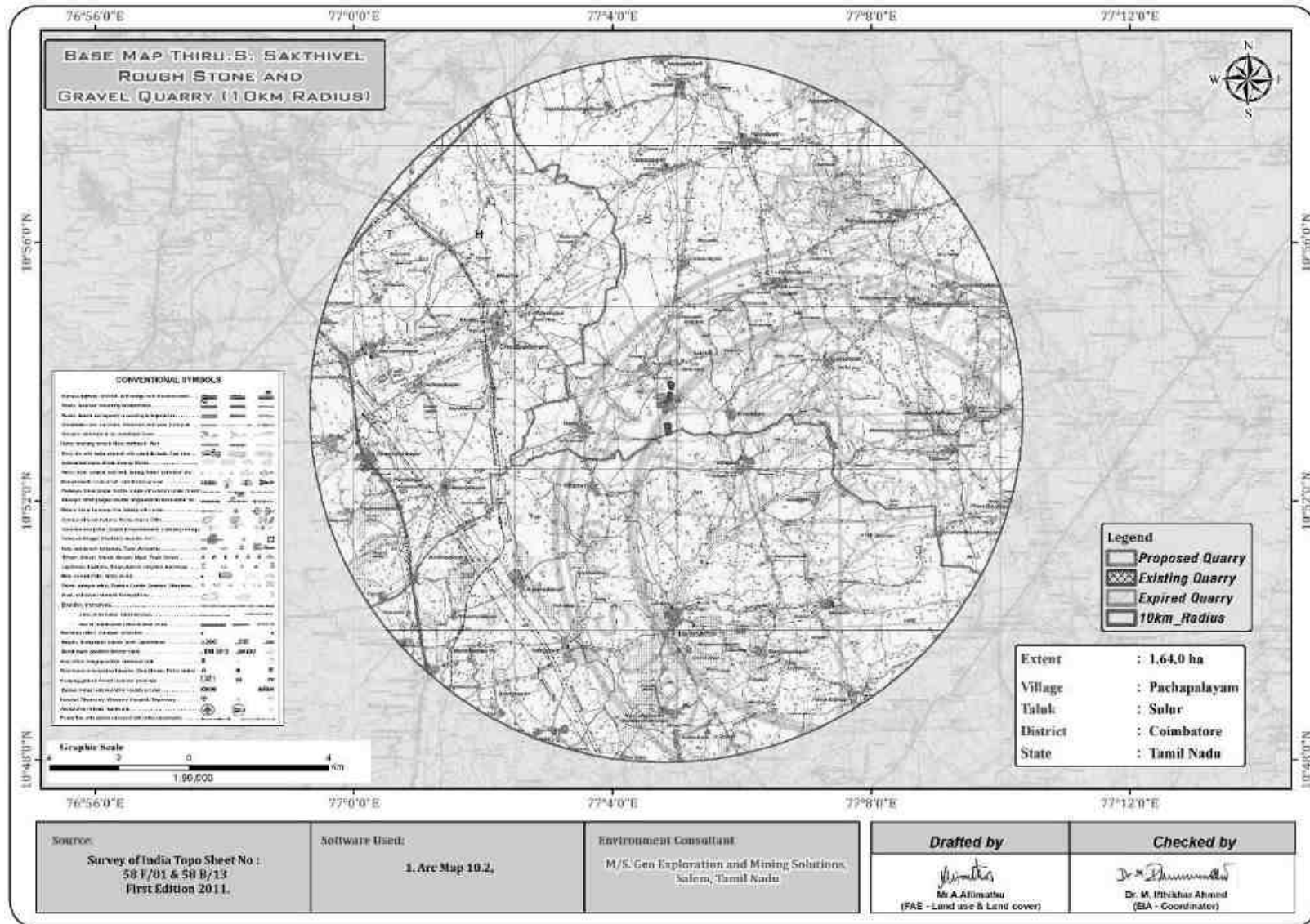
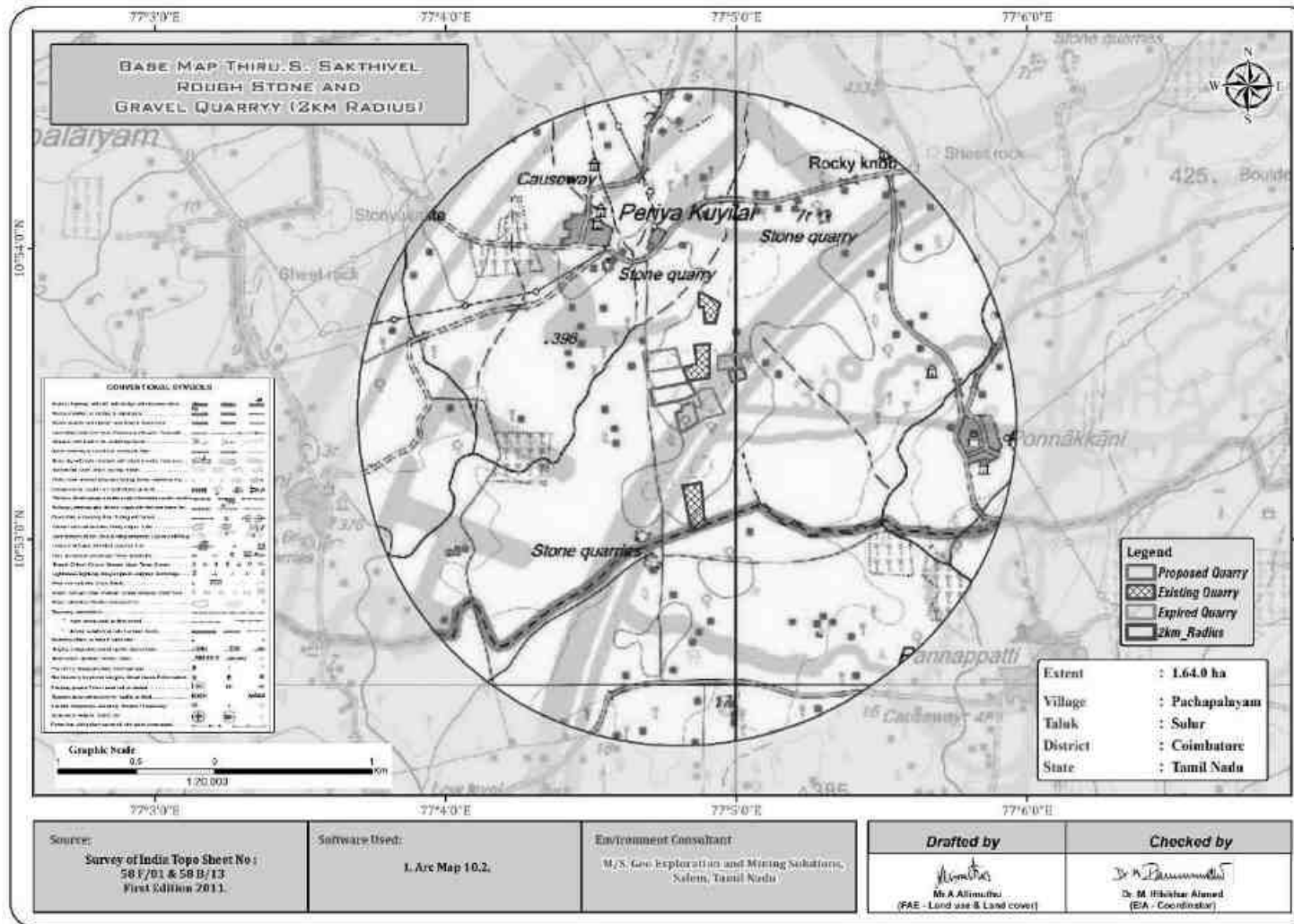


FIGURE 1.2 KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE

Source: Survey of India Toposheet 58-F/01

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

Source: Survey of India Toposheet 58-F/01

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

1.4 ENVIRONMENTAL CLEARANCE

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

- Screening,
- Scoping
- Public consultation &
- Appraisal

SCREENING:

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 11.05.2023
- Precise Area Communication Letter was issued by the District Collector, Coimbatore Rc. No 554/Mines/2023, Dated: 09.10.2024
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc. No 554/Mines/2023, Dated: 12.11.2024.
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No.SIA/TN/MIN/508671/2024 dated: 27.11.2024.

SCOPING:

- The proposal was placed in 523rd SEAC meeting held on 27.12.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 787th SEIAA meeting held on 08.01.2025 and issued ToR vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025

PUBLIC CONSULTATION

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

APPRAISAL –

- Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.
- The report has been prepared using the following references:
- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
- EIA Notification, 14th September, 2006
- ToR vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025
- Approved Mining Plan

1.5 TERMS OF REFERENCE (ToR)

Compliance to ToR issued vide –

- ToR vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025

1.6 POST ENVIRONMENT CLEARANCE MONITORING

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

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

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

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the Winter season December 2024 to February 2025 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

TABLE 1.5: ENVIRONMENT ATTRIBUTES

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

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

Source: Field Monitoring Data

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

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance.
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959.
- Environment Protection Act, 1986
- Water (Prevention and Control) Act, 1974
- Air (Prevention and Control) Act, 1981
- ToR vide File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025

2. PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone Quarry requires Environmental Clearance. There are 3 proposed, and 3 existing quarries forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 12.37.85 ha.

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

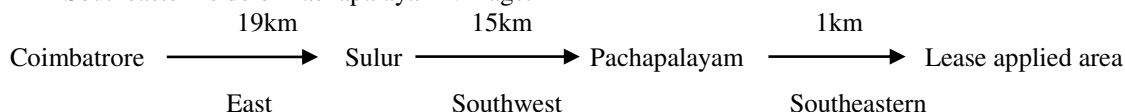
2.1 DESCRIPTION OF THE PROJECT

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

Method of mining is common for all the quarries. Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

2.2 LOCATION OF THE PROJECT

- The proposed quarry project falls in Pachapalayam Village, Suler Taluk and Coimbatore District. The lease applied area is located about 20km Southeast of Coimbatore, 15km Southwestern side of Suler and 1km Southeastern side of Pachapalayam Village.



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

TABLE 2.1: SITE CONNECTIVITY

Nearest Roadway	NH83- Coimbatore – Trichy Road -8.0km-SW SH163- Palladam– Chettipalayam Road-5.0km-NW
Nearest Village	Pachapalayam – 440m- NW
Nearest Town	Chettipalayam – 5km-NW
Nearest Railway Station	Chettipalayam – 6km-NW
Nearest Airport	Coimbatore – 16.0km – NW
Seaport	Kochi- 141 km – South West

Source: Survey of India Toposheet

TABLE 2.2: BOUNDARY CO-ORDINATES OF PROPOSED PROJECT

Corner Nos.	Latitude	Longitude
1	10°53'22.23"N	77°04'48.35"E
2	10°53'23.32"N	77°04'48.09"E
3	10°53'25.09"N	77°04'47.72"E
4	10°53'26.12"N	77°04'47.52"E
5	10°53'26.46"N	77°04'48.79"E
6	10°53'27.57"N	77°04'48.75"E
7	10°53'28.24"N	77°04'51.10"E
8	10°53'27.09"N	77°04'51.53"E
9	10°53'27.02"N	77°04'51.38"E
10	10°53'24.27"N	77°04'52.13"E
11	10°53'22.47"N	77°04'49.51"E

Datum: UTM-WGS84, Zone 43 North

Source: Approved Mining Plan

FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA

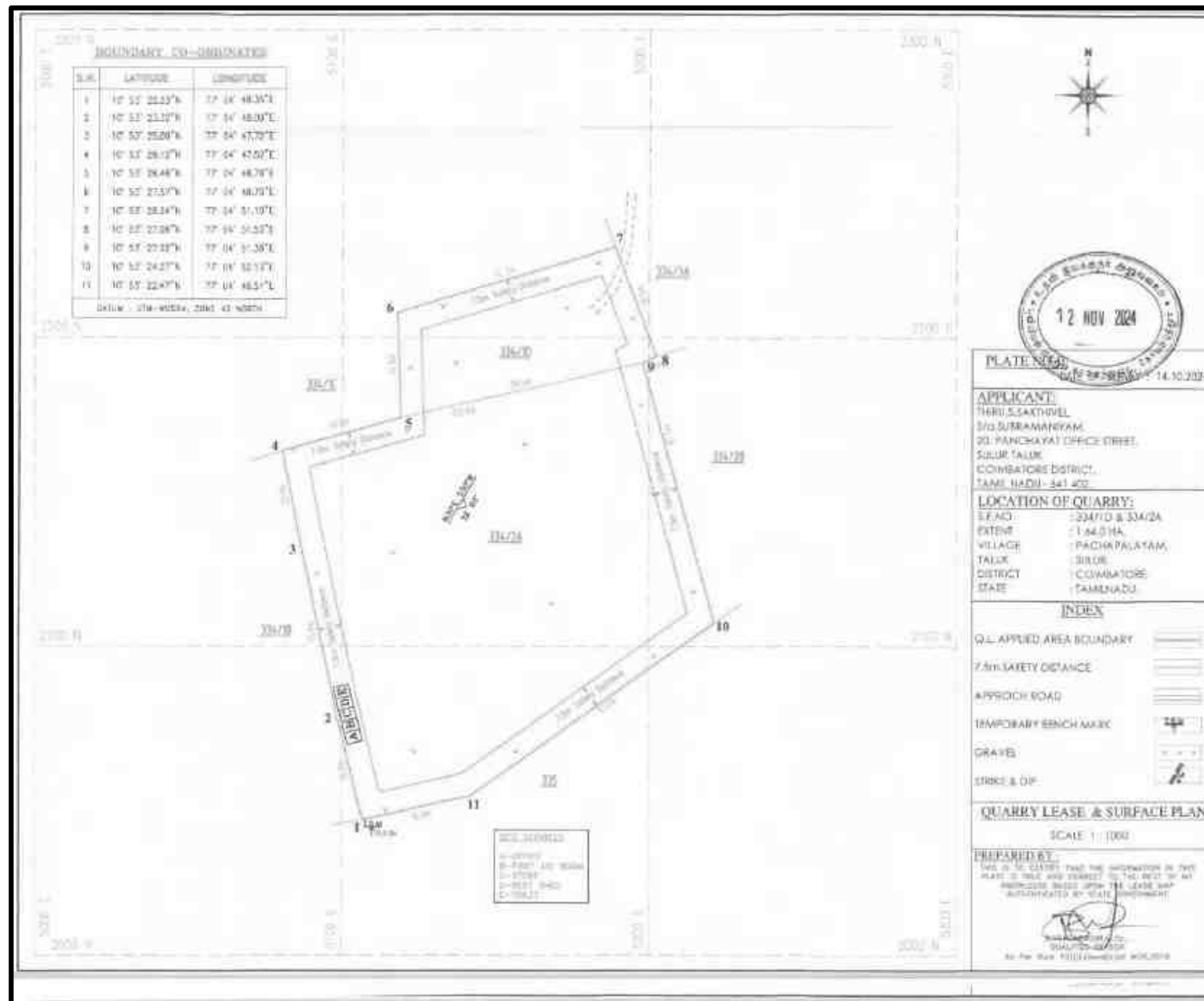


FIGURE 2.2: PHOTOGRAPHS OF GREEN BELT & FENCING



FIGURE 2.3: GOOGLE IMAGE OF THE PROJECT AREA



FIGURE 2.4: QUARRY LEASE PLAN / SURFACE PLAN

Source: Approved Mining Plan

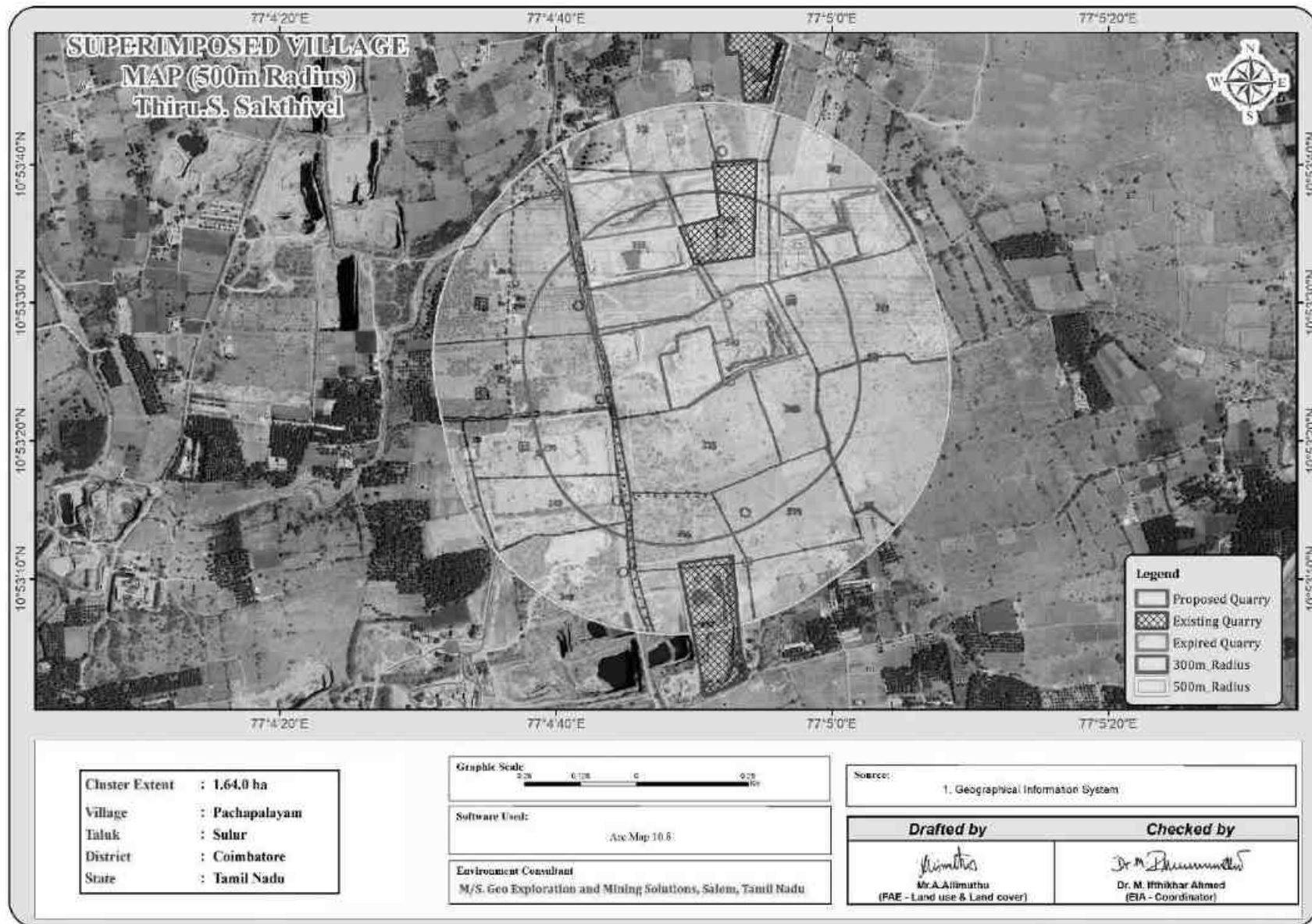
FIGURE 2.5: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

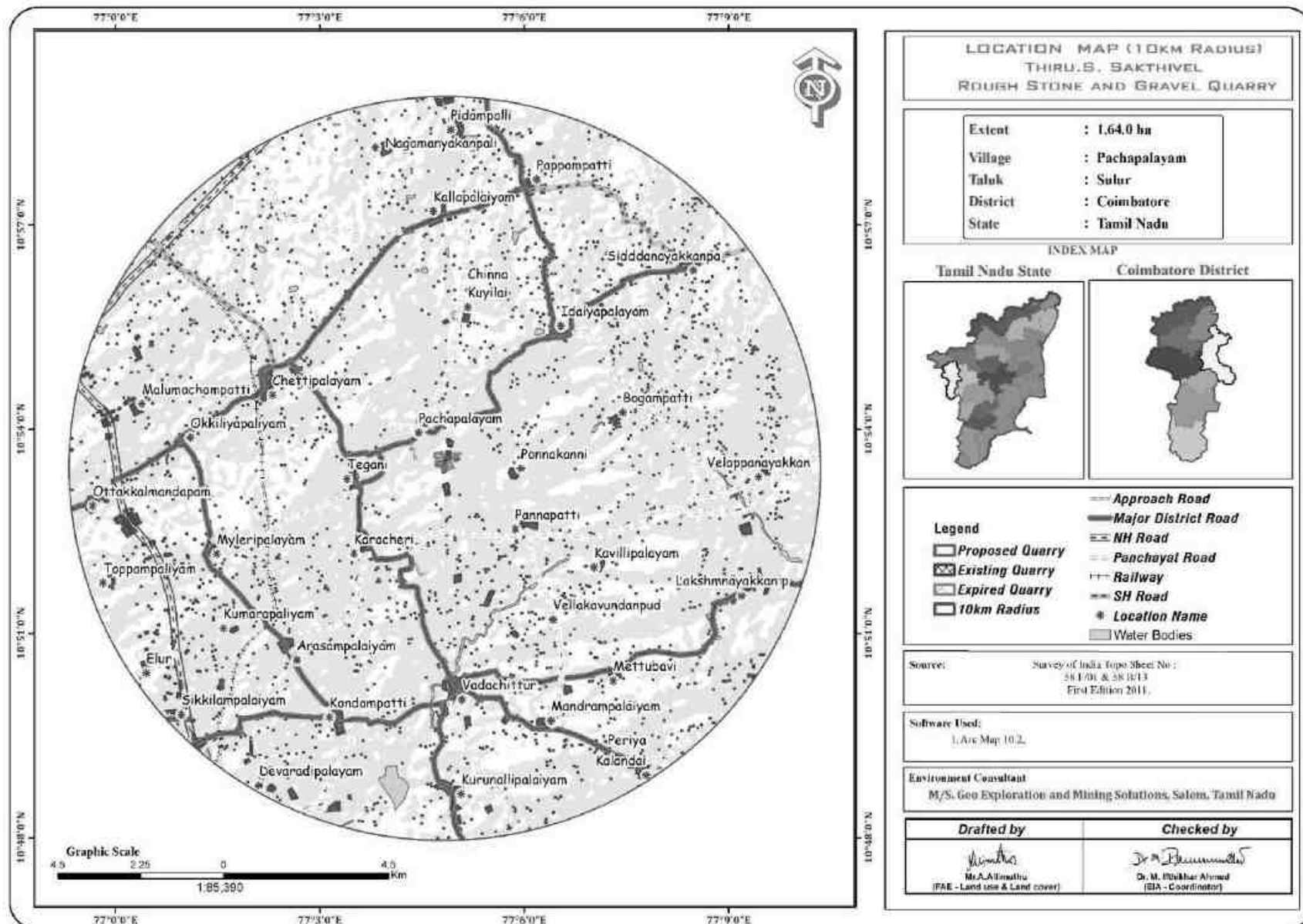
FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS

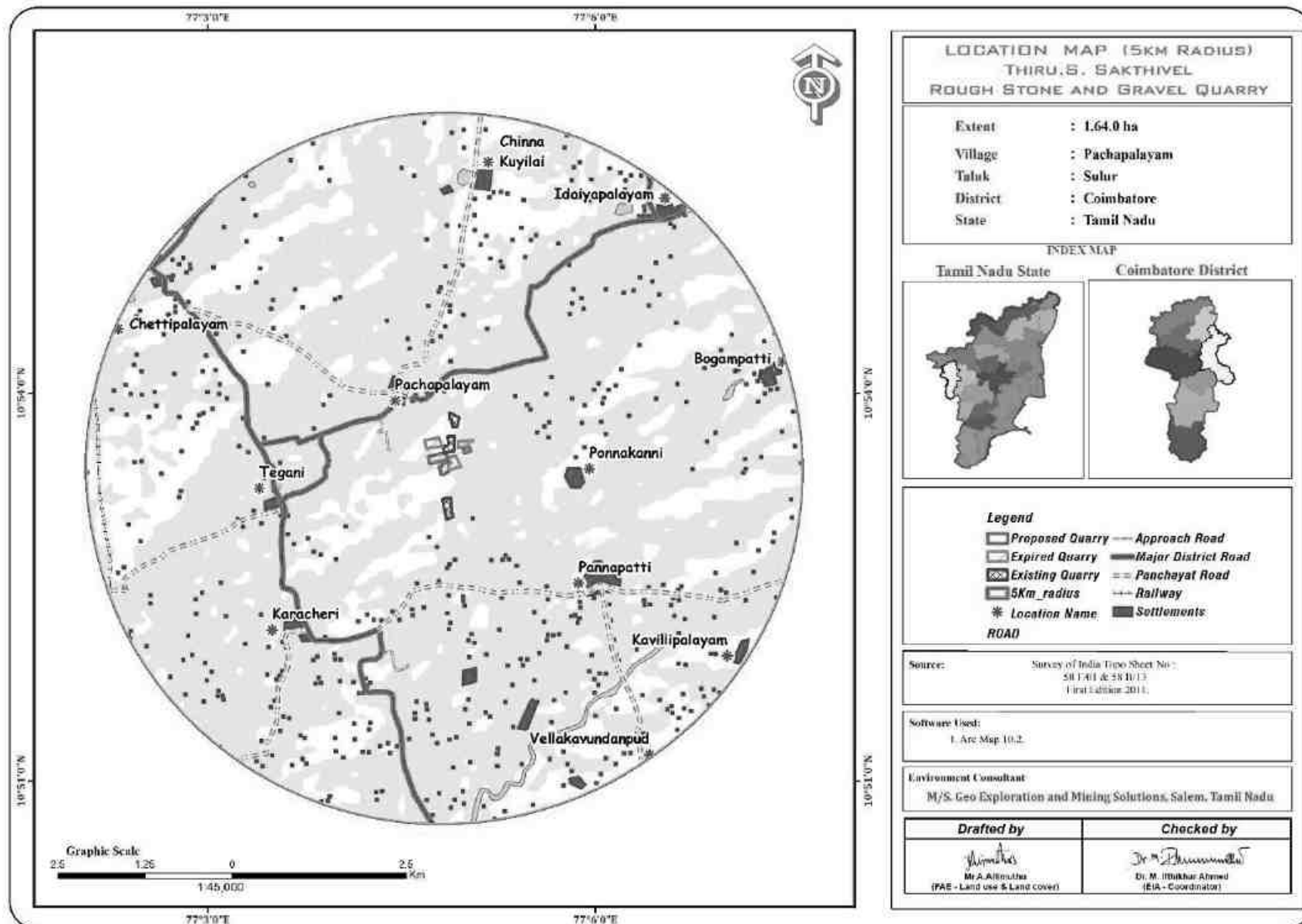
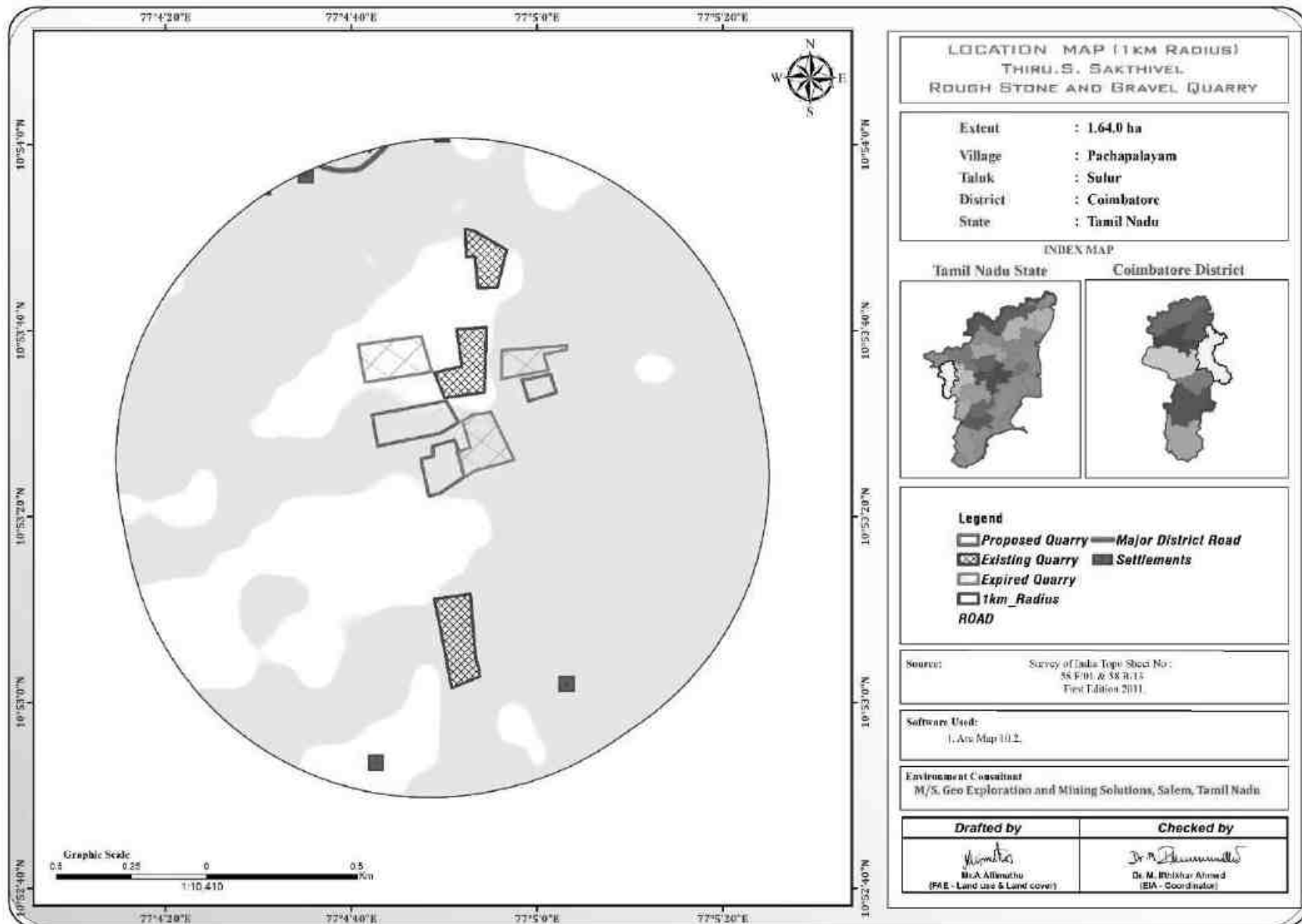
FIGURE 2.7: IMAGE SHOWING SURFACE FEATURES AROUND 5KM RADIUS

FIGURE 2.8: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS

2.2.1 Project Area

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

TABLE 2.3: LAND USE PATTERN OF THE PROPOSED PROJECT

Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
Area Under Quarry	Nil	1.28.00	1.28.00
Site Services	0.02.00	Nil	0.02.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.22.31	0.32.00
Unutilized Area	1.62.00	0.11.69	Nil
Grand Total	1.64.00	1.64.00	1.64.00

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT

PARTICULARS	DETAILS	
	Rough Stone (10 Years Plan)	Gravel (3 Years Plan)
Geological Resources	6,11,940 m ³	34,968 m ³
Mineable Reserves	2,15,015 m ³	26,536 m ³
1 st Five Year plan period	1,22,900 m ³	26,536 m ³
2 nd Five Year Plan Period	92,115 m ³	-
Mining Plan Period / Lease Applied Period	10 Years	
Number of Working Days	300 Days	
Production per day	72	
No of Lorry loads (12m ³ per load)	6	
Total Depth of Mining As per ToR	37 below the ground level	

Source: Approved mining plan

2.3 GEOLOGY

2.3.1 Regional Geology

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

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

Stratigraphy of the area –

Age	Group	Lithology
Holocene		Block cotton soil/clay±gypsum
Cenozoic		Kankar/calc-tufa

Neoproterozoic	Acid intrusives	Quartz veins Pegmatite Pink Granite
	Sivamalai syenite Complex	Nepheline-syenite
	Chalk Hills (Basic Intrusives)	Pyroxenite/Dunite
Archaean – Palaeoproterozoic	Peninsular Gneissic Complex (II) PGC (II)	Pink Granite Gneiss Hornblende Biotite gneiss
Archaean	Charnockite Group	Charnockite (Unclassified) Pyroxene Granulite Banded Magnetite Quartzite

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

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

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

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

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

2.3.2 Local Geology: -

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

2.3.3 Hydrogeology

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

Quaternary - Laterites, Sands and Clays

Tertiary - Sandstone, Gravels and Clays

Cretaceous - Limestone, Calcareous Sandstone and Clay unconformity.

Archaean - Charnockites, Gneisses, Granites, Dolerites and Pegmatite

- The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of Archaean age intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting.
- Ground Water occurs under the phreatic condition and wherever there are deep seated fractures, it occurs under semi-confined to confined conditions.
- Occurrence of Ground Water in hard rock depends upon the intensity and depth of weathering, fractures and fissures present in the rocks.
- Granites and gneisses yield moderately compared to the yield in Charnockites.
- Depth of well in hard rock generally ranges between 8 and 15m below ground level.

- Generally, yield in open wells ranges from 30 to 250m³ /day and in bore well between 260 and 430m³ /day. The weathered thickness varies from 2.5 m to 42m in general there are 3 to 5 fracture zones within 100 m and 1 to 4 fracture zones between 100 and 200 m.

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

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

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

Aquifer Systems:

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

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

Alluvial Formations

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

Tertiary Cuddalore sandstone

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

Cretaceous Formations

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

Hard Rock Formations

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

Granitic Gneiss

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

Charnockite

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

Aquifer Parameters

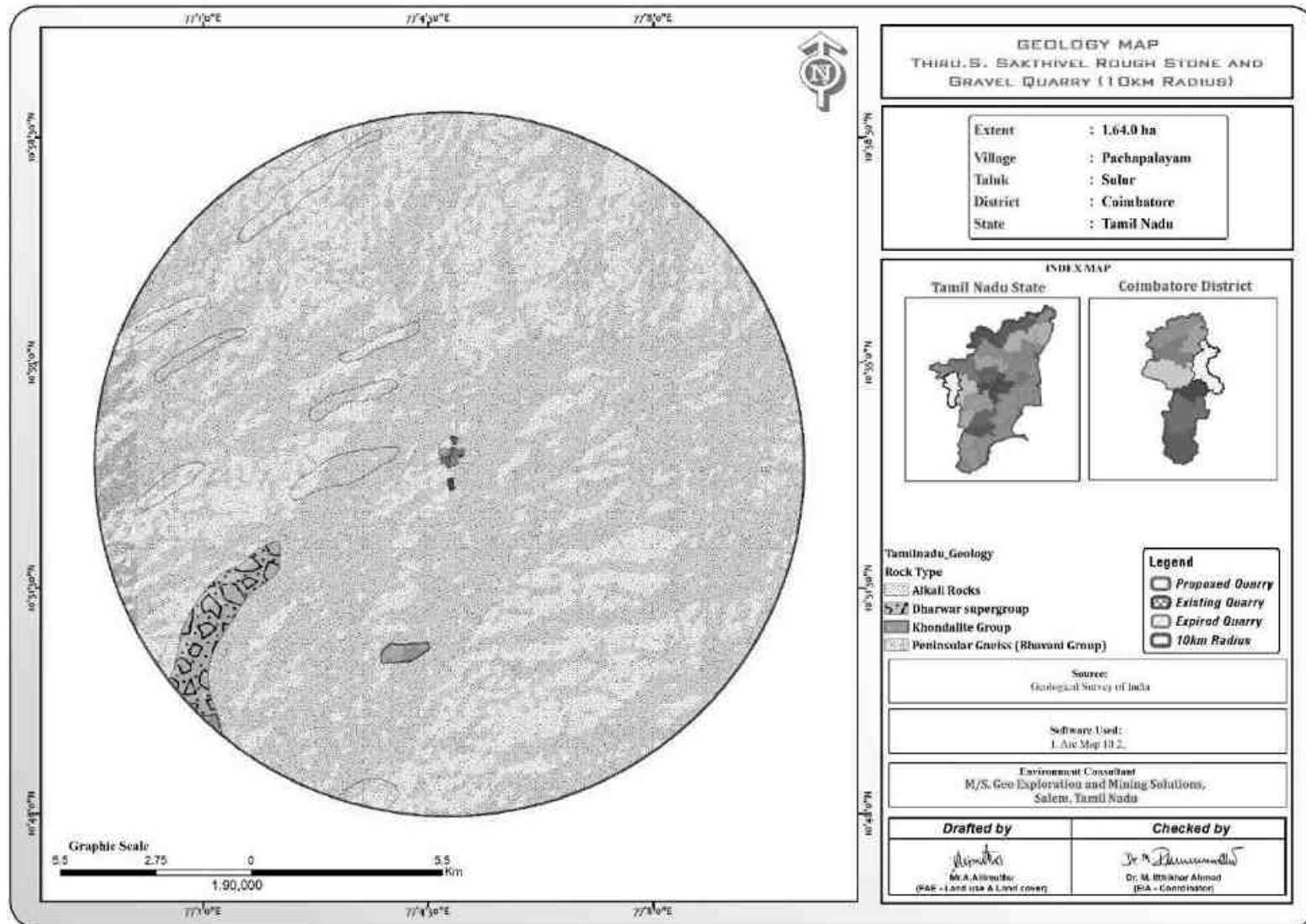
The thickness of aquifer in this district is highly erratic and varies between 15m to 40m below ground level. The intergranular Porosity is essentially dependent on the intensity and degree of weathering and fracture

development in the bed rock. As discussed earlier deep weathering has developed in Gneissic formations and moderate weathering in charnockite formations. The range of aquifer parameters in hard rock and sedimentary formations are given below:

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

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

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

FIGURE 2.9: REGIONAL GEOLOGY MAP

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

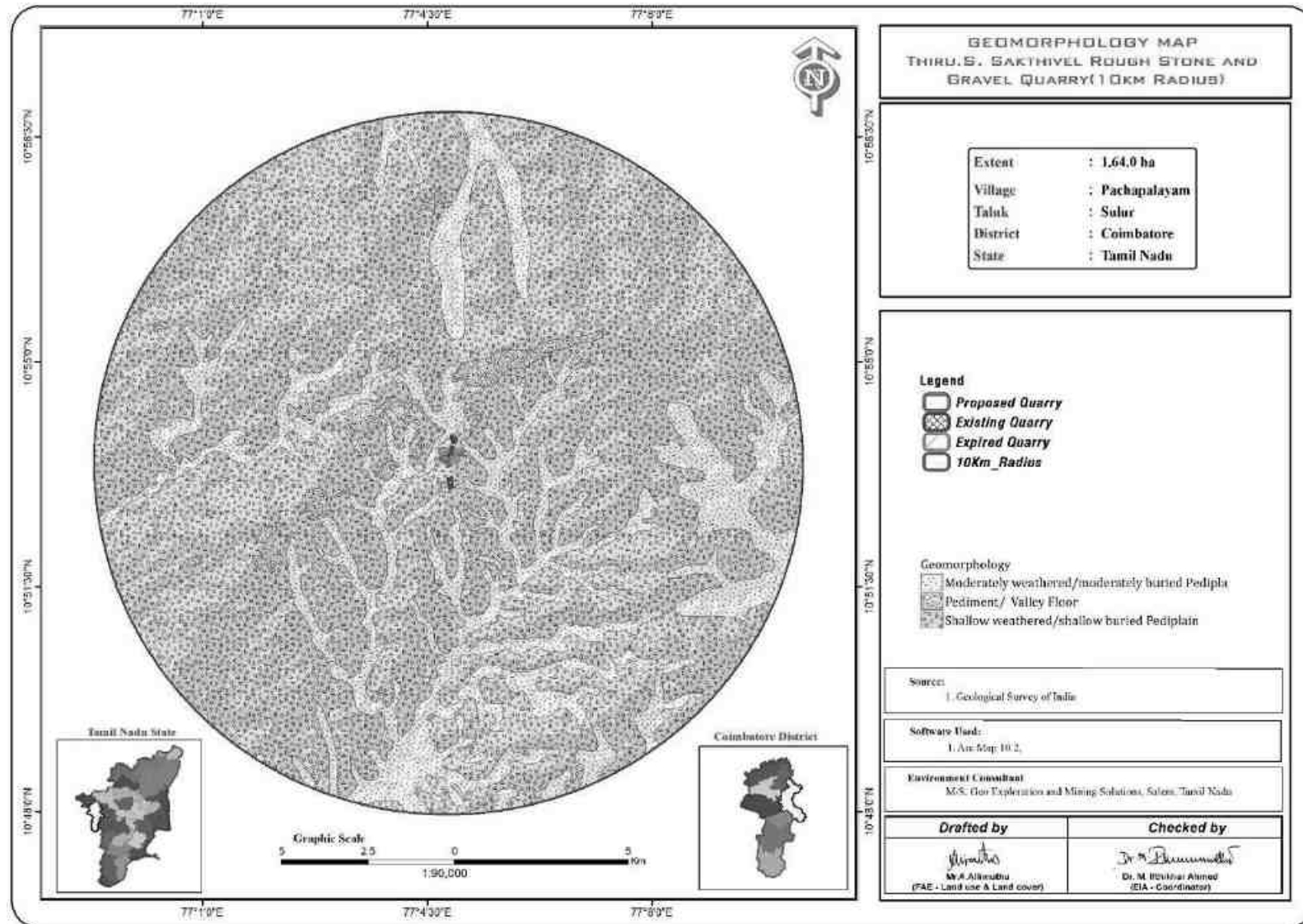
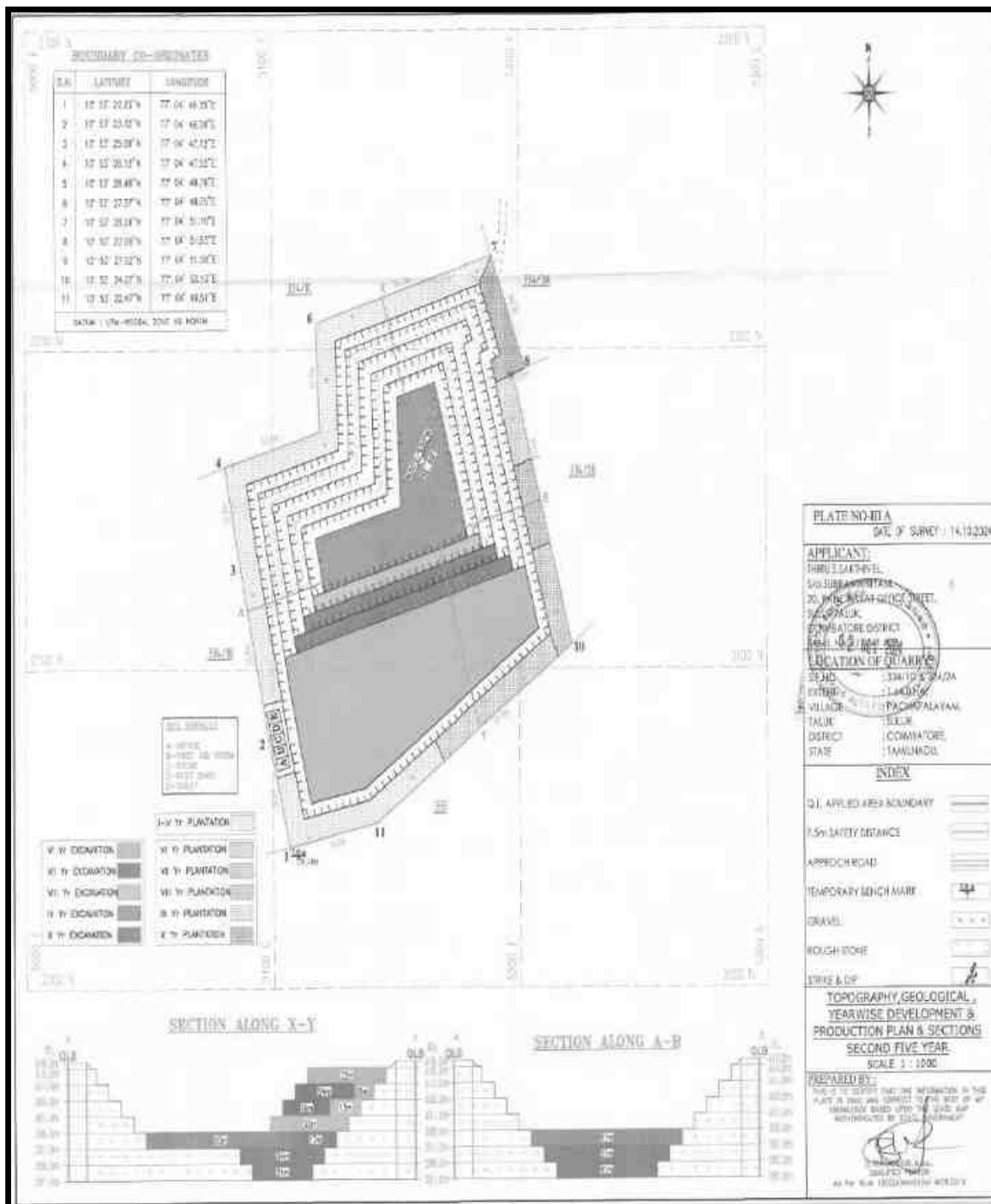
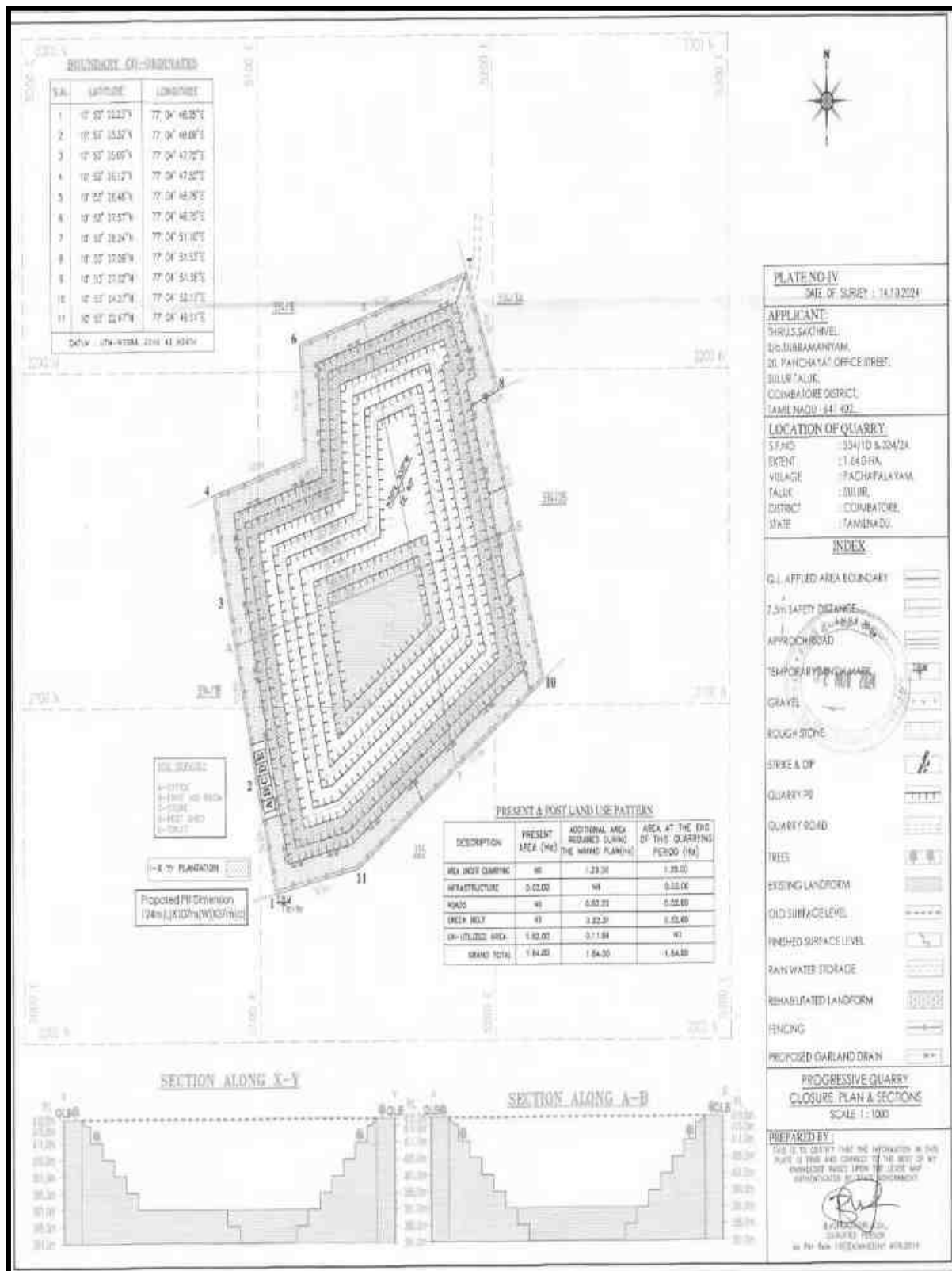
FIGURE 2.10: GEOMORPHOLOGY MAP

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



Source: Approved Mining Plan

FIGURE 2.12: CLOSURE PLAN AND SECTIONS



2.4 RESOURCES AND RESERVES

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

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

TABLE 2.6: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT

	Rough Stone m³	Gravel m³
Geological Resource in m ³	6,11,940	34,968
Mineable Resource in m ³	2,15,015	26,536
Year wise production for 1 st five-year plan period	1,22,900	26,536
Year wise production for 2 nd five-year plan period	92,115	-

Source: Approved Mining Plan

TABLE 2.7: YEAR-WISE PRODUCTION PLAN

YEAR	ROUGH STONE (m³)	GRAVEL (m³)
I	24450	8774
II	34510	8774
III	22140	8988
IV	20250	-
V	21550	-
VI	19800	-
VII	18615	-
VIII	16625	-
IX	18300	-
X	18775	-
TOTAL	215015	26536

Source: Approved Mining Plan

Disposal of Overburden/Waste:

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

Conceptual Mining Plan/ Final Mine Closure Plan

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

TABLE 2.8: ULTIMATE PIT DIMENSION

Length (Max) (m)	Width (Max) (m)	Depth (Max)
124	107	37m bgl

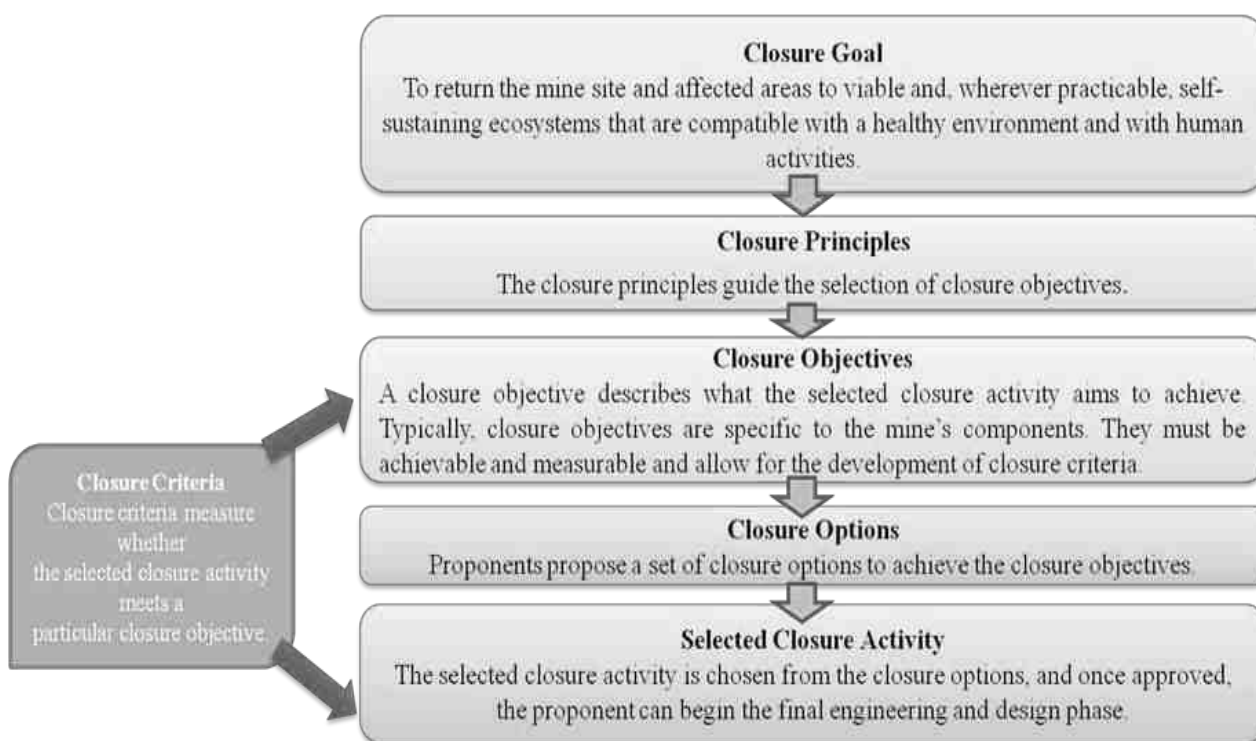
Source: Approved Mining Plan

- At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem

- Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- The principal closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

Closure Objectives –

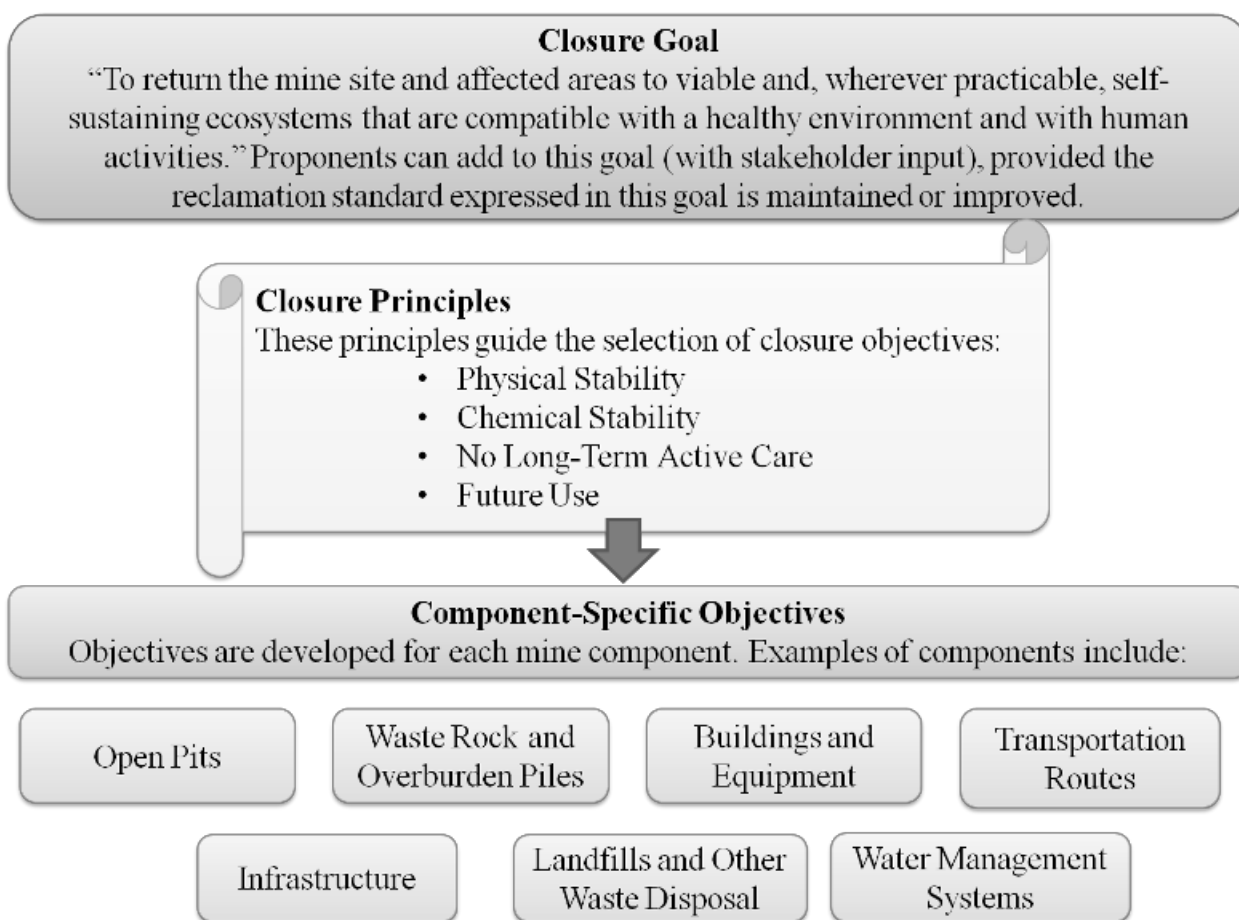
- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in flooded pits is safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.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



Closure Planning & Options Considerations in Mine Design –

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side

- There is a canal on Western side of the cluster project area. The river canal will not be hindered by any of mine closure activities
- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1st bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure
- The layout design shall be prepared and get approved from Department of Geology and Mining.
- The proponent is instructed to construct as per the layout approved
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure.



Post-Closure Monitoring –

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

- Monitor physical and geotechnical stability of remnant pit walls.
- Monitor the ground regime in pit walls to confirm achievement of design objectives.
- Monitor water level in pit to confirm closure objectives regarding fish, fish habitat, and wildlife safety are being achieved.

- Sample water quality and quantity at controlled pit discharge points.
- Identify and test unanticipated areas where water management is an issue.
- Inspect integrity of barriers such as berms & fences.
- Monitor wildlife interactions with barriers to determine effectiveness.
- Inspect aquatic habitat in flooded pits where applicable.
- Monitor dust levels.

TABLE 2.9: MINE CLOSURE BUDGET

ACTIVITY		YEAR					RATE	COST (Rs.)
		I	II	III	IV	V		
Plantation under Safety Zone	Nos.	1000	-	-	-	-	@200 Rs	2,00,000/-
	Cost	2,00,000	-	-	-	-	Per sapling	
Plantation in quarried out top benches and approach road	Nos.	1300	-	-	-	-	@200 Rs	2,60,000/-
	Cost	2,60,000	-	-	-	-	Per sapling	
Wire Fencing (In Mtrs) 530 Mtrs		159000	-	-	-	-	@300 Rs Per Meter	1,59,000/-
Garland drain (In Mtrs) 480 Mtrs		1,44,000	-	-	-	-	@300 Rs Per Meter	1,44,000/-
TOTAL								7,63,000/-

2.5 METHOD OF MINING

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

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

2.5.1 Drilling & Blasting Parameters

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

Spacing	–	1.2m
Burden	–	1.0 m
Depth of hole	–	1.5 m
Charge per hole	–	0.5kg
Powder factor	–	6.0 tonnes/kg
Diameter of hole	–	32 mm

Type of Explosives to be used –

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

Storage of Explosives –

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

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

2.5.2 Extent of Mechanization

TABLE 2.10. PROPOSED MACHINERY DEPLOYMENT

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

Source: Approved Mining Plan

2.6 GENERAL FEATURES

2.6.1 Existing Infrastructures

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

2.6.2 Drainage Pattern

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

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

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

2.6.3 Traffic Density

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

Traffic density measurements were performed at two locations

1. Periyakuyili to Panapatti Panchayat Road
2. Chettipalayam District Road

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

TABLE.2.11: TRAFFIC SURVEY LOCATIONS

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Periyakuyili to Panapatti Panchayat Road	900m NW	Panchayat Road
TS2	Chettipalayam District Road	2.2km W	District Road

Source: On-site monitoring by GEMS FAE & TM

TABLE 2.12: EXISTING TRAFFIC VOLUME

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

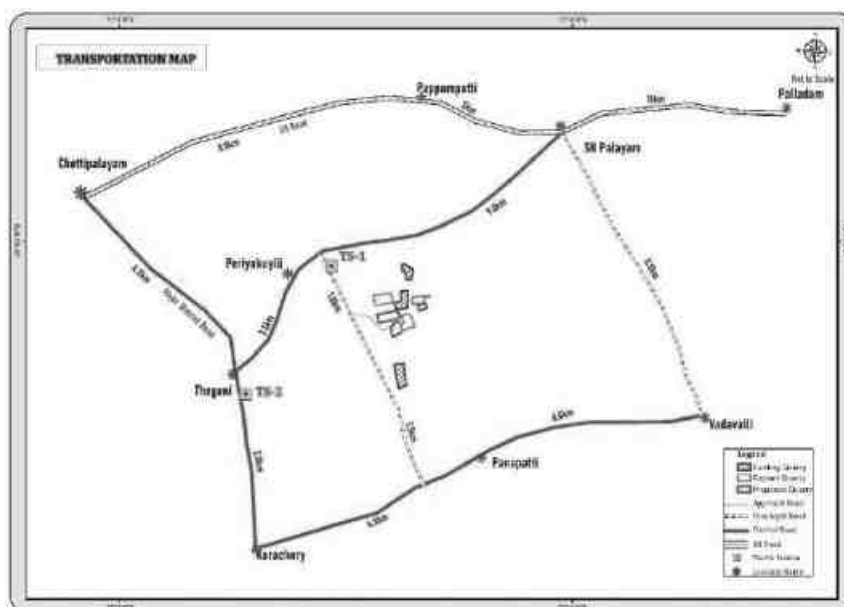
Source: On-site monitoring by GEMS FAE & TM

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

TABLE 2.13: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone & Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
10 tonnes	70	140

Source: Data analysed from Approved Mining Plan

FIGURE.2.13: MINERAL TRANSPORTATION ROUTE MAP**TABLE 2.14: SUMMARY OF TRAFFIC VOLUME**

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

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

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

2.6.4 Mineral Beneficiation and Processing

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

2.7 PROJECT REQUIREMENT

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.15: WATER REQUIREMENT FOR THE PROJECT

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

Source: Prefeasibility report

2.7.2 Power and Other Infrastructure Requirement

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

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

2.7.3 Fuel Requirement

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

2.7.4 Project Cost**TABLE 2.16: PROJECT COST OF PROPOSED PROJECT**

Total Project Cost	Rs. 87,42,000/-

Source: Approved Mining Plan & Prefeasibility Report

2.8 EMPLOYMENT REQUIREMENT:

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

TABLE 2.17: PROPOSED MANPOWER DEPLOYMENT

Employment Potential
24

Source: Approved Mining Plan

2.9 PROJECT IMPLEMENTATION SCHEDULE

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

TABLE 2.18: EXPECTED TIME SCHEDULE

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

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

3. DESCRIPTION OF ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering December 2024 to February 2025 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries EHS 360 LABS PRIVATE LIMITED (NABL) Laboratory for the below attributes –

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

Study Area

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

Study Period

The baseline study was conducted during the season (**Winter**) i.e., **December 2024 to February 2025**

Study Methodology

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

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

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio-Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (1 surface water & 5 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Auto matic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
*Ambient Air Quality	PM10 PM2.5 SO2 NOX Fugitive Dust	24 hourly twice a week (December 2024 – February 2025)	7 (2 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (2 core & 5 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

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

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

3.1 LAND ENVIRONMENT

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

3.1.1 Land Use/ Land Cover

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

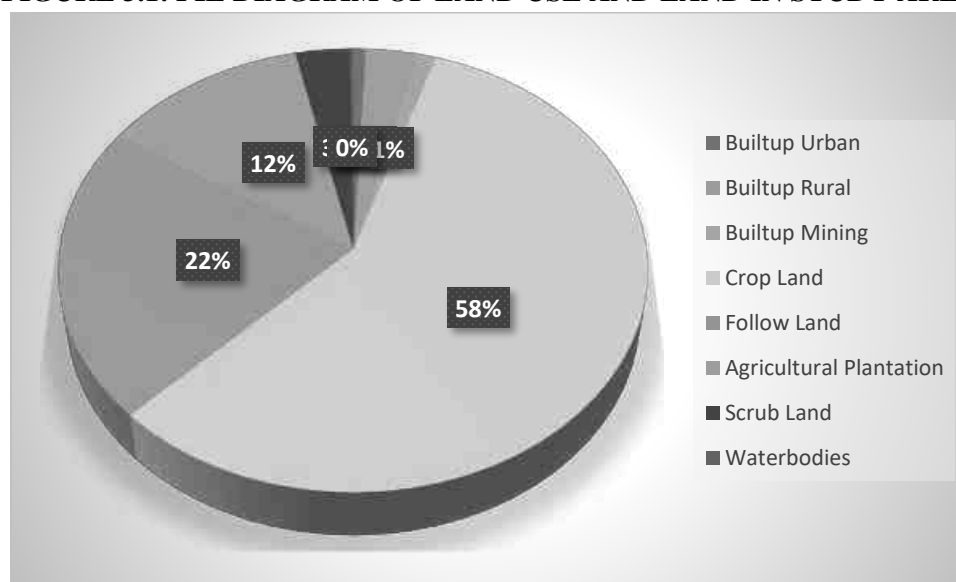
preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

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

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	URBAN	235.01	0.73
2	RURAL	1004.89	3.14
3	MINING	355.55	1.11
AGRICULTURAL LAND			
4	CROP LAND	18411.56	57.55
5	FOLLOW LAND	6897.71	21.56
6	PLANTATION	3973.17	12.42
BARREN/WASTE LANDS			
6	SCRUB LAND	1045.23	3.27
WETLANDS/ WATER BODIES			
7	WATER BODIES/LAKE/RIVER	68.67	0.21
TOTAL		31991.79	100.00

Source: Survey of India Toposheet and Landsat Satellite Imagery

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



Source: Table 3.2

Interpretation

From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture and fallow land (includes crop land) 91.53% followed by Built-up Lands – 3.87%, Scrub land – 3.27%, and Water bodies 0.21%.

The total mining area within the study area is 355.55 ha i.e., 1.11%. The cluster area of 12.37.85 ha contributes about 3.48% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

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

3.1.3 Drainage Pattern of the Area

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

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

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

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

3.1.4 Seismic Sensitivity

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

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

3.1.5 Environmental Features in the Study Area

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

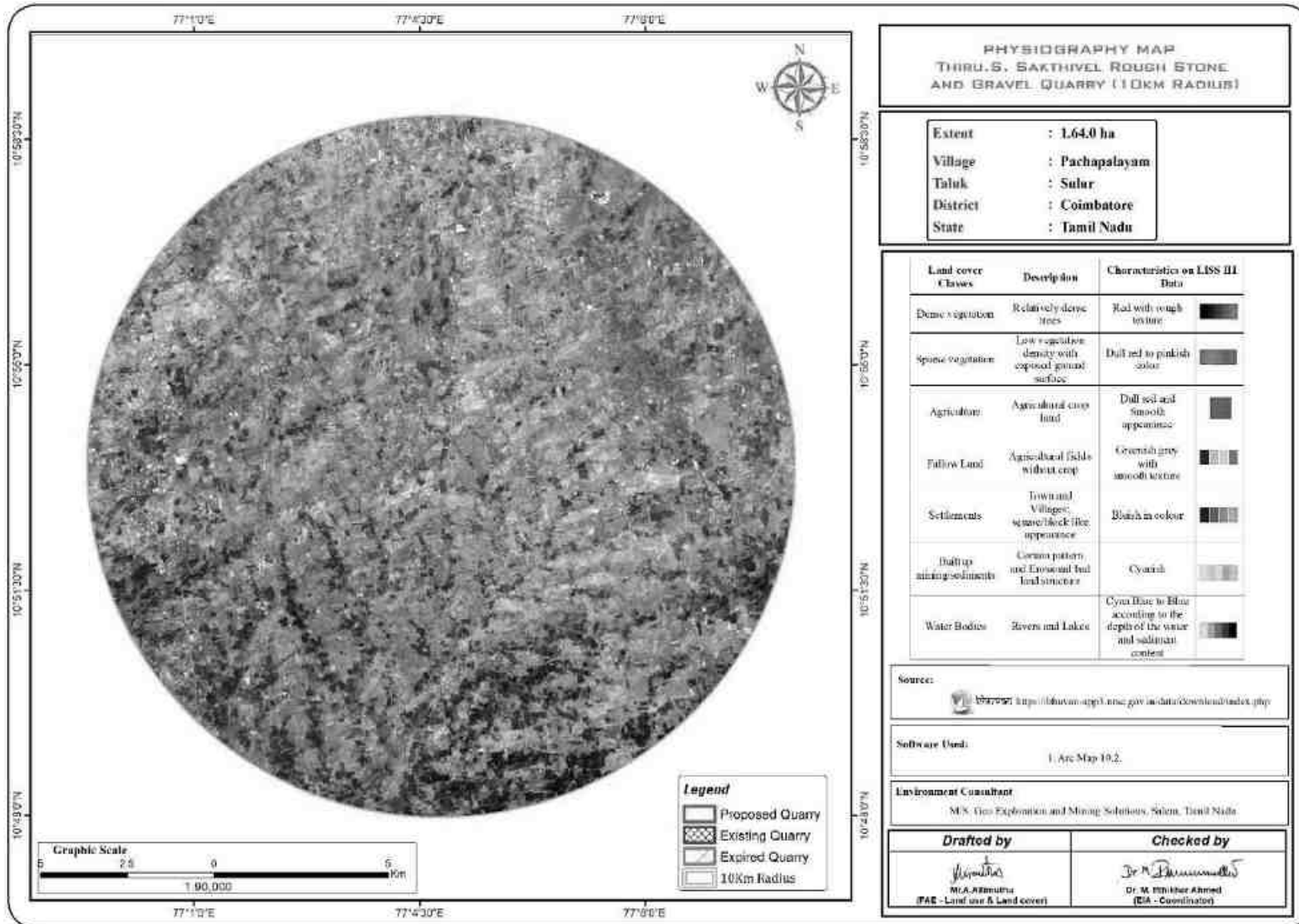
FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS

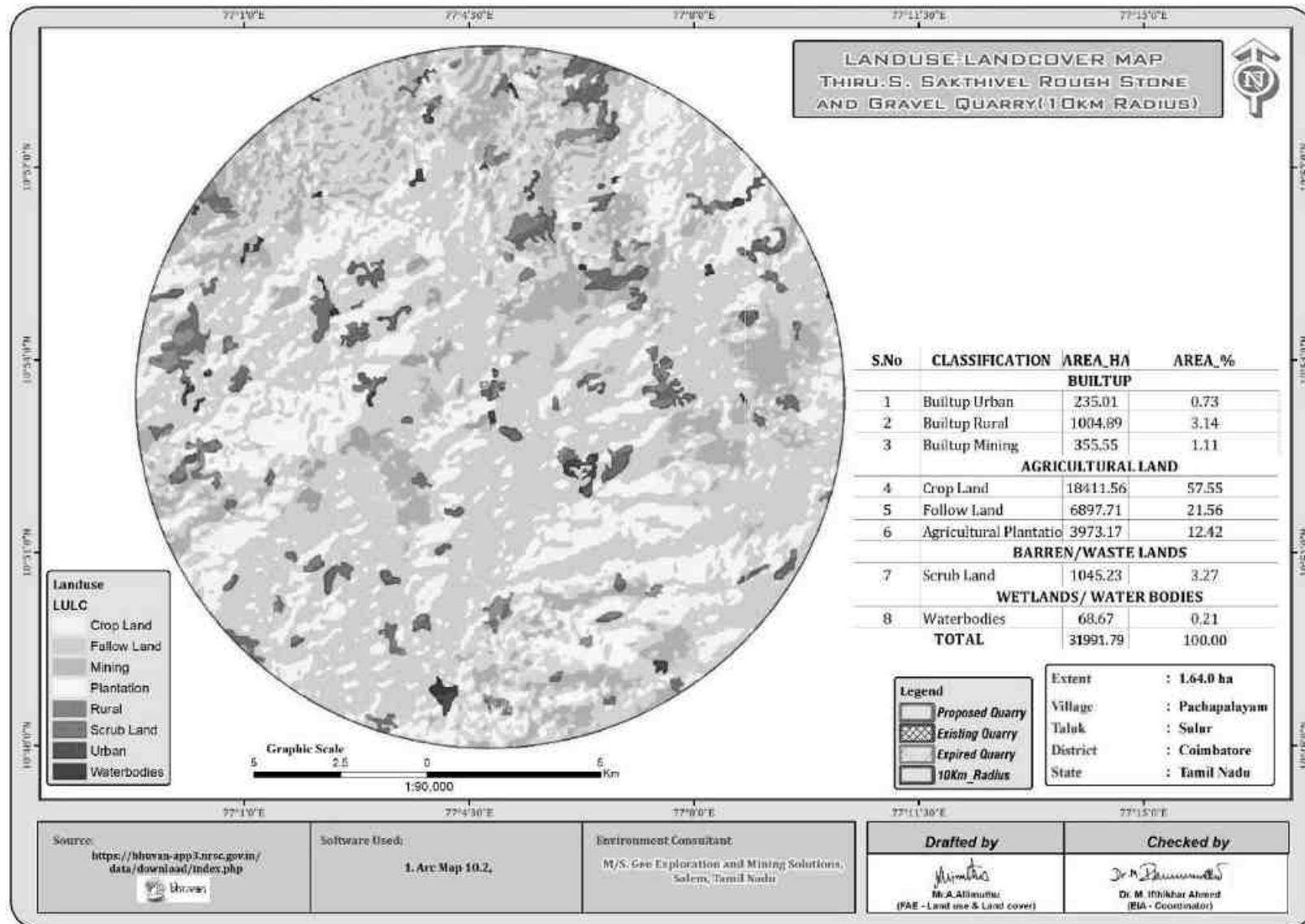
FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS

TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	Indiragandhi (Anamalai)	41km-S
2	Reserve Forest	Boluvampatti R.F	14.5km-NW
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10Km Radius
4	Critically Polluted Areas	Coimbatore - SIDCO Industrial Estate	Around 10.5 km- NorthWest
5	Mangroves	None	Nil within 10km Radius
6	Mountains/Hills	None	Nil within 10km Radius
7	Notified Archaeological Sites	None	Nil within 10km Radius
8	Industries/ Thermal Power Plants	None	Nil within 10km Radius
9	Defence Installation	None	Nil within 10km Radius

Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No	NAME	DISTANCE & DIRECTION
1	Odai	490m-NW
2	Odai	1.2km-East
3	Kothavadi Lake	8.5km-SW

Source: Village Cadastral Map and Field Survey

3.1.6 Soil Environment

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

The objective of the soil sampling is -

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

TABLE 3.5: SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Core Zone	Project Area	10°53'23.67"N 77° 4'50.95"E
2	S-2	Near Existing Quarry	350m NE	10°53'39.50"N 77° 4'55.23"E
3	S-3	KG Pudur	5km West	10°53'28.15"N 77° 2'5.16"E
4	S-4	Chinnakuyili	4.2km North	10°55'45.36"N 77° 5'4.04"E
5	S-5	Bogampatti	4.5km NE	10°54'2.30"N 77° 7'19.69"E
6	S-6	Vadasithur	5.5km South	10°50'15.09"N 77° 4'50.11"E

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

Methodology –

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

TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION

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

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

Soil Testing Result –

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

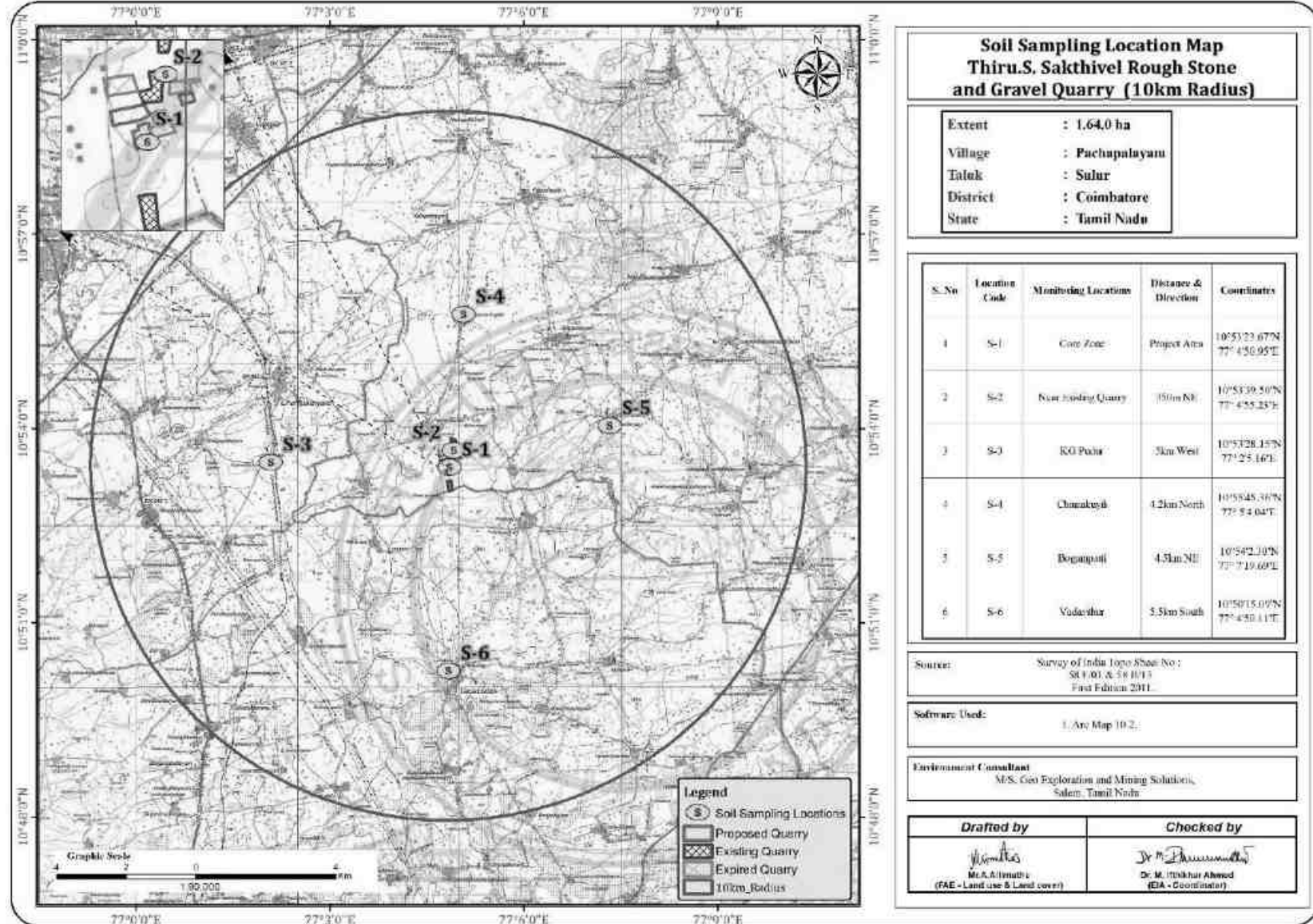
FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

FIGURE 3.4: SOIL MAP

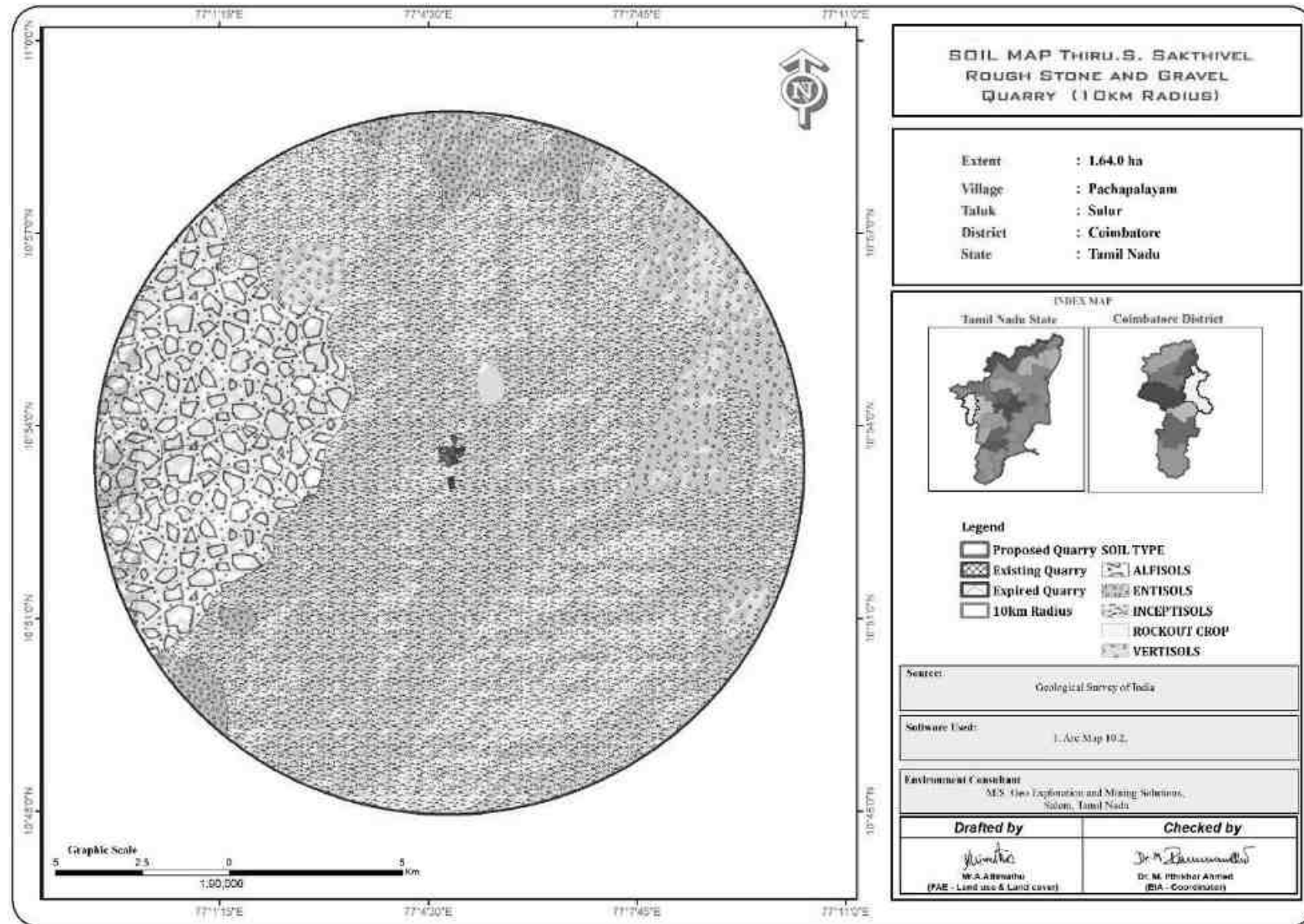


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

Parameter		Unit	S-1 Core Zone	S-2 Near Existing quarry	S-3 KG Pudur	S-4 Chinnakuyili	S-5 Bogampatti	S-6 Vadasithur
1	pH @ 25°C	-	7.68	8.12	7.68	7.94	7.68	7.81
2	Conductivity @ 25°C	µmhos/cm	412 µmhos/cm	312.5 µmhos/cm	380 µmhos/cm	324.6 µmhos/cm	378.2 µmhos/cm	442 µmhos/cm
3	Water Holding Capacity	%	39.9 %	43.2 %	46.1 %	39.8 %	43.9 %	46.4 %
4	Bulk Density	g/cm ³	1.01 g/cm ³	0.86 g/cm ³	1.12 g/cm ³	0.89 g/cm ³	0.92 g/cm ³	1.21 g/cm ³
5	Porosity	%	35.8 %	46.7 %	39.7 %	36.8 %	47.6 %	42.6 %
6	Calcium as Ca	mg/kg	40.2 mg/kg	67.4 mg/kg	58.9 mg/kg	87.9 mg/kg	59.6 mg/kg	67.8 mg/kg
7	Magnesium as Mg	mg/kg	20.8 mg/kg	36.9 mg/kg	36.6 mg/kg	41.4 mg/kg	23.9 mg/kg	31.9 mg/kg
8	Chloride as Cl	mg/kg	70.9 mg/kg	70.7 mg/kg	82.4 mg/kg	57.5 mg/kg	68.4 mg/kg	73.6 mg/kg
9	Soluble Sulphate as SO ₄	%	0.015 %	0.0019 %	0.0021 %	0.0013 %	0.0020 %	0.0015 %
10	Total Phosphorus as P	mg/Kg	2.24 mg/kg	1.29 mg/kg	2.96 mg/kg	1.29 mg/kg	6.20 mg/kg	3.56 mg/kg
11	Total Nitrogen as N	mg/Kg	424.8 mg/kg	437.8 mg/kg	418.9 mg/kg	392.7 mg/kg	452.5 mg/kg	464 mg/kg
12	Organic Matter	%	1.46 %	1.36 %	1.98 %	2.09 %	1.88 %	2.12 %
13	Organic Carbon	%	0.85 %	0.79 %	1.15 %	1.21 %	1.09 %	1.23 %
14	Texture :							
	Clay	%	28.4 %	26.2 %	25.0 %	25.4 %	24.7 %	26.9 %
	Sand	%	34.8 %	35.9 %	36.1 %	34.8 %	35.6 %	33.7 %
	Silt	%	36.8 %	37.9 %	38.9 %	39.8 %	39.7 %	39.4 %
15	Manganese as Mn	mg/Kg	20.1 mg/kg	24.4 mg/kg	26.3 mg/kg	29.6 mg/kg	22.5 mg/kg	29.8 mg/kg
16	Zinc as Zn	mg/Kg	1.15 mg/kg	2.01 mg/kg	1.07 mg/kg	1.45 mg/kg	1.78 mg/kg	1.45 mg/kg
17	Boron as B	mg/Kg	1.97 mg/kg	1.23 mg/kg	1.32 mg/kg	1.71 mg/kg	1.65 mg/kg	1.62 mg/kg
18	Potassium as K	mg/Kg	32.6 mg/kg	32.8 mg/kg	35.9 mg/kg	46.4 mg/kg	39.2 mg/kg	46.8 mg/kg
19	Cadmium as Cd	mg/Kg	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr	-	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
21	Copper as Cu	mg/Kg	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
22	Lead as Pb	mg/Kg	1.15 mg/kg	0.98 mg/kg	1.33 mg/kg	1.81 mg/kg	1.33 mg/kg	0.98 mg/kg
23	Iron as Fe	mg/Kg	2.32 mg/kg	6.97 mg/kg	6.29 mg/kg	3.09 mg/kg	1.78 mg/kg	5.56 mg/kg
24	Cation Exchange Capacity	meq/100g	38.8 meq/100g of soil	45.6 meq/100g of soil	49.7 meq/100g of soil	45.8 meq/100g of soil	41.9 meq/100g of soil	46.5 meq/100g of soil

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay (24.7 % -28.4 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 0.86– 1.21 g/cm³. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 39.8 – 46.4 %. and 35.8 to 47.6 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.68 to 8.12
- The available Nitrogen content range between 392.7 to 464 mg/kg
- The available Phosphorus content range between 1.29 to 6.2 mg/kg
- The available Potassium range between 32.6 mg/kg to 46.8 mg/kg

3.2 WATER ENVIRONMENT

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

3.2.1 Surface Water Resources:

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

3.2.2 Ground Water Resources:

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

Ground water occurring in pheratic conditions in weathered and fractured gneiss rock formation. The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.2 to 13 m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

3.2.3 Methodology

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

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

One (1) surface water and Five (5) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and ‘Standard methods for the Examination of Water and Wastewater’ published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

TABLE 3.8: WATER SAMPLING LOCATIONS

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	CO-ORDINATES
SURFACE WATER				
1	SW-1	Kothavadi Lake	8.8km South	10°48'38.19"N 77° 4'3.24"E
GROUND WATER				
1	WW-1	Near Project Area	460m North	10°53'43.45"N 77° 4'49.24"E
2	WW-2	Chinnakuyili	4.0km North	10°55'34.52"N 77° 5'2.99"E
3	WW-3	Near KG Pudur	4.5km NW	10°53'51.67"N 77° 2'14.94"E
4	BW-1	Near Project Area	330m NW	10°53'29.61"N 77° 4'37.06"E
5	BW-2	Bogampatti	4.5km NE	10°54'13.04"N 77° 7'19.31"E

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

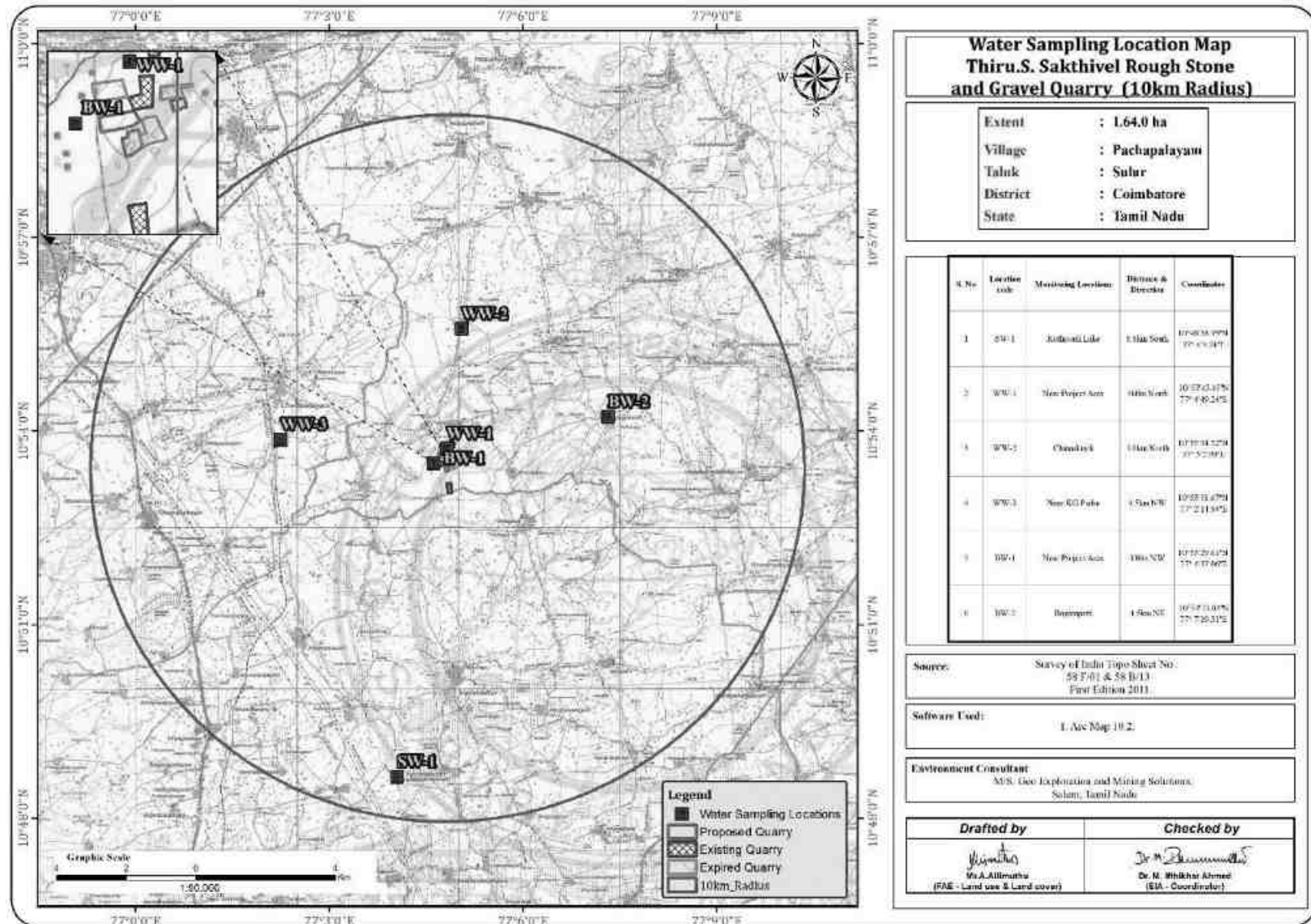
FIGURE 3.5: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

TABLE 3.9: GROUND WATER SAMPLING RESULTS

S.NO	Parameter	BW-1 Near Project Area	BW-2 Bogampatti	WW-1 Near Project Area	WW-2 Chinnakuyili	WW-3 Near KG Pudur
1	Color	< 5	< 5	< 5	< 5	< 5
2	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	pH@ 25°C	7.56	7.28	7.63	7.89	7.35
4	Electrical Conductivity @ 25°C	1358.0 µmhos/cm	1312.0 µmhos/cm	1745.0 µmhos/cm	1580 µmhos/cm	1370.0 µmhos/cm
5	Turbidity	< 1 NTU	< 1 NTU	< 1 NTU	< 1 NTU	< 1 NTU
6	Total Dissolved Solids	803.0 mg/l	777.0 mg/l	1030.0 mg/l	934 mg/l	810.0 mg/l
7	Total Hardness as CaCO ₃	264.0 mg/l	248.0 mg/l	356.0 mg/l	304.0 mg/l	288.0 mg/l
8	Calcium as Ca	62.5 mg/l	57.7 mg/l	83.3 mg/l	68.9 mg/l	65.7 mg/l
9	Magnesium as Mg	26.2 mg/l	25.3 mg/l	35.9 mg/l	32.1 mg/l	30.1 mg/l
10	Total Alkalinity	232.5 mg/l	229.5 mg/l	325.0 mg/l	286.5 mg/l	264.5 mg/l
11	Chloride as Cl ⁻	286.5 mg/l	275.5 mg/l	372.0 mg/l	326.1 mg/l	302.6 mg/l
12	Sulphate as SO ₄ ⁻	55.6 mg/l	51.5 mg/l	58.9 mg/l	53.8 mg/l	61.5 mg/l
13	Iron as Fe	0.40 mg/l	0.36 mg/l	0.21 mg/l	0.19 mg/l	0.33 mg/l
14	Free Residual Chlorine	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)
15	Fluoride as F	0.37 mg/l	0.30 mg/l	0.31 mg/l	0.27 mg/l	0.37 mg/l
16	Nitrates as NO ₃	3.2 mg/l	4.8 mg/l	3.3 mg/l	3.1 mg/l	4.6 mg/l
17	Copper as Cu	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)
21	Selenium as Se	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
23	Lead as Pb	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
25	Total Chromium	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)	BDL(DL : 0.02 mg/l)
26	Boron as B	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)	BDL(DL : 0.01 mg/l)
28	Phenolic Compounds as C ₆ H ₅ OH	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents as	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
30	Cynaide as CN	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
31	Barium as Ba	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)
37	Total Coliform	112 MPN/100ml	134 MPN/100ml	139 MPN/100ml	142 MPN/100ml	120 MPN/100ml
38	E-Coli	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml

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

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

Sl. No.	Parameter	Unit	RESULT
			SW1- Kothavadi Lake
1	Colour	Hazen	12 Hazen
2	Odour	-	Agreeable
3	pH @ 25°C	-	8.51
4	Electrical Conductivity @ 25°C	µs/cm	2190 µmhos/cm
5	Turbidity	NTU	6.5 NTU
6	Total Dissolved Solids	mg /l	1293 mg/l
7	Total Hardness as CaCO ₃	mg/l	432 mg/l
8	Calcium as Ca	mg/l	109.0 mg/l
9	Magnesium as Mg	mg/l	38.9 mg/l
10	Total Alkalinity as CaCO ₃	mg/l	424.5 mg/l
11	Chloride as Cl ⁻	mg/l	471.5 mg/l
12	Sulphate as SO ₄ ⁻	mg/l	60.1 mg/l
13	Iron as Fe	mg/l	0.46 mg/l
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)
15	Fluoride as F	mg/l	0.31 mg/l
16	Nitrates as NO ₃	mg/l	8.6 mg/l
17	Copper as Cu	mg/l	BDL (DL:0.01 mg/l)
18	Manganese as Mn	mg/l	BDL (DL:0.02 mg/l)
19	Mercury as Hg	mg/l	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	mg/l	BDL (DL:0.001 mg/l)
21	Selenium as Se	mg/l	BDL (DL:0.005 mg/l)
22	Aluminium as Al	mg/l	BDL (DL:0.005 mg/l)
23	Lead as Pb	mg/l	BDL (DL:0.005 mg/l)
24	Zinc as Zn	mg/l	BDL (DL:0.05 mg/l)
25	Total Chromium	mg/l	BDL (DL:0.02 mg/l)
26	Boron as B	mg/l	BDL (DL:0.05 mg/l)
27	Mineral Oil	mg/l	BDL (DL:0.01 mg/l)
28	Phenolic Compounds as C ₆ H ₅ OH	mg/l	BDL (DL:0.0005 mg/l)
29	Anionic Detergents as MBAS	mg/l	BDL (DL:0.01 mg/l)
30	Cyanide as CN	mg/l	BDL (DL:0.01 mg/l)
31	Biological Oxygen Demand, 3 days @ 27°C		11.5 mg/l
32	Chemical Oxygen Demand		40 mg/l
33	Dissolved Oxygen		13.2 mg/l
34	Barium as Ba	mg/l	BDL (DL:0.05 mg/l)
35	Ammonia (as Total Ammonia-N)	mg/l	2.6 mg/l
36	Sulphide as H ₂ S	mg/l	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	mg/l	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	mg/l	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	mg/l	20.1 mg/l
40	Total Coliform	MPN/ 100ml	550 MPN/100ml
41	E-Coli		110 MPN/100ml

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

3.2.4 Interpretation & Conclusion

Surface Water

Ph:

The pH - 8.51 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids -1293mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 471.5mg/l. Nitrates -8.6mg/l, while sulphates -60.1mg/l.

Ground Water

The pH of the water samples collected ranged from 7.28 to 7.89 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 777– 1030mg/l in all samples. Total hardness varied between 248-356mg/l for all samples.

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

3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 70-65m. The maximum depth proposed out of proposed project is 37m (2m Gravel + 35m Rough stone) below ground level. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to these proposed project.

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

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

S.NO	LABEL	LONGITUDE	LATITUDE	Dec-24	Jan-25	Feb-25
1	OW-1	77° 04' 49.1931" E	10° 53' 43.3918" N	11	11.8	12.4
2	OW-2	77° 05' 09.2887" E	10° 53' 33.3311" N	10.4	11.2	11.8
3	OW-3	77° 05' 00.5106" E	10° 54' 06.0161" N	10.8	11.6	12.2
4	OW-4	77° 05' 29.7008" E	10° 53' 18.5156" N	10.1	10.9	11.5
5	OW-5	77° 05' 04.0071" E	10° 53' 10.4332" N	10.4	11.2	11.8
6	OW-6	77° 05' 10.7282" E	10° 53' 04.1157" N	10.9	11.7	12.3
7	OW-7	77° 04' 51.1891" E	10° 52' 42.2793" N	11.3	12.1	12.7
8	OW-8	77° 04' 24.2664" E	10° 53' 19.4872" N	10.5	11.3	11.9
9	OW-9	77° 04' 06.6982" E	10° 53' 46.1772" N	10.8	11.6	12.2
10	OW-10	77° 04' 34.0486" E	10° 54' 05.6870" N	11.7	12.5	13.1

Source: Onsite monitoring data

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

S.NO	LABEL	LONGITUDE	LATITUDE	Dec-24	Jan-25	Feb-25
1	BW-1	77° 04' 37.1409" E	10° 53' 29.4973" N	63	63.8	64.2
2	BW-2	77° 04' 31.2930" E	10° 53' 45.4938" N	62.4	63.2	63.6
3	BW-3	77° 04' 52.8977" E	10° 53' 57.9424" N	61.6	62.4	62.8
4	BW-4	77° 04' 55.3224" E	10° 54' 11.4138" N	63.3	64.1	64.5
5	BW-5	77° 05' 18.0135" E	10° 53' 23.9395" N	63	63.8	64.2
6	BW-6	77° 05' 28.3610" E	10° 53' 11.8189" N	62.6	63.4	63.8
7	BW-7	77° 04' 57.8990" E	10° 53' 05.1010" N	62.9	63.7	64.1
8	BW-8	77° 04' 54.0067" E	10° 52' 40.5584" N	62.6	63.4	63.8
9	BW-9	77° 04' 22.4720" E	10° 53' 17.6011" N	61.7	62.5	62.9
10	BW-10	77° 04' 04.9367" E	10° 53' 42.3109" N	62.1	62.9	63.3

Source: Onsite monitoring data

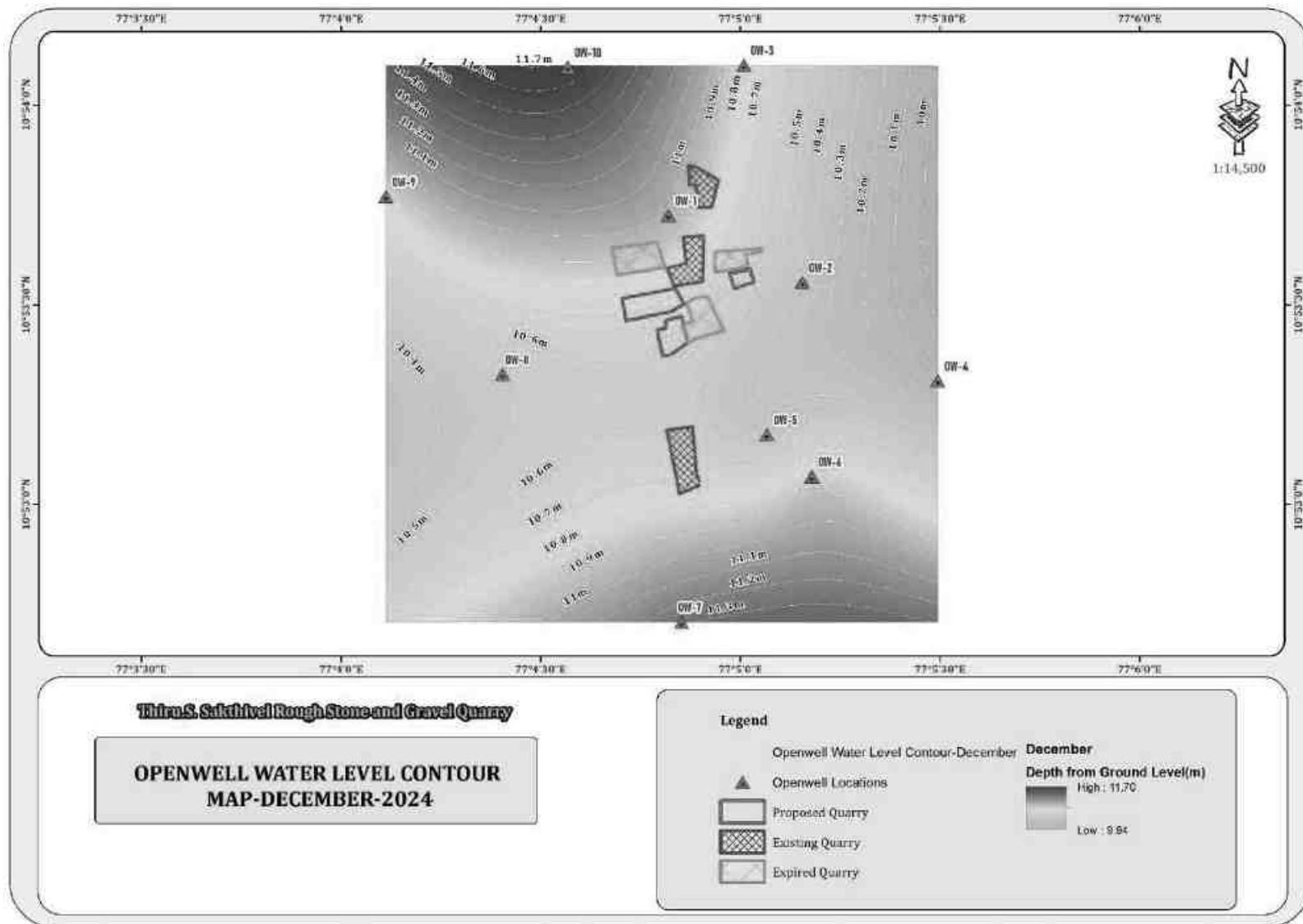
FIGURE 3.6: OPEN WELL CONTOUR MAP – DECEMBER 2024

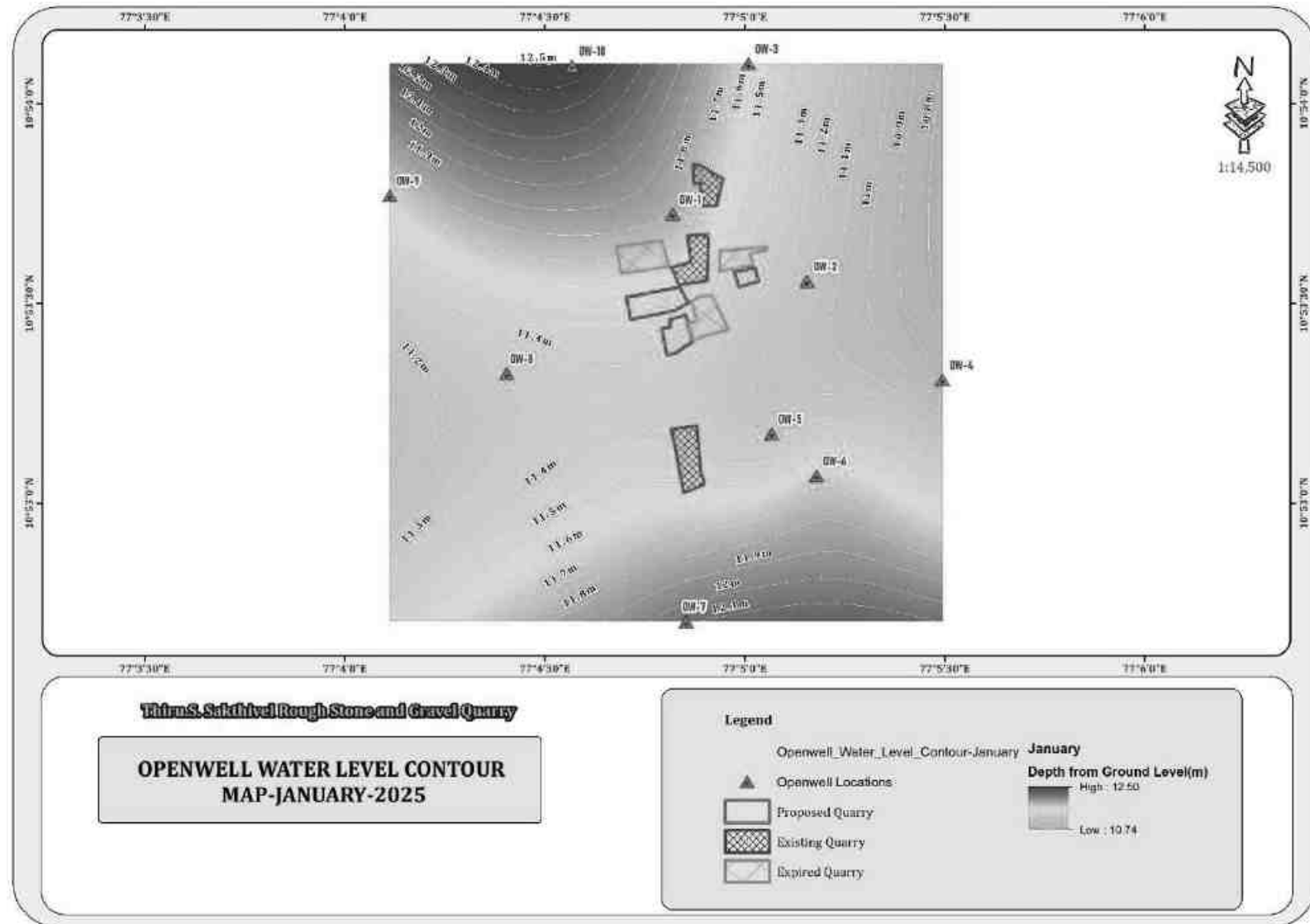
FIGURE 3.7: OPEN WELL CONTOUR MAP – JANUARY 2025

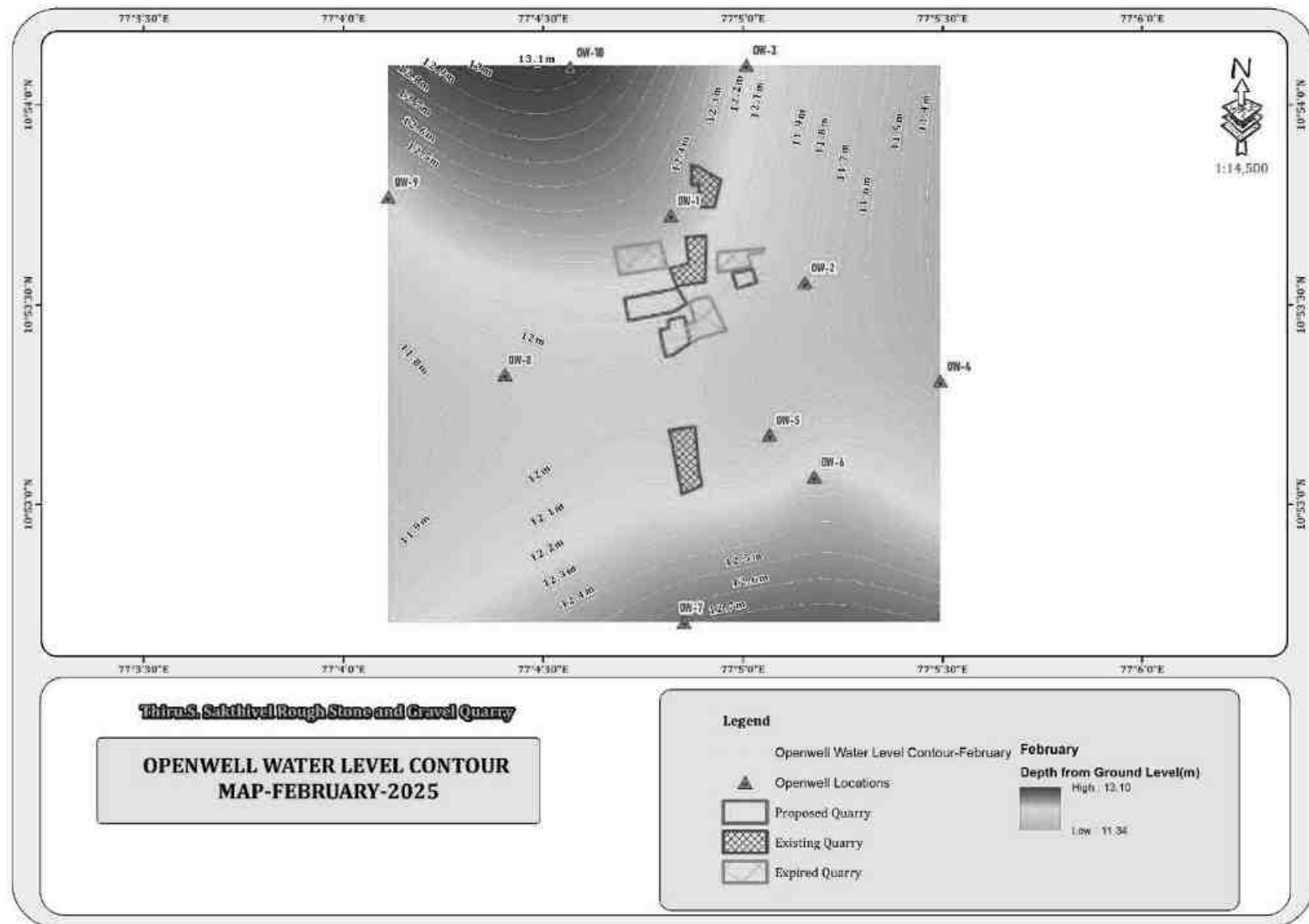
FIGURE 3.8: OPEN WELL CONTOUR MAP – FEBRUARY 2025

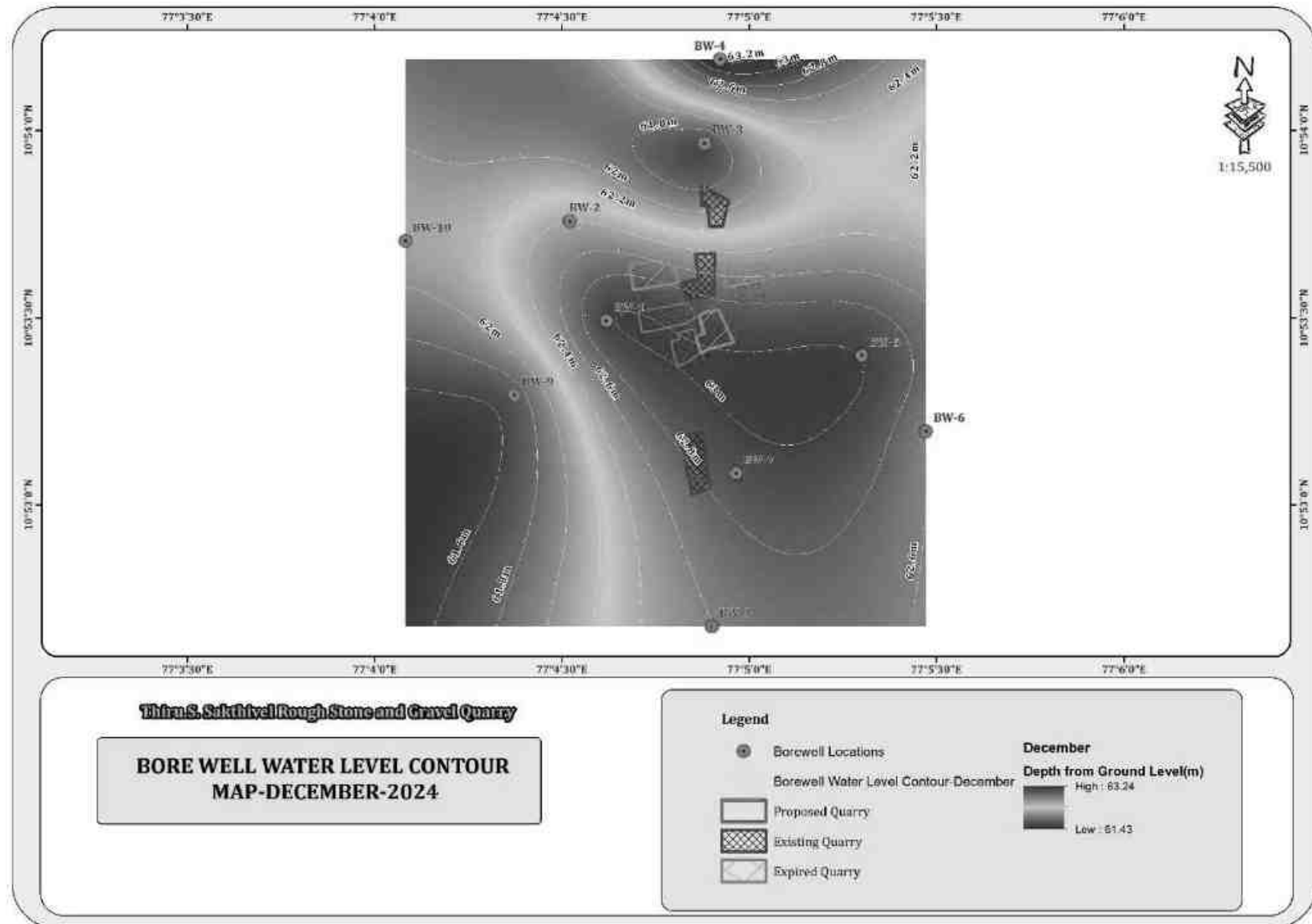
FIGURE 3.9: BOREWELL CONTOUR MAP – DECEMBER 2024

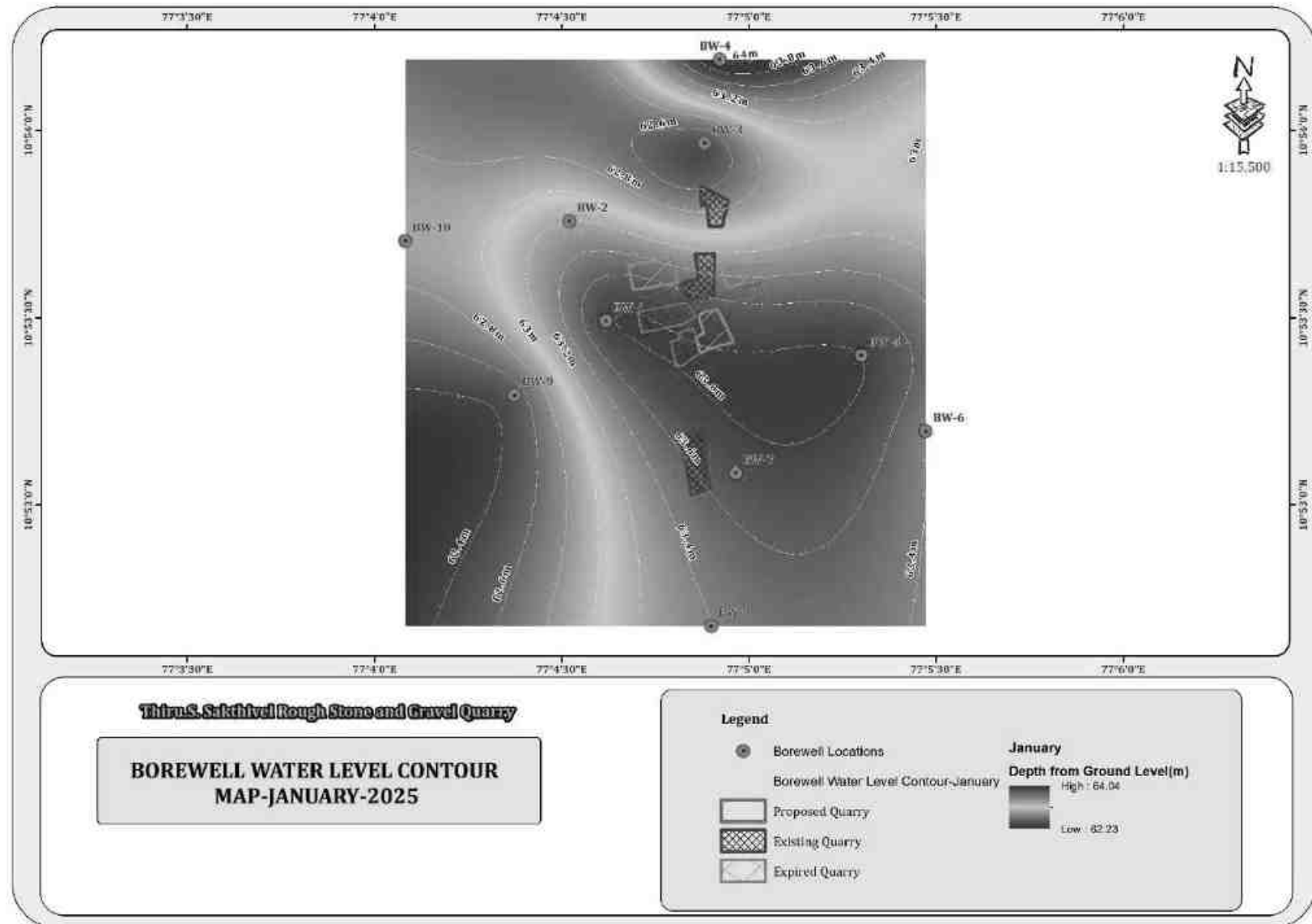
FIGURE 3.10: BOREWELL CONTOUR MAP – JANUARY 2025

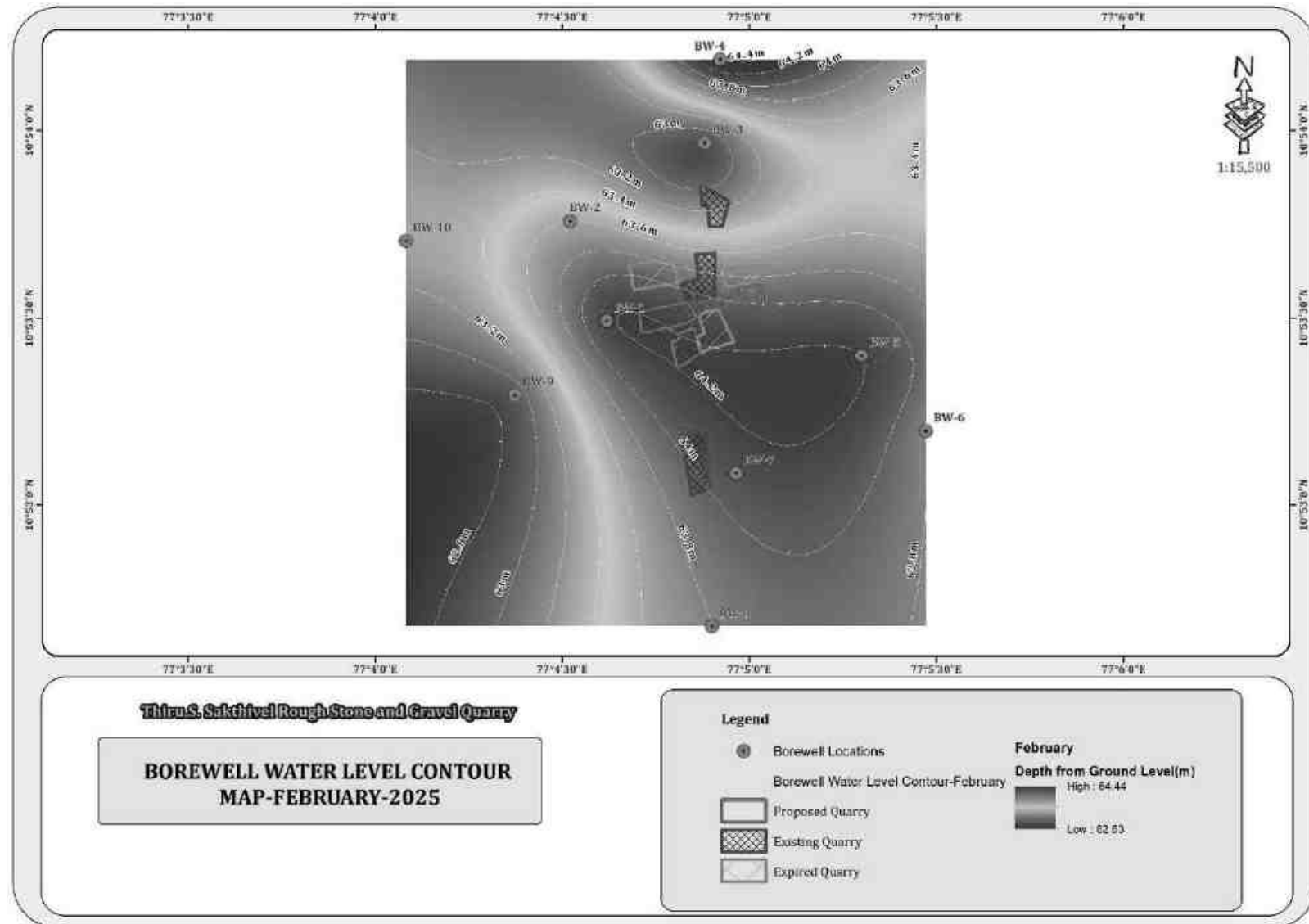
FIGURE 3.11: BOREWELL CONTOUR MAP – FEBRUARY 2025

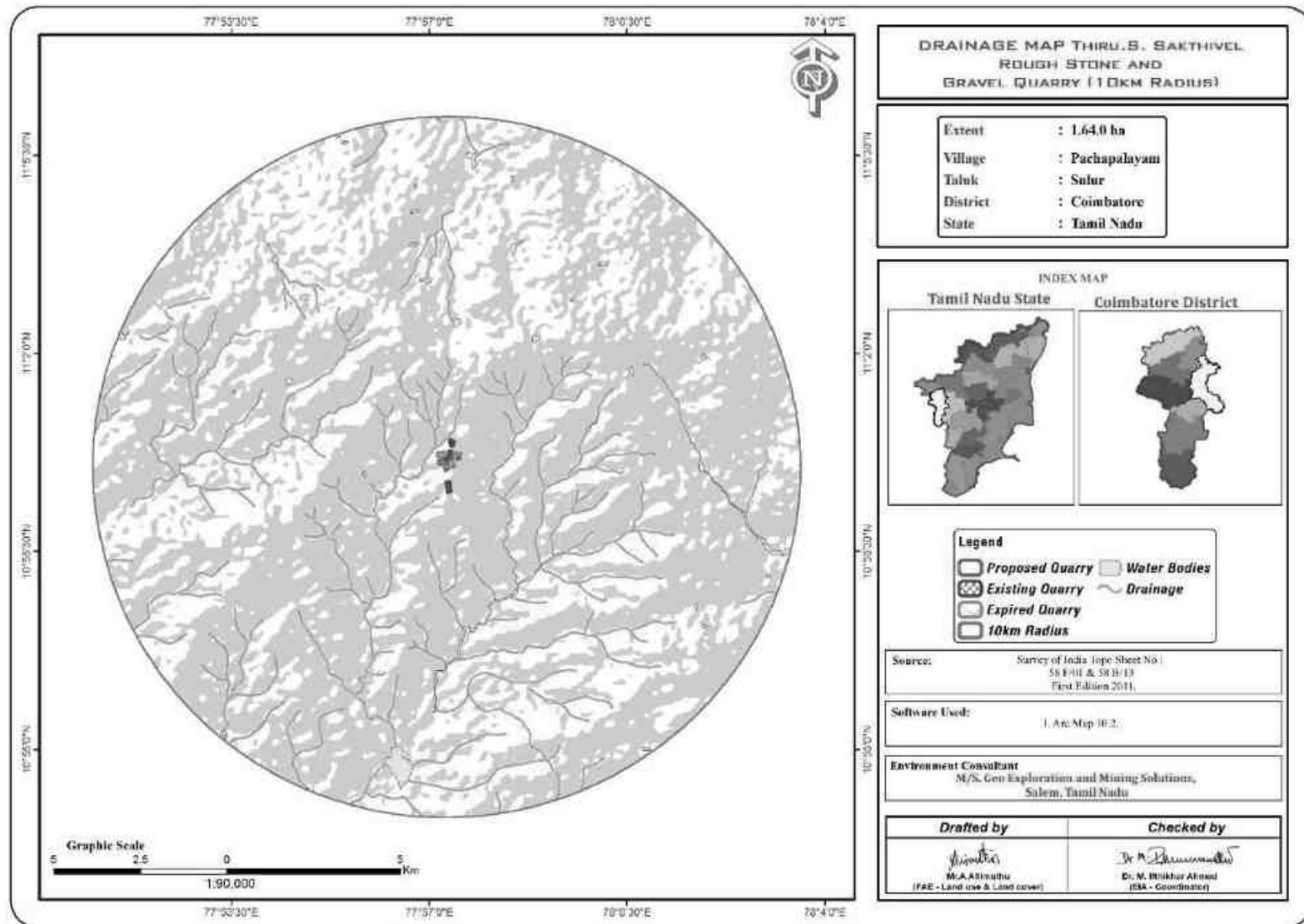
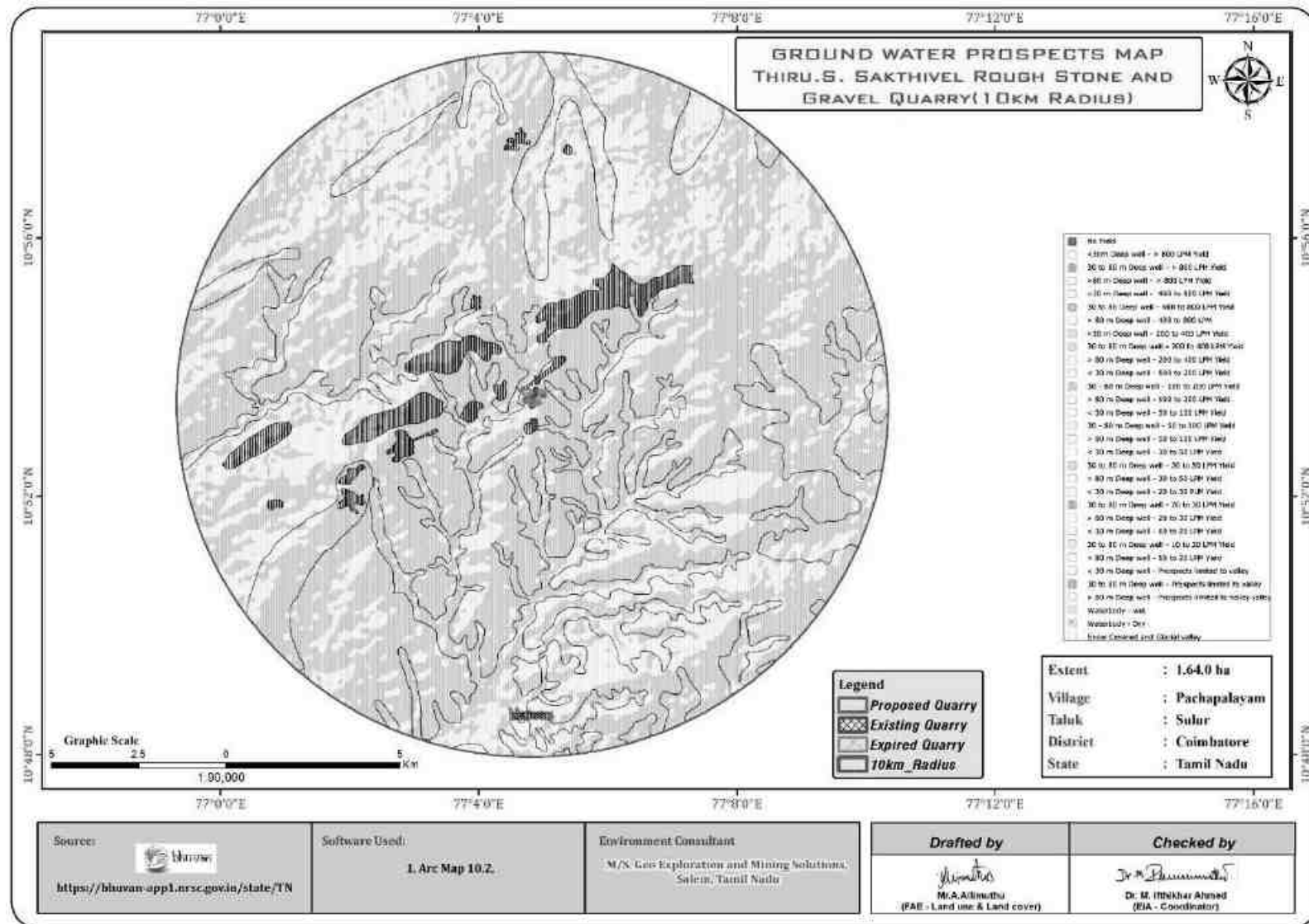
FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

FIGURE 3.13: GROUND WATER PROSPECT MAP



3.2.5.1 Methodology and Data Acquisition

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

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

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

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

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

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

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

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

ϕ = Fractional pore volume

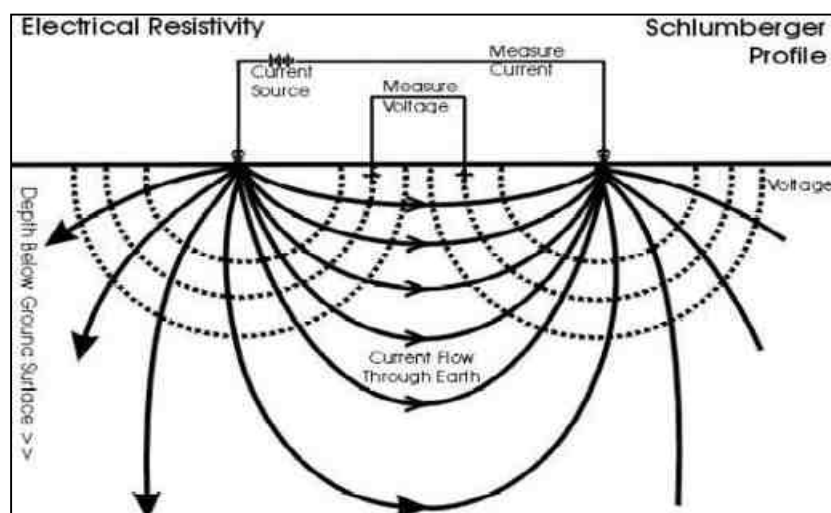
A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

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

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

RESISTIVITY SURVEY PROFILE



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes (C₁ & C₂) and measuring the resulting potential by two other electrodes called potential electrode (P₁ & P₂). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 65-70m. The maximum depth of proposed project is 37m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation

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

3.3 AIR ENVIRONMENT

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

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

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

3.3.1 Meteorology & Climate

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

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

Climate

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

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

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

Rainfall

TABLE 3.13: RAINFALL DATA

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

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

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Dec-2024	Jan-2025	Feb-2025
1	Temperature (°C)	Max	24.59	25.06	25.18
		Min	20.39	19.81	21.84
		Avg	22.49	22.43	23.51
2	Relative Humidity (%)	Avg	86.72	76.15	64.92
3	Wind Speed (m/s)	Max	4.52	4.21	2.60
		Min	1.06	2.47	1.63
		Avg	2.79	3.34	2.11
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		ENE,E	ENE,E	E,ENE

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

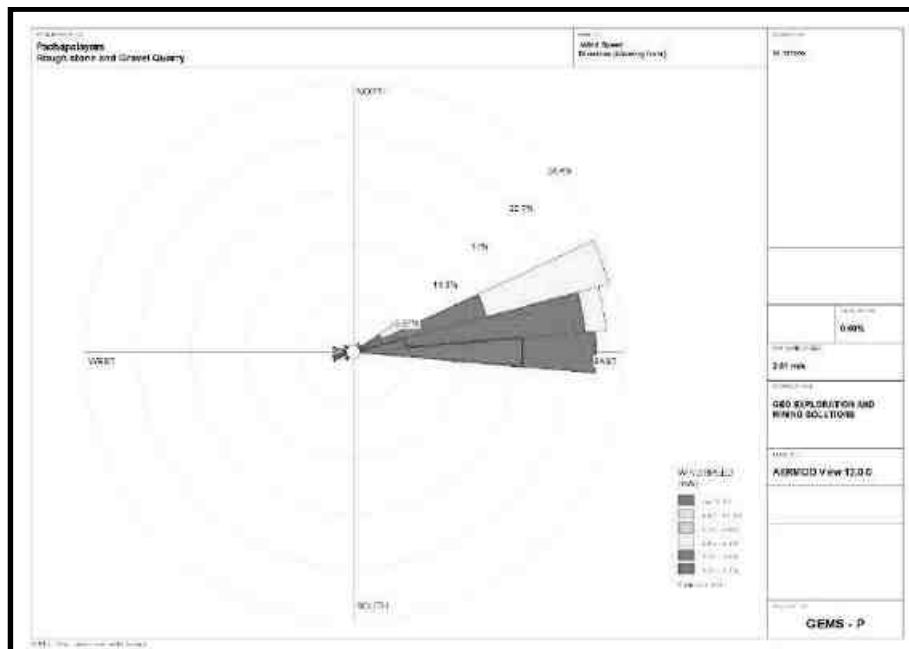
Correlation between Secondary and Primary Data

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

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

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

FIGURE 3.14: WINDROSE DIAGRAM



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

1. Predominant winds were from ENE, E
2. Wind velocity readings were recorded between 0.50 to 5.70m/s
3. Calm conditions prevail of about 0 % of the monitoring period
4. Temperature readings ranging from 22.43 to 23.51 °C
5. Relative humidity ranging from 64.92 to 86.72 %
6. The monitoring was carried out continuously for three months. (December 2024 to February 2025)

3.3.2 Methodology and Objective

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

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

3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS

Parameter	Method	Instrument
PM2.5	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM10	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO2	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NOx	IS-5182 Part II (Jacob & Hochheiser modifiedmethod)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by EHS 360 Labs Private Limited & CPCB Notification

TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS

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

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

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

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

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period December 2024 to February 2025. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

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

3.3.5 Ambient Air Quality Monitoring Stations

Seven (7) monitoring stations were set up in the study area as depicted in Figure 3.15 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Core Zone	Project Area	10°53'22.49"N 77° 4'48.49"E
2	AAQ-2	Core Zone	Project Area	10°53'27.99"N 77° 4'50.90"E
3	AAQ-3	Near Existing Quarry	300m NE	10°53'37.25"N 77° 4'54.88"E
4	AAQ-4	KG Pudur	5km West	10°53'28.25"N 77° 2'4.71"E
5	AAQ-5	Chinnakuyili	4.2km North	10°55'44.74"N 77° 5'4.27"E
6	AAQ-6	Bogampatti	4.5km NE	10°53'58.10"N 77° 7'14.89"E
7	AAQ-7	Vadasithur	5.5km South	10°50'22.56"N 77° 4'56.46"E

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

FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

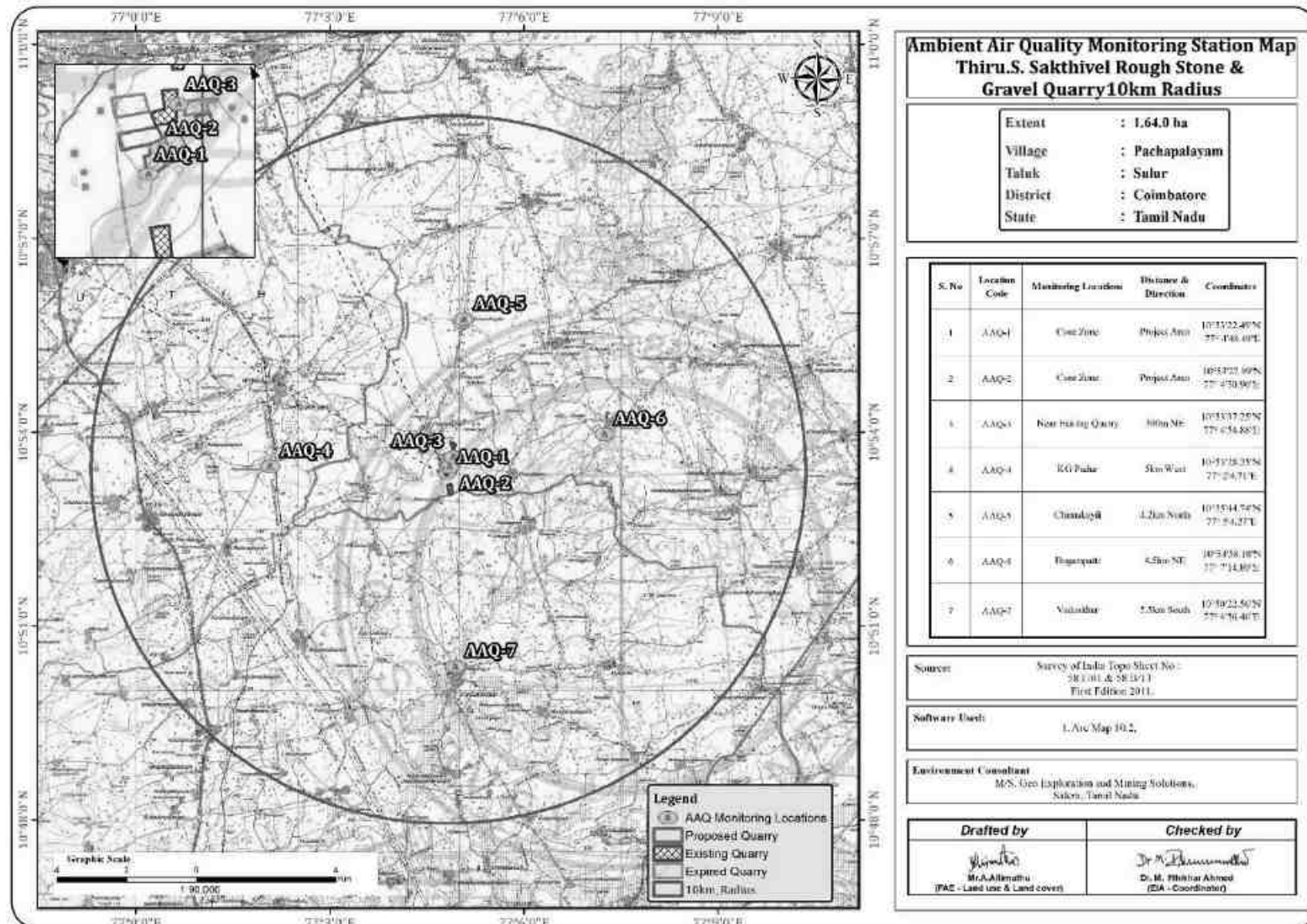


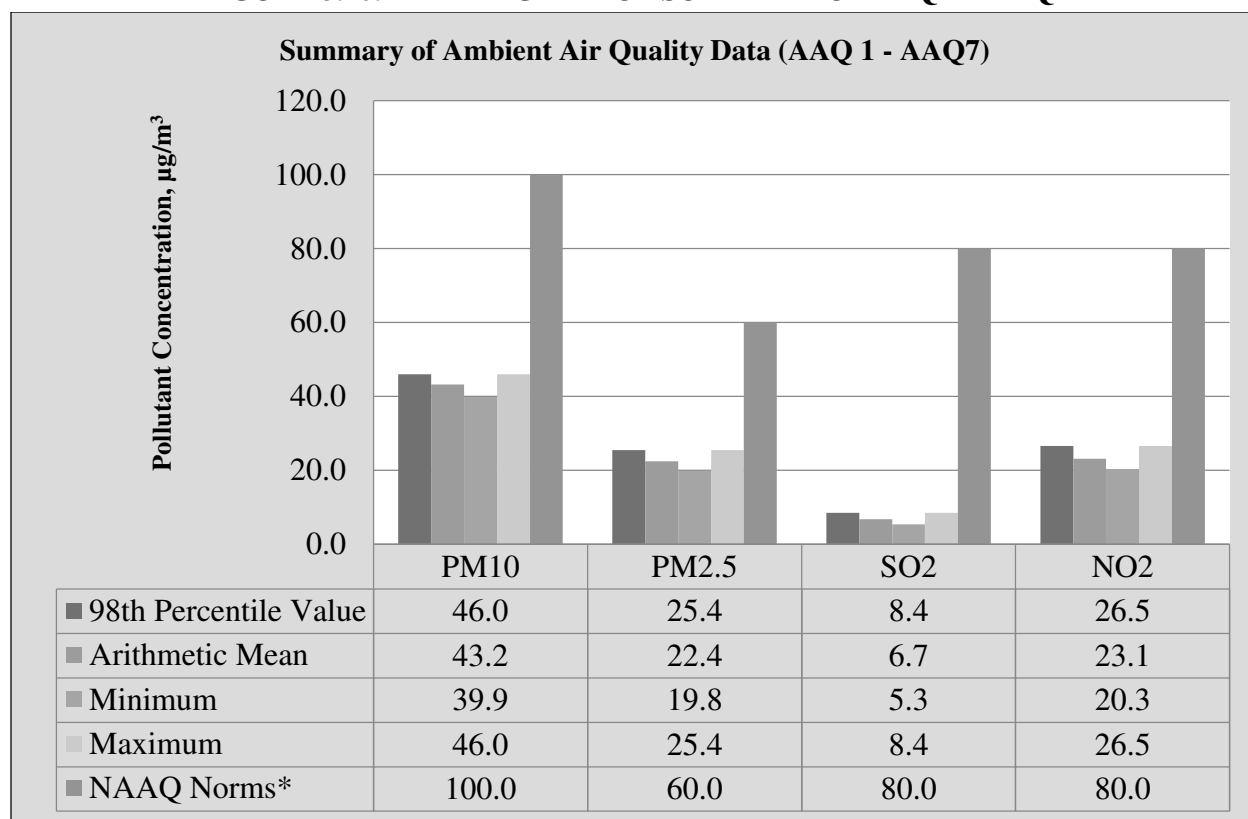
TABLE 3.27: SUMMARY OF AAQ 1 to AAQ 8

PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	44.1	40.8	40.2	43.1	43.2	43.0	43.9
Minimum	41.4	38.6	36.8	40.0	40.2	40.6	42.1
Maximum	46.9	45.1	43.7	46.0	46.1	44.8	45.7
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	22.5	21.1	21.4	22.0	22.1	21.1	23.3
Minimum	20.8	19.4	18.9	20.1	20.2	18.1	21.3
Maximum	24.1	23.1	23.5	23.7	24.1	24.5	26.5
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	6.6	6.1	5.7	6.3	7.0	6.4	6.6
Minimum	5.2	4.7	4.7	5.2	5.4	5.3	5.2
Maximum	7.4	7.2	6.9	7.9	8.6	7.7	8.3
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	22.4	21.5	23.8	21.0	23.5	21.3	22.8
Minimum	19.6	19.5	13.7	18.7	20.4	18.5	20.7
Maximum	24.2	23.5	26.8	23.5	26.6	22.9	25.3
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

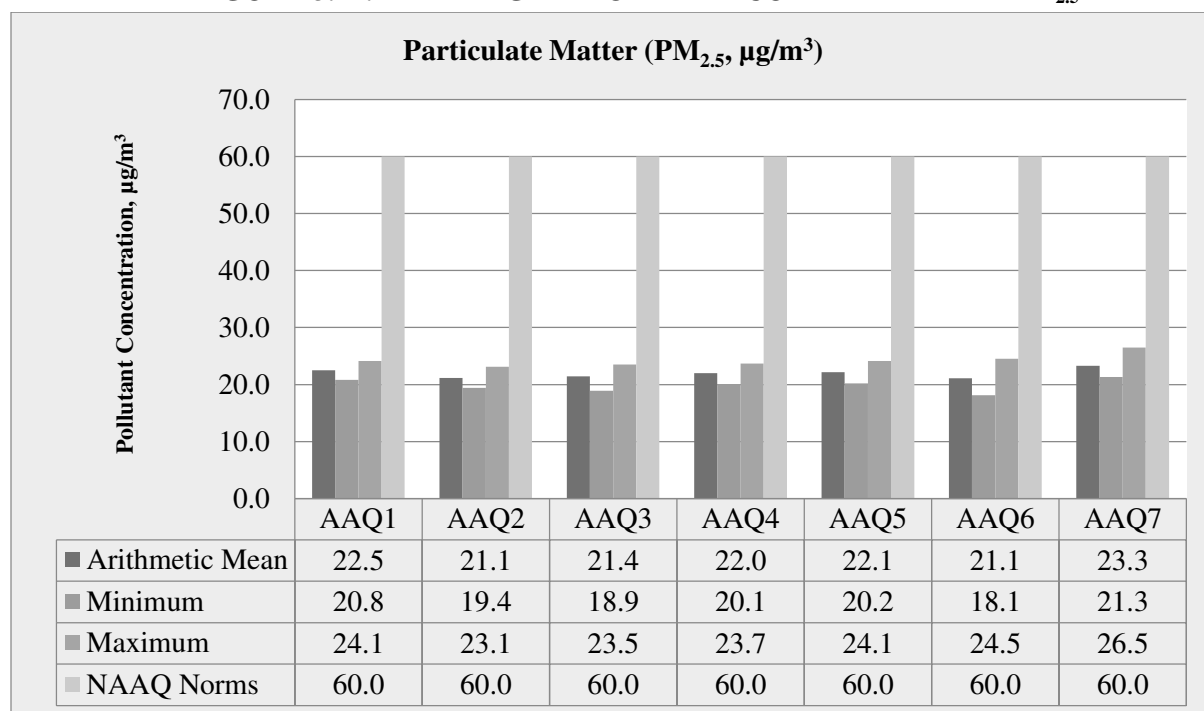
TABLE 3.28: ABSTRACT OF AMBIENT AIR QUALITY DATA

1	Parameter	PM10	PM2.5	SO₂	NO₂
2	No. of Observations	260	260	260	260
3	10 th Percentile Value	39.9	19.8	5.3	20.3
4	20 th Percentile Value	40.7	20.4	5.5	20.8
5	30 th Percentile Value	41.7	21.0	5.9	21.4
6	40 th Percentile Value	42.4	21.4	6.2	21.7
7	50 th Percentile Value	42.7	21.8	6.4	22.4
8	60 th Percentile Value	43.4	22.3	6.6	22.6
9	70 th Percentile Value	43.7	22.8	6.8	23.3
10	80 th Percentile Value	44.2	23.1	7.1	23.6
11	90 th Percentile Value	44.8	23.7	7.5	25.0
12	95 th Percentile Value	45.6	24.5	7.8	26.0

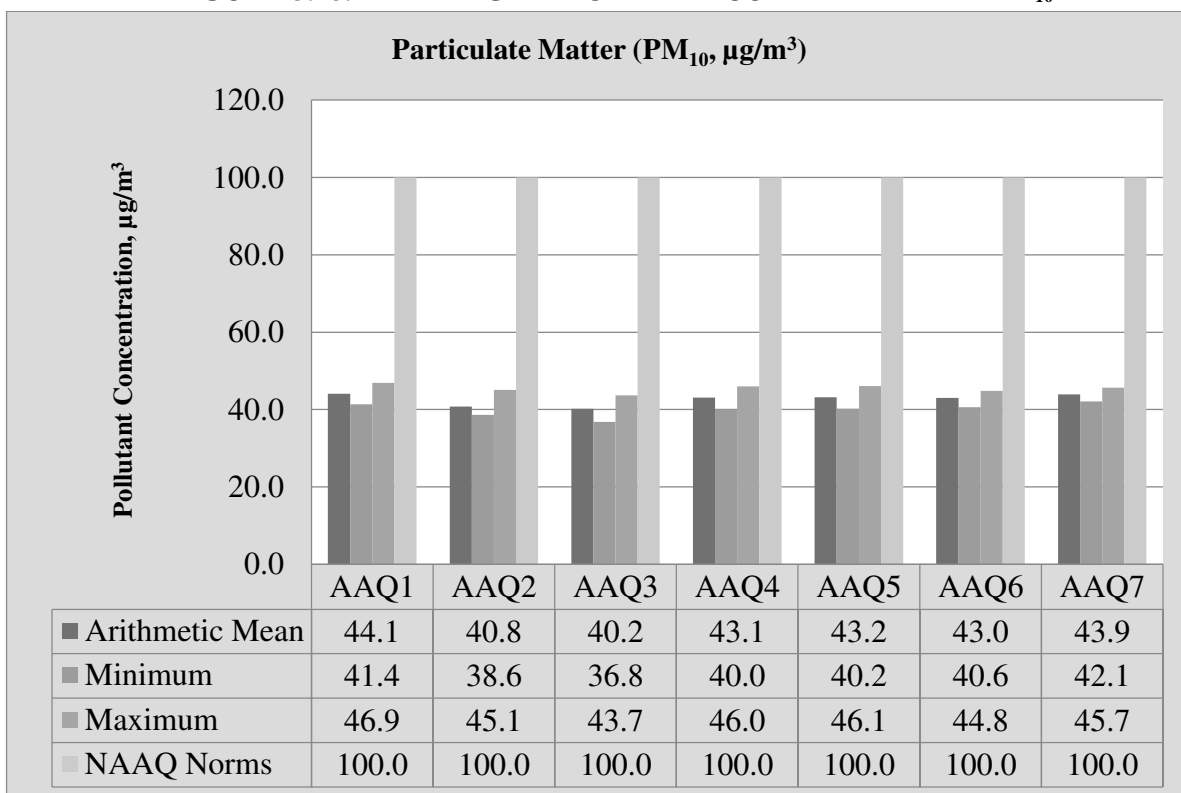
13	98 th Percentile Value	46.0	25.4	8.4	26.5
14	Arithmetic Mean	43.2	22.4	6.7	23.1
15	Geometric Mean	43.1	22.3	6.6	23.0
16	Standard Deviation	1.9	1.7	1.0	2.1
17	Minimum	39.9	19.8	5.3	20.3
18	Maximum	46.0	25.4	8.4	26.5
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ7

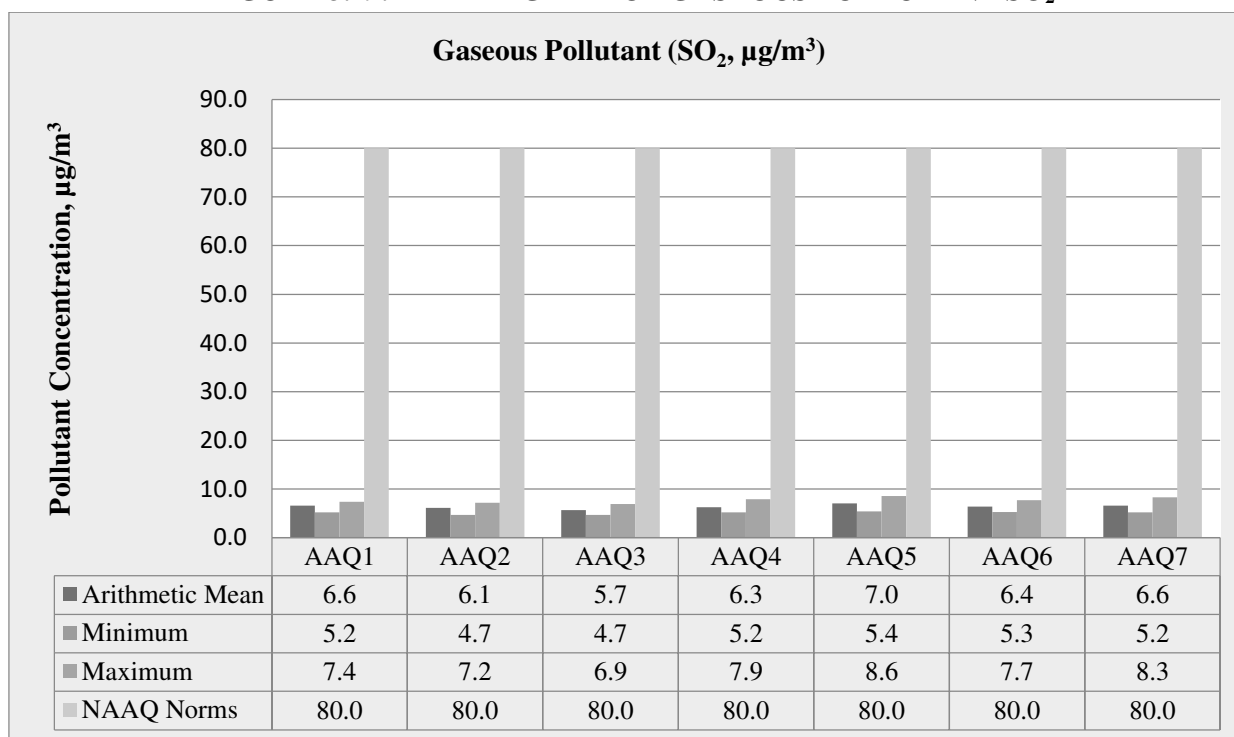
Source: Table 3.17 to 3.27

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

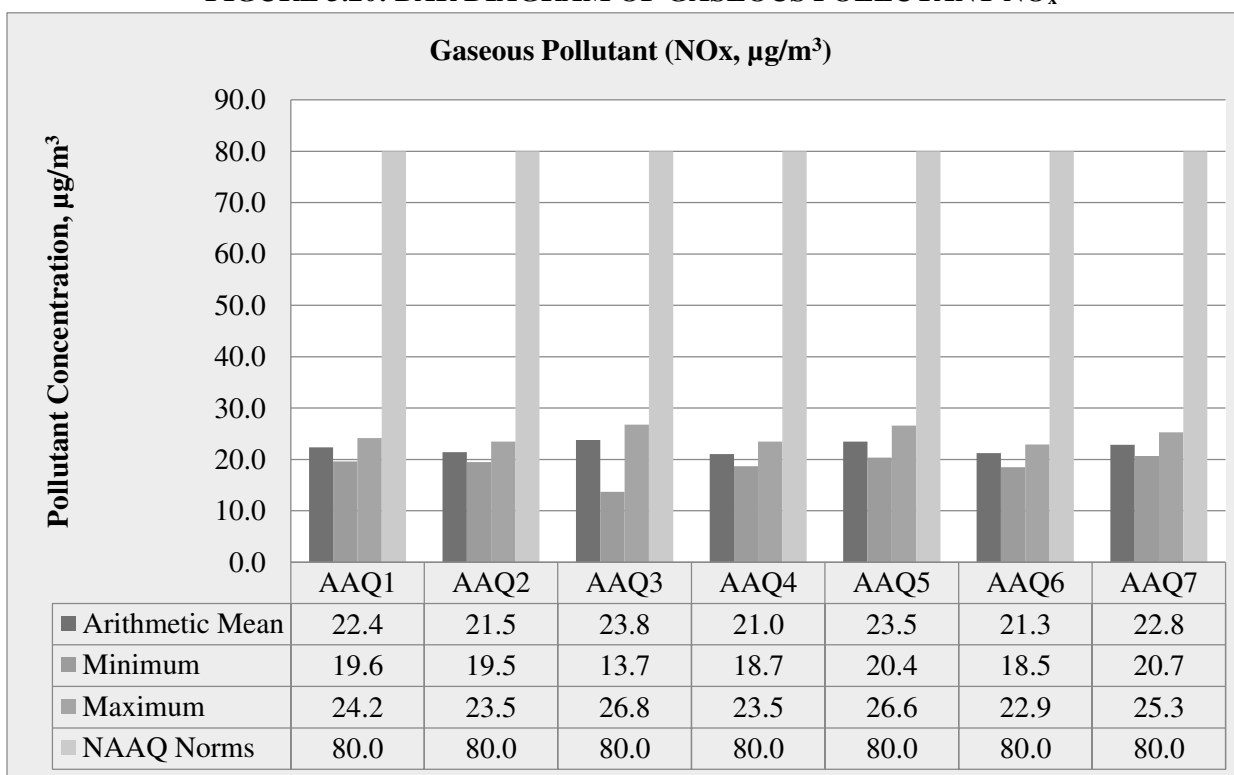
Source: Table 3.17 to 3.27

FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER PM₁₀

Source: Table 3.17 to 3.27

FIGURE 3.19: BAR DIAGRAM OF GASEOUS POLLUTANT SO₂

Source: Table 3.17 to 3.27

FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT NO_x

Source: Table 3.17 to 3.27

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 40.2 µg/m³ to 44.1 µg/m³, PM_{2.5} data ranges from 21.1 µg/m³ to 23.3 µg/m³, SO₂ ranges from 5.7 µg/m³ to 7.0 µg/m³ and NO₂ data ranges from 21.0 µg/m³ to 23.8 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.4 NOISE ENVIRONMENT

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

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

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Seven (7) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

TABLE 3.31: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Core Zone	Project Area	10°53'23.29"N 77° 4'50.21"E
2	N2	Core Zone	Project Area	10°53'27.97"N 77° 4'51.13"E
3	N3	Near Existing Quarry	300m NE	10°53'37.02"N 77° 4'55.11"E
4	N4	KG Pudur	5km West	10°53'29.42"N 77° 2'3.96"E
5	N5	Chinnakuyili	4.2km North	10°55'38.85"N 77° 5'13.98"E
6	N6	Bogampatti	4.5km NE	10°54'2.50"N 77° 7'19.54"E
7	N7	Vadasithur	5.5km South	10°50'23.48"N 77° 4'55.68"E

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

3.4.2 Method of Monitoring

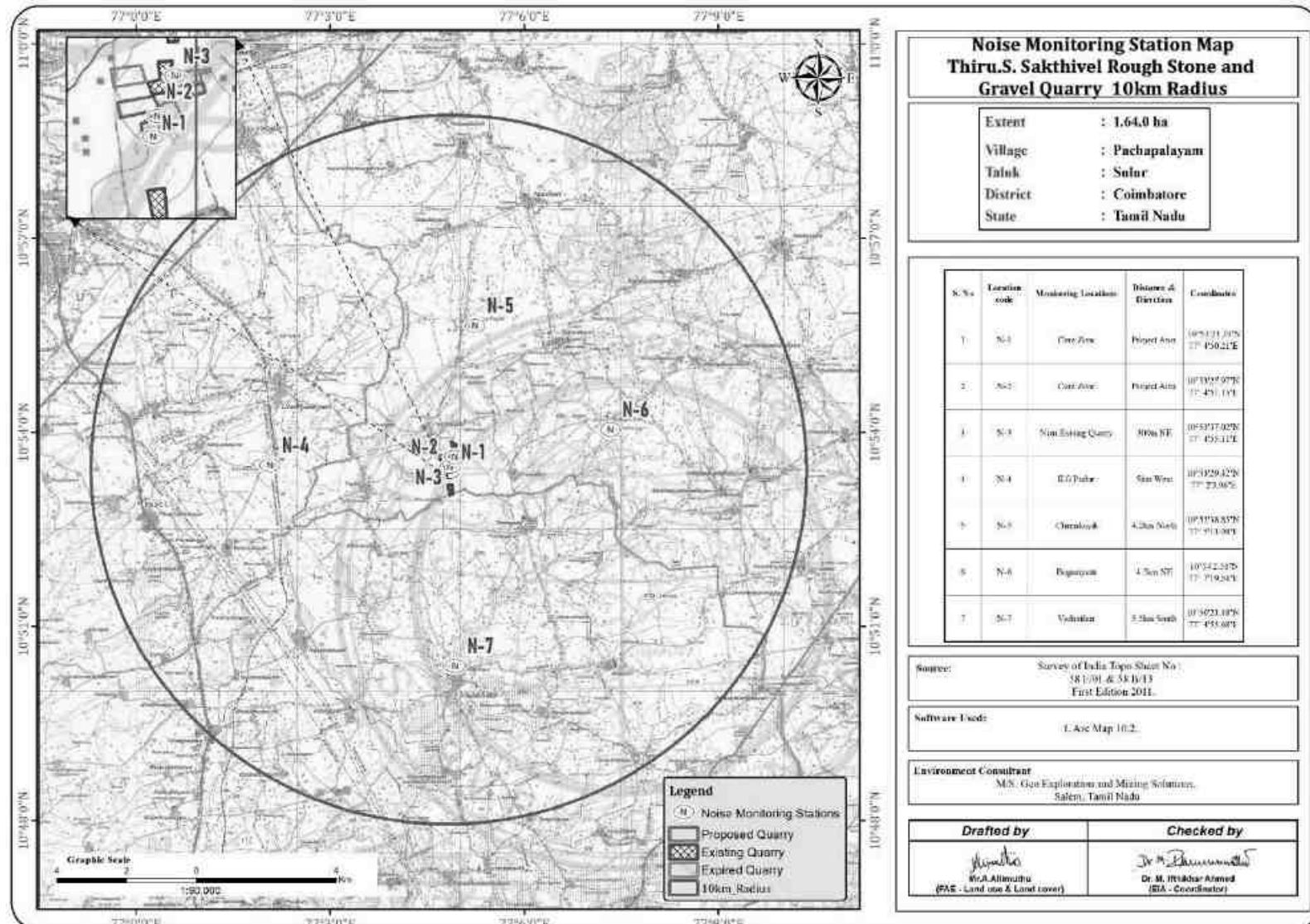
Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring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

$$Leq = 10 \log L / T \sum (10L_n/10)$$

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

T = Time interval of observation

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

FIGURE 3.23: NOISE MONITORING STATIONS AROUND 10 KM RADIUS

3.4.3 Analysis of Ambient Noise Level in the Study Area

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

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

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

TABLE 3.32: AMBIENT NOISE QUALITY RESULT

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core Zone	48.0	37.0	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Core Zone	39.5	35.2	
3	Near Existing Quarry	49.6	42.3	
4	KG Pudur	50.3	45.7	
5	Chinnakuyili	47.8	39.0	Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
6	Bogampatti	40.0	35.2	
7	Vadasithur	39.2	35.4	

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

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

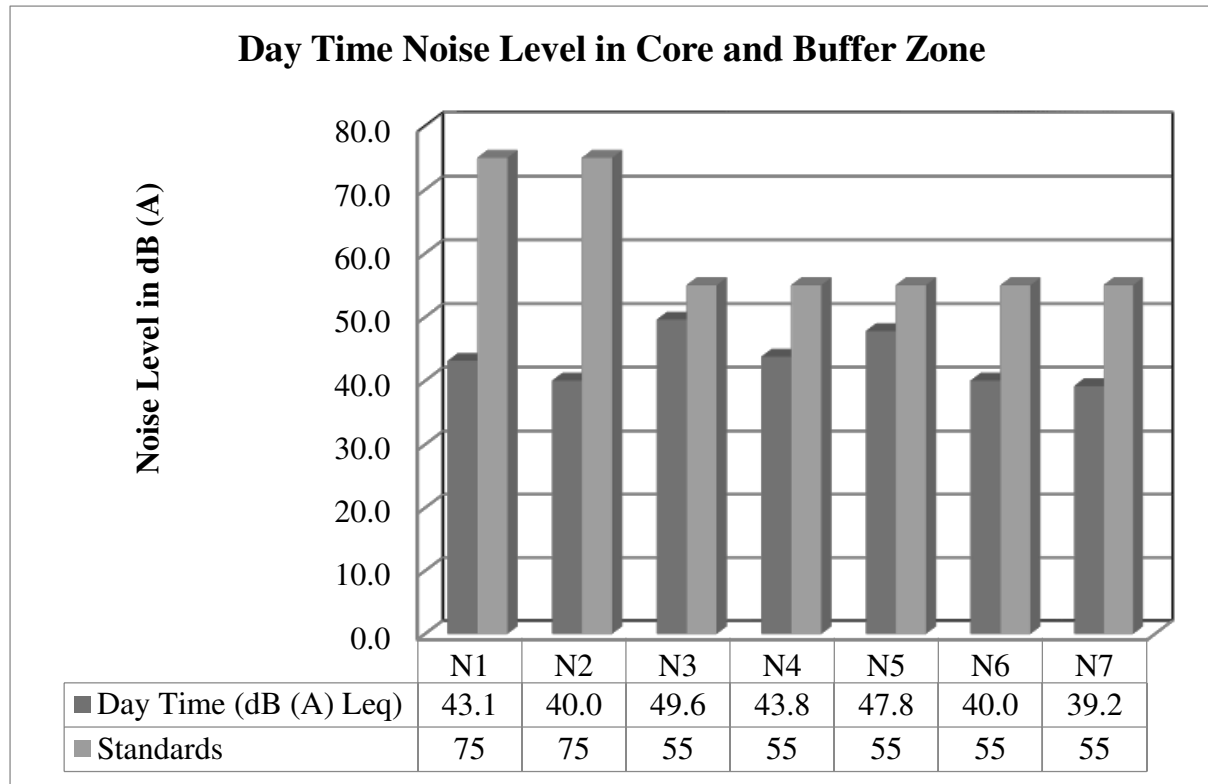
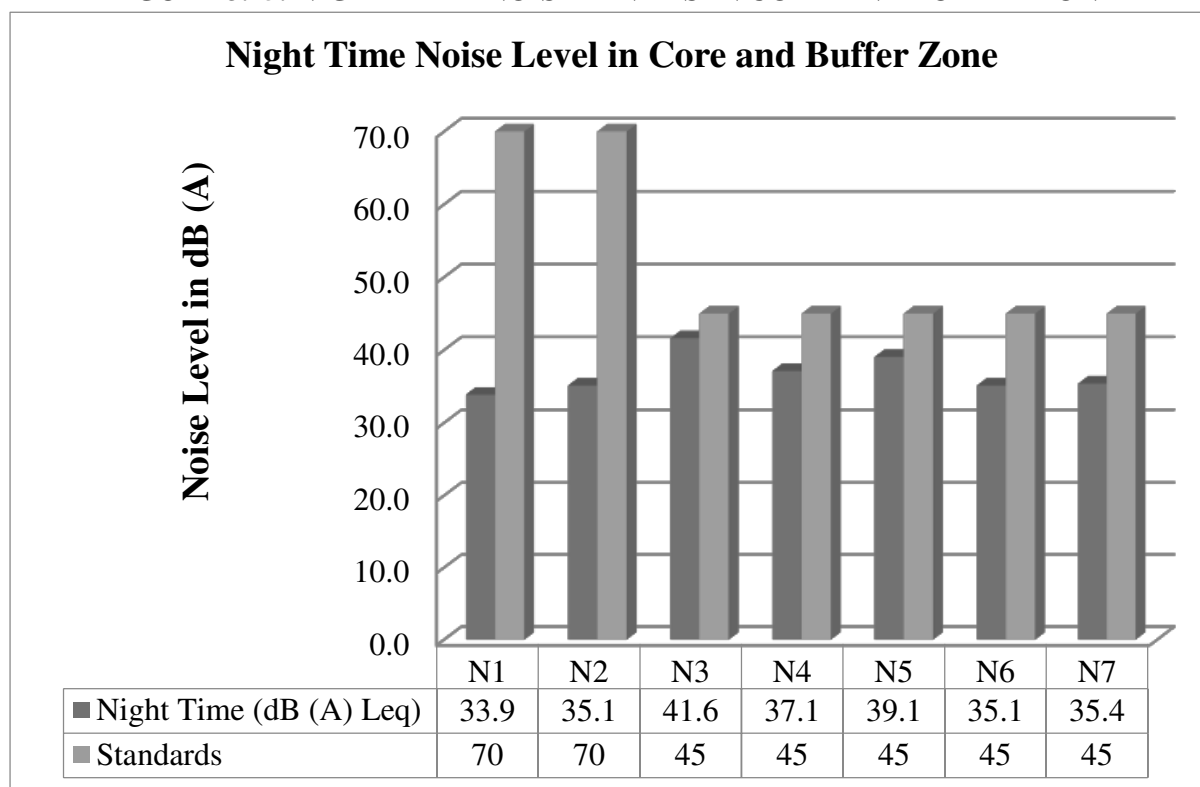


FIGURE 3.25: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE**3.4.4 Interpretation & Conclusion:**

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 40.0-41.3 dB (A) Leq and during night time were from 33.9-35.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 39.2 to 49.6 dB (A) Leq and during night time were from 35.1 to 41.6 dB (A) Leq.

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

3.5 ECOLOGICAL ENVIRONMENT**3.5.1. Study area Ecology**

The project area extent of 1.64.0 Ha of Rough stone and Gravel quarry has an impact on the diversity of flora and fauna of the surrounding area. But present work was carried out on the detailed study of the impacts of the Rough stone and Gravel quarry on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The proposed area applied area exhibits plain topography. The following methods were applied during the baseline study of flora, fauna, and diversity assessment.

3.5.2. Objectives of Biological Studies

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

3.5.3. Methodology of Sampling

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

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

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

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

3.5.3.1. Sampling

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

3.5.3.2 Sampling Size

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

3.5.3.3. Timing of Study

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

3.5.3.4. Observations from Sampling

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

3.5.3.5. Equipment/ References

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

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

3.5.4. Part I Field Sampling Techniques

3.5.4.1. Transect walk – Birds

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

3.5.4.2. Modified Pollard Walk – for Butterflies

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

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

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

3.5.4.4. Observational methods- Mammals

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

3.5.4.5. Multiple Stage Quadrat – Vegetation

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

3.5.5. Flora

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

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

Sl.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Velvet mesquite	Mullu Maram	<i>Prosopis juliflora</i>	Fabaceae
2.	Wild Tamarind	Savundal	<i>Leucaena latisilqua</i>	Mimosaceae
3.	Neem or Indian lilac	Vembu maram	<i>Azadirachta indica</i>	Meliaceae
4.	Millettia Pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
5.	Malayan Cherry	Ten Pazham	<i>Muntingia calabura</i>	Muntingiaceae
6.	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
Shrubs				
1.	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
2.	Devil's trumpet	Umathai	<i>Datura metel</i>	Solanaceae
3.	Triangular spruge	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae
4.	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
5.	West Indian Lantana	Unni chedi	<i>Lantana camara</i>	Verbenaceae
Herbs				
1.	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
2.	Fish poison	Kolinchi	<i>Tephrosia purpurea</i>	Fabaceae

3.	Coat buttons	Thatha poo	<i>Tridax procumbens</i>	Asteraceae
4.	Devil's thorn	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales
5.	Asthma-plant	Amman pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae
6.	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
7.	Malabar catmint	Pie Viratti	<i>Anisomeles malabarica</i>	Lamiaceae
Grasses				
1.	Eragrostis	Pullu	<i>Eragrostis ferruginea</i>	Poaceae
2.	Great brome	Thodappam	<i>Bromus diandrus</i>	Poaceae
Cactus				
1.	Indian fig opuntia	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae

Sources: Species observation in the field study

3.5.6. Flora Composition in the Core Zone

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



a. *Azadirachta indica*



b. *Muntingia calabura*



c. Calotropis gigantea

d. Opuntia ficus-indica



e. Calotropis gigantea

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

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

SLNo	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Velvet mesquite	Mullu maram	<i>Prosopis juliflora</i>	Fabaceae
2.	Neem or Indian lilac	Vembu	<i>Azadirachta indica</i>	Meliaceae
3.	Asian Palmyra palm	Panai maram	<i>Borassus flabellifer</i>	Arecaceae
4.	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae
5.	Wild Tamarind	Savundal	<i>Leucaena latisilqua</i>	Mimosaceae
6.	Tree of heaven	Perumaram	<i>Ailanthus excelsa</i>	Simaroubaceae
7.	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
8.	Madras thorn	Kudukapuli	<i>Pithecellobium dulce</i>	Fabaceae
9.	River tamarind	Soundal maram	<i>Leucaena leucocephala</i>	Fabaceae
10.	Monkey pod tree	Thungumoonchi	<i>Samanea saman</i>	Fabaceae
11.	Cutch tree	Karangali	<i>Acacia chundra</i>	Mimosaceae
12.	Portia tree	Poovarasan	<i>Thespesia Populnea</i>	Malvaceae
13.	Jack fruit	Bala maram	<i>Artocarpusintegrifolia</i>	Moraceae
14.	Indian siris	Vagai	<i>Albizia lebbeck</i>	Mimosaceae
15.	Bitter Albizia	Unja, Usilai	<i>Albizia amara</i>	Mimosaceae
16.	Tree of heaven	Perumaram	<i>Ailanthus excelsa</i>	Simaroubaceae
17.	Velvet mesquite	Mullu maram	<i>Prosopis juliflora</i>	Fabaceae
18.	Peepal	Asoka maram	<i>Ficus religiosa</i>	legume
19.	Lemon	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae
20.	Jamun Fruit Plant	Naval maram	<i>Syzygium cumini</i>	Myrtaceae
21.	Gum arabic tree	Karuvelam	<i>Vachellia nilotica</i>	Fabaceae
22.	Rain Tree	Mazlhimaram	<i>Samanea saman</i>	Mimosaceae
23.	Chinese chaste tree	Nochi	<i>Vitex negundo</i>	Verbenaceae
24.	Yellow Flame	Vagai	<i>Peltophorum pterocarpum</i>	Caesalpiniaceae
25.	Teak	Thekku	<i>Tectona grandis</i>	Verbenaceae
26.	Indian mulberry	Nuna maram	<i>Morinda tinctoria</i>	Rubiaceae
27.	Drumstick tree	Murunga maram	<i>Moringa oleifera</i>	Moringaceae
28.	Guava	Koyya	<i>Psidium guajava</i>	Myrtaceae
29.	Eucalyptus	Thailam maram	<i>Eucalyptus tereticornis</i>	Myrtaceae
30.	Pongamia pinnata	Pongam	<i>Milletia pinnata</i>	Fabaceae
31.	Horsetail She-oak	Savukku maram	<i>Casuarina equisetifolia</i>	Casuarinaceae
32.	Henna	Marudaani	<i>Lawsonia inermis</i>	Lythraceae
33.	Indian gooseberry	Nelli	<i>Phyllanthus emblica</i>	Phyllanthaceae
34.	Indian siris	Eayal vaagai	<i>Albizia lebbeck</i>	Mimosaceae

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

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

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

Sources: Species observation in the field study and secondary data

3.5.7. Flora Composition in the Buffer Zone

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

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

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

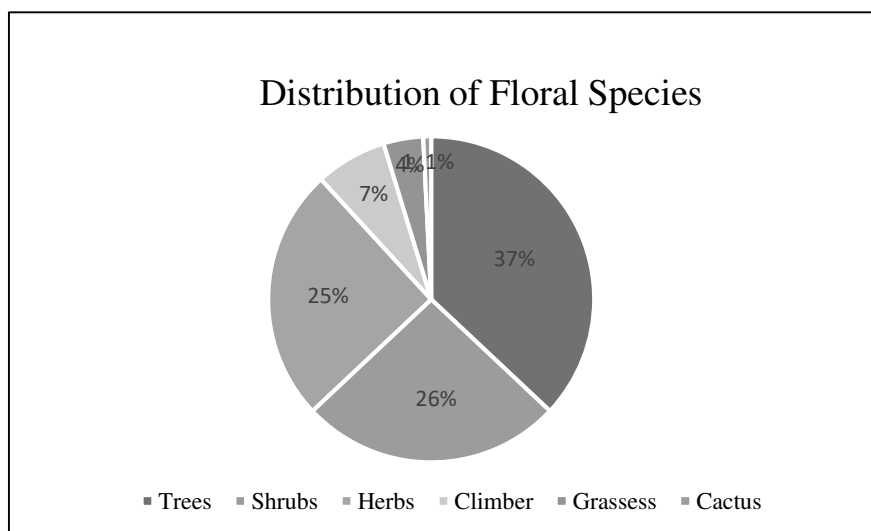


Fig No. 3.27: Graph showing % distribution of floral life forms



a. *Ziziphus Mauritiana*



b. *Azadirachta indica*



c. *Euphorbia hirta*



d. *Leucas aspera*



e. *Ocimum tenuiflorum*



f. *Cissus quadrangularis*



Senna auriculata



h. *Euphorbia antiquorum*



i. *Solanum torvum*

g.



J. *Cocos nucifera*



k. *Musa acuminata*



l. *Prosopis juliflora*

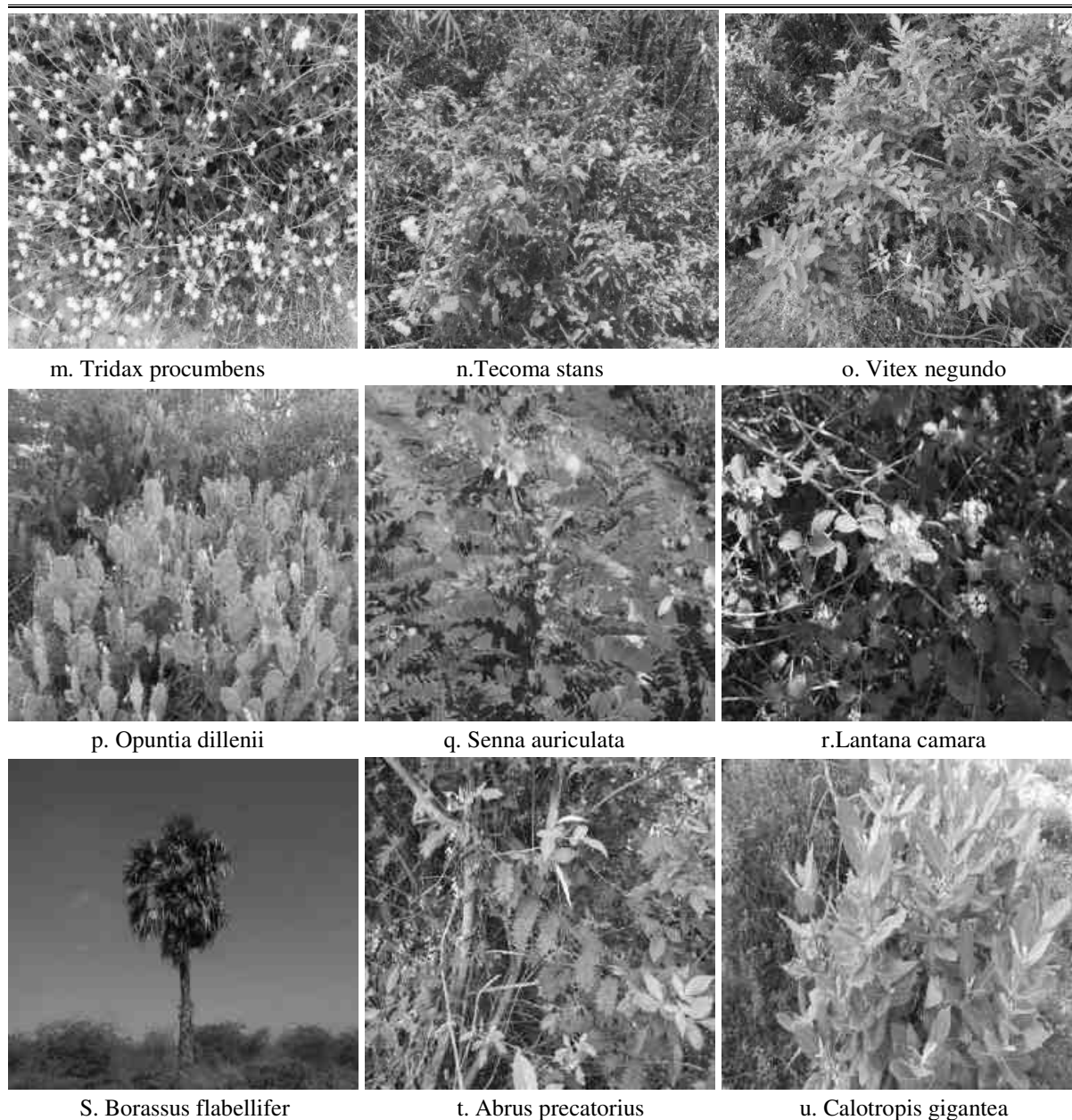


Fig No: 3.28. Flora species observation in the Buffer zone area

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

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

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

3.5.10. Fauna

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

3.5.10.1. Fauna Composition in the Core Zone

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

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

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

*NL- Not listed, LC- Least Concern

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

3.5.11. Fauna Composition in the Buffer Zone

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

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

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

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

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

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

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

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

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

Table 3.38. Listed birds

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

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

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

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

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

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

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

Species observation in the field study and secondary data

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

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

Sl. No	Common Name/English Name	Scientific Name	Schedule
1	Indian palm bob	<i>Suastus greimius</i>	-
2	Common Mormon	<i>Papilio polytes</i>	-
3	Common rose	<i>Pachliopta aristolochiae</i>	-
4	Spotless grass yellow	<i>Eurema laeta</i>	-

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

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

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

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

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

3.5.12 Aquatic Ecology

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

3.5.13. Objectives of Aquatic Studies

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

3.5.14. Macrophytes

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

Table No.3.42 Description of Macrophytes

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

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

3.5.15. Aquatic Faunal Diversity

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

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

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

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

3.5.17. Findings/Results

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

Records of threatened species in the area

No threatened species were observed

Endangered Species as per Wildlife (Protection) Act

No Endangered fauna was recorded in the project area.

Endemic Species of the Project areas

No endemic species were observed in the project area.

Migratory species of the Project areas

No migratory fauna observed in project area.

Migratory corridors and Flight paths

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

Breeding and spawning grounds

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

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

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

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

3.5.18. Conclusion

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

fauna, protected area, natural habitats, and wildlife species etc., and consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.6 SOCIO ECONOMIC ENVIRONMENT

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

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

3.6.1 Objectives of the Study

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

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

3.6.2 Scope of Work

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

3.6.3 District Profile

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

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

3.6.4 Study area:

PACHAPALAYAM VILLAGE

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

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

TABLE 3.44: PACHAPALAYAM VILLAGE POPULATION FACTS

Number of Households	842
Population	2,933
Male Population	1,488
Female Population	1,445

Children Population	271
Sex-ratio	971
Literacy	65.89%
Male Literacy	74.46%
Female Literacy	57.11%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	556

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

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

TABLE 3.45: DEMOGRAPHICS POPULATION OF PACHAPALAYAM VILLAGE

Total Population	Male Population	Female Population
2933	1488	1445

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

Sex Ratio of Pachapalayam Village -Census 2011

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

Literacy of pachapalayam Village

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

Workers profile of pachapalayam Village

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

TABLE 3.46: PACHAPALAYAM VILLAGE CENSUS 2011 DATA

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

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

TABLE 3.47: PACHAPALAYAM WORKING POPULATION ---CENSUS 2011

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

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

TABLE 3.48: POPULATION DATA OF STUDY AREA

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

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

TABLE 3.49: WORKERS PROFILE OF STUDY AREA

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

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

TABLE 3.50: COMMUNICATION & TRANSPORT FACILITIES IN THE STUDY AREA

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

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

TABLE 3.51: WATER & DRAINAGE FACILITIES IN THE STUDY AREA

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

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

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

TABLE 3.52: OTHER FACILITIES IN THE STUDY AREA

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

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

TABLE 3.53: EDUCATIONAL FACILITIES IN THE STUDY AREA

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

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

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

TABLE 3.54: MEDICAL FACILITIES IN THE STUDY AREA

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

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

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

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

3.6.6 Recommendation and Suggestion

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

3.6.7 Summary & Conclusion

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

3.6.8 Structure Map upto 300m Radius

Fig No:3.29 Structure Map 300m

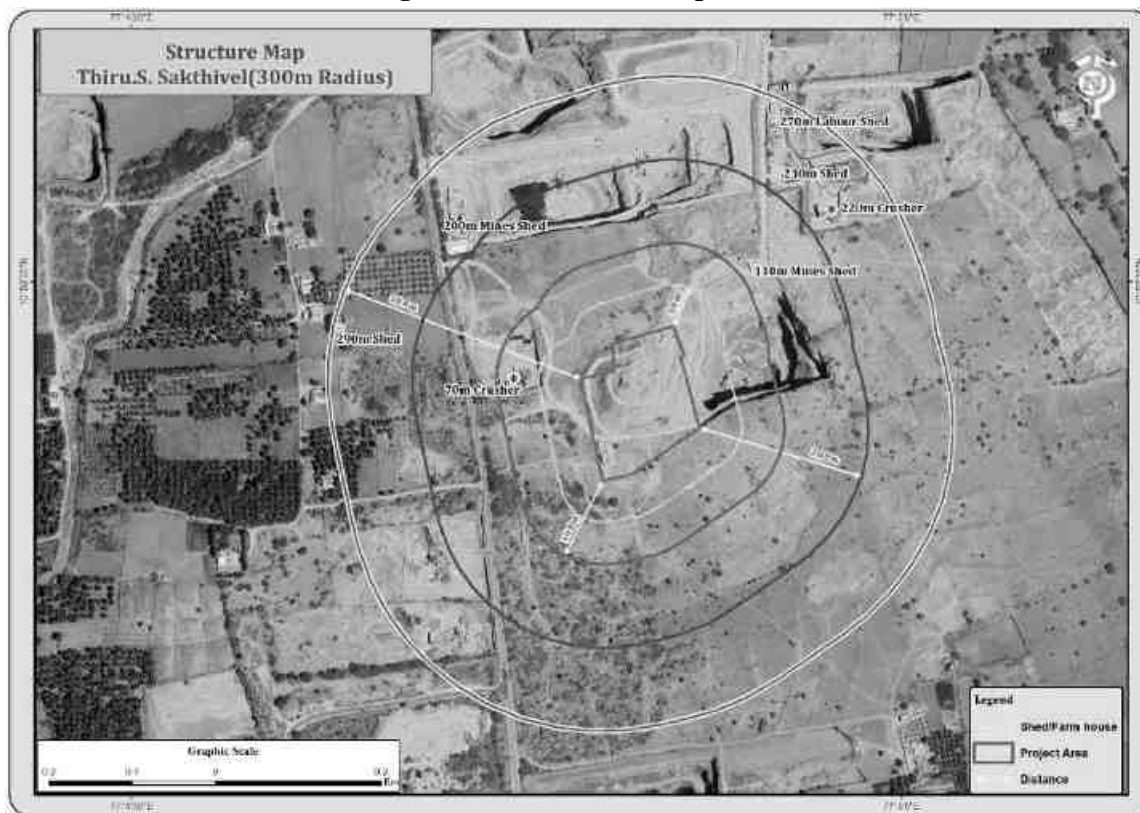


Table No 3.53 Structures details in the study area around 300m Radius

Enumeration of Structure from 0 – 300m Radius						
Structure Numbers	Distance & Direction from the project site	Structure Details and Usage Purpose	Type of Structure Structures (Kutchha/ Brick/ Cement/ RCC/ Framed Structures)	No. of Occupants	Structure belongs to owner (Yes/No)	Remarks
1	70m – West	Crusher	Framed Structure	3Nos	No	Production of M-Sand, P-Sand and Jelly– No Stay
2	110m – North East	Mines Shed	RCC Structure	Nil	Yes	Used to store Mine Materials– No Stay
3	200m - North West	Mines Shed	RCC Structure	Nil	No	Used to store Mine Materials– No Stay
4	220m – North East	Crusher	Framed Structure	4Nos	No	Production of M-Sand, P-Sand and Jelly– No Stay
5	230m - North East	Shed	Sheet Structure	Nil	No	Storage purpose– No Stay
6	270m - North East	Labour Shed	Sheet Structure	Nil	No	Used as rest shelter for the labours – No Stay
7	290m - North West	Shed	Sheet Structure	Nil	No	Storage purpose– No Stay

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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

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

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

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

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

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

4.1 LAND ENVIRONMENT:

4.1.2 Anticipated Impact from Proposed Project

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

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

4.1.2 Mitigation Measures for Proposed Project

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

4.1.3 Soil Environment

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

4.1.4 Impact on Soil Environment from all Proposed Projects

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

4.1.5 Mitigation Measures for Proposed Project

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

4.1.6 Waste Dump Management

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

4.2 WATER ENVIRONMENT

4.2.1 Anticipated Impact from Proposed Project

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

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

Detail of water requirements in KLD as given below:

TABLE 4.1: WATER REQUIREMENT

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

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

Source: Approved Mining Plan Pre-Feasibility Report

4.2.2 Mitigation Measures for Proposed Project

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

4.3 AIR ENVIRONMENT

4.3.1. Anticipated Impact from Proposed Project

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

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

4.3.1.1. Modelling of Incremental Concentration from Proposed Project

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM₁₀ & PM_{2.5} and emissions of Sulphur dioxide (SO₂) & Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

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

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

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

4.3.2.1 Emission Estimation

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

The general equation for emissions estimation is:

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

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER = overall emission reduction efficiency, %

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

4.3.2 Frame work of Computation & Model details

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

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

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

TABLE 4.2: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.060567625	g/s
	Blasting	Point Source	0.000197159	g/s
	Mineral Loading	Point Source	0.037145982	g/s
	Haul Road	Line Source	0.002484775	g/s/m
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.050208407	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.00018518	g/s
			0.000008091	g/s

FIGURE 4.1: AERMOD TERRAIN MAP

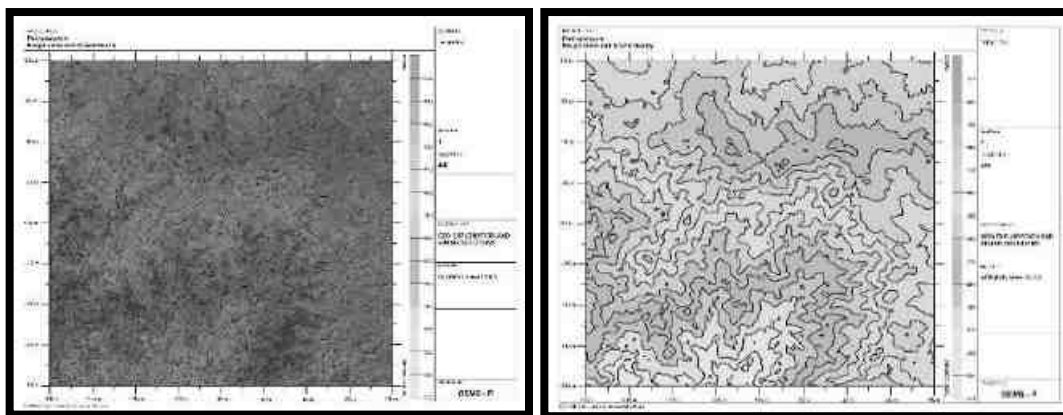


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

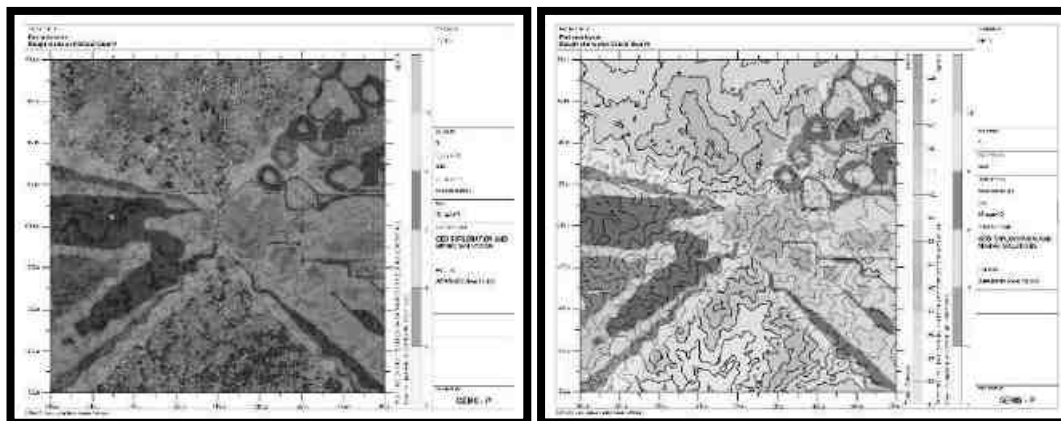
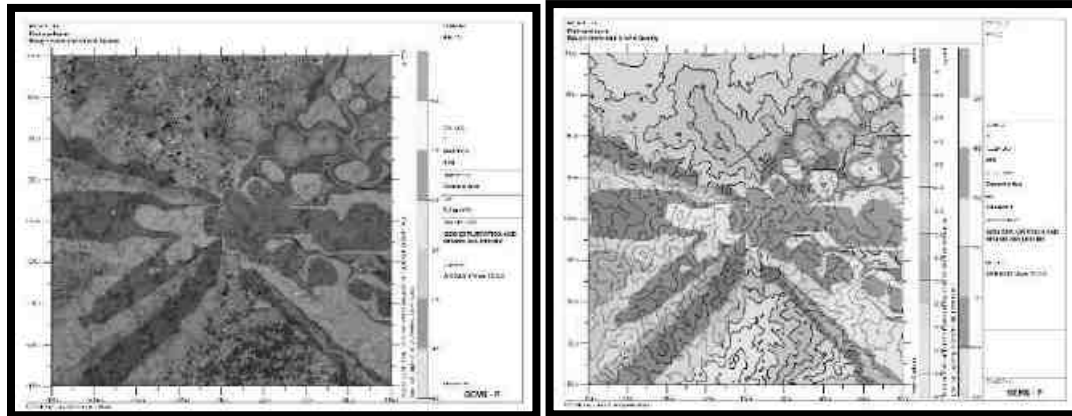
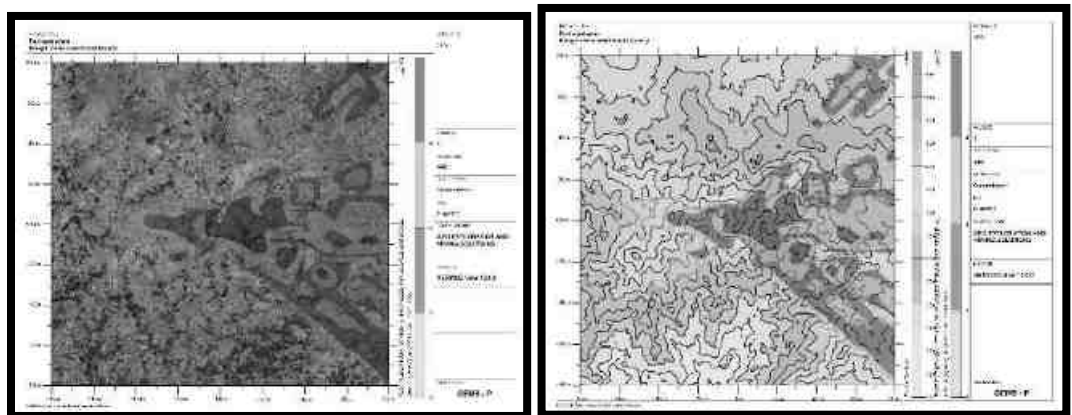
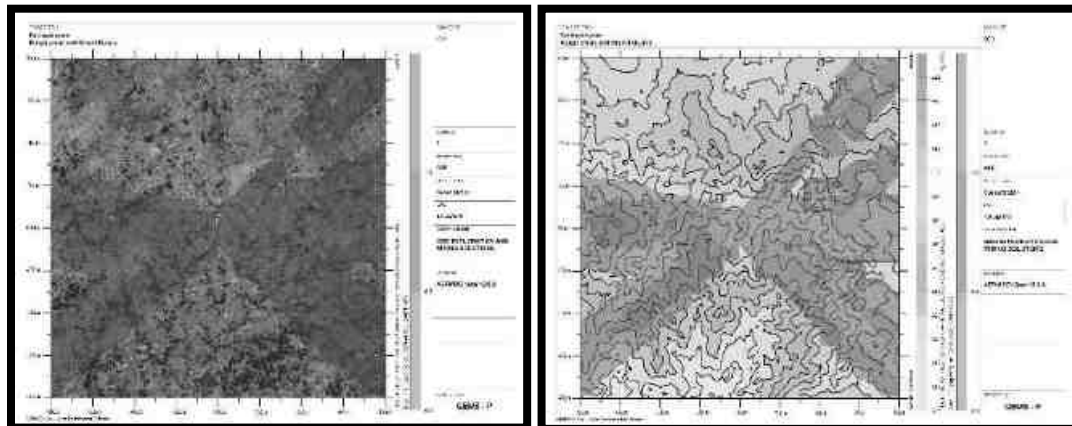


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM_{2.5}**FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO_x****FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF SO₂**

4.3.2.1 Model Results

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

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³)
AAQ1	10°53'22.49"N 77° 4'48.49"E	-43	-79	44.1	12.91	57.01
AAQ2	10°53'27.99"N 77° 4'50.90"E	31	89	40.8	12.60	53.4
AAQ3	10°53'37.25"N 77° 4'54.88"E	153	278	40.2	12.26	52.46
AAQ4	10°53'28.25"N 77° 2'4.71"E	-5052	97	43.1	8.00	51.1
AAQ5	10°55'44.74"N 77° 5'4.27"E	438	4318	43.2	0	43.2
AAQ6	10°53'58.10"N 77° 7'14.89"E	4690	729	43.0	11.20	54.2
AAQ7	10°50'22.56"N 77° 4'56.46"E	203	-5647	43.9	0	43.9

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

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³)
AAQ1	10°53'22.49"N 77° 4'48.49"E	-43	-79	22.5	5.87	28.37
AAQ2	10°53'27.99"N 77° 4'50.90"E	31	89	21.1	5.43	26.53
AAQ3	10°53'37.25"N 77° 4'54.88"E	153	278	21.4	5.09	26.49
AAQ4	10°53'28.25"N 77° 2'4.71"E	-5052	97	22.0	3.68	25.68
AAQ5	10°55'44.74"N 77° 5'4.27"E	438	4318	22.1	0	22.1
AAQ6	10°53'58.10"N 77° 7'14.89"E	4690	729	21.1	4.50	25.6
AAQ7	10°50'22.56"N 77° 4'56.46"E	203	-5647	23.3	0	23.3

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO ₂ (µg/m ³)	Incremental value due to mining (µg/m ³)	Total SO ₂ (µg/m ³)
AAQ1	10°53'22.49"N 77° 4'48.49"E	-43	-79	6.6	1.10	7.7
AAQ2	10°53'27.99"N 77° 4'50.90"E	31	89	6.1	1.06	7.16
AAQ3	10°53'37.25"N 77° 4'54.88"E	153	278	5.7	1.00	6.70
AAQ4	10°53'28.25"N 77° 2'4.71"E	-5052	97	6.3	0.69	6.99
AAQ5	10°55'44.74"N 77° 5'4.27"E	438	4318	7.0	0	7.0
AAQ6	10°53'58.10"N 77° 7'14.89"E	4690	729	6.4	0.90	7.3
AAQ7	10°50'22.56"N 77° 4'56.46"E	203	-5647	6.6	0	6.6

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline NO _x (µg/m ³)	Incremental value due to mining (µg/m ³)	Total NO _x (µg/m ³)
AAQ1	10°53'22.49"N 77° 4'48.49"E	-43	-79	22.4	6.90	29.3
AAQ2	10°53'27.99"N 77° 4'50.90"E	31	89	21.5	6.49	27.99
AAQ3	10°53'37.25"N 77° 4'54.88"E	153	278	23.8	6.15	29.95
AAQ4	10°53'28.25"N 77° 2'4.71"E	-5052	97	21.0	1.00	22.0
AAQ5	10°55'44.74"N 77° 5'4.27"E	438	4318	23.5	0	23.5

AAQ6	10°53'58.10"N 77° 7'14.89"E	4690	729	21.3	3.05	24.35
AAQ7	10°50'22.56"N 77° 4'56.46"E	203	-5647	22.8	0	22.8

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

4.3.4. Mitigation Measures for Proposed Project

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

Advantages of Wet Drilling: -

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

Blasting –

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

Haul Road & Transportation –

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

Green Belt –

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

Occupational Health –

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

4.4 NOISE ENVIRONMENT

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

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

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

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

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

Where:

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

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

$$Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots\}$$

4.4.1 Anticipated Impact from Proposed Project

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

- Source data
- Receptor data
- Attenuation factor

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

TABLE 4.8: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

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

*50 feet from source = 15.24 meters

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

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

TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	48.0	39.5	49.6	50.3	47.8	40.0	39.2
Incremental Value dB(A)	47.30	42.60	30.56	27.04	28.06	27.04	26.48
Total Predicted Noise level dB(A)	46.30	49.26	48.96	49.33	45.48	43.30	44.07

The incremental noise level is found within the range of 42.60-47.3dB (A) in Core Zone and 25.29 – 30.56 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per The Noise Pollution (Regulation And Control) Rules, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.4.2 Mitigation Measures for Proposed Project

The following noise mitigation measures are proposed for control of Noise

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

4.4.3 Ground Vibrations

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

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

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

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

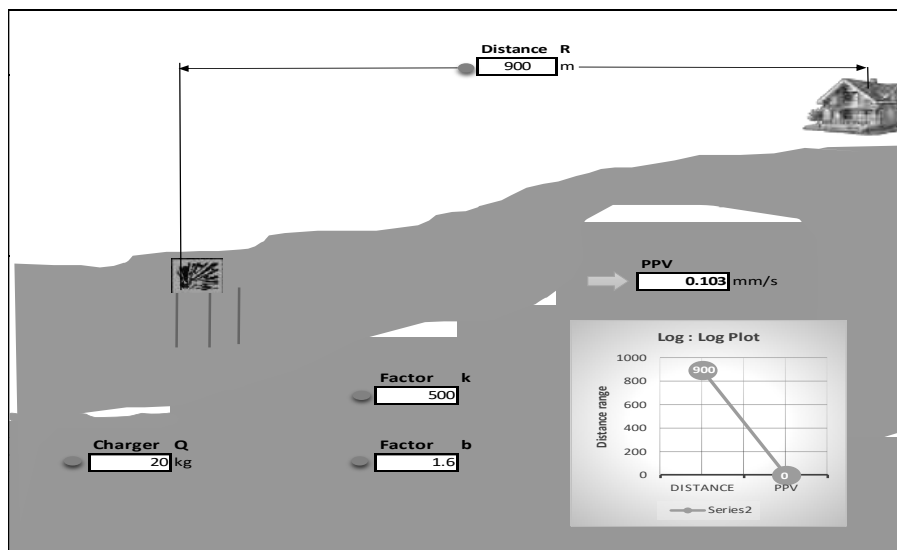
B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
20	900-NW	0.103

FIGURE 4.6: GROUND VIBRATION PREDICTION



From the above graph, the charge per blast of 20kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the all the project proponents ensure that the charge per blast shall be less than 2 kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Mitigation Measures for Proposed Project

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

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

4.5 ECOLOGY AND BIODIVERSITY

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

4.5.1. Anticipated Impact on Flora

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

4.5.1.1. Mitigation Measures

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

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

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

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

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

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

4.5.2. Anticipated Impact on Fauna

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

4.5.2.1. Mitigation Measures

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

4.5.3. Impact on Aquatic Biodiversity

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

4.5.4. Impacts on Bird Fauna

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

4.5.5. Impacts on wildlife

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

4.5.5. Impact Assessment on Biological Environment

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

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

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

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

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

TABLE 4.13: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

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

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

TABLE 4.14: GREENBELT DEVELOPMENT PLAN

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

TABLE 4.15: BUDGET FOR GREENBELT DEVELOPMENT PLAN

ACTIVITY	YEAR					RATE		COST (Rs.)
		I	II	III	IV	V		
Plantation under safety zone and approach road	Nos.	820	-	-	-	-	@200 Rs	1,64,000/-
	Cost	1,64,000	-	-	-	-	Per sapling	
Wire Fencing (In Mtrs) 530 Mtrs		1,59,000	-	-	-	-	@300 Rs Per Meter	1,59,000/-
Garland drain (In Mtrs) 480 Mtrs		1,44,000	-	-	-	-	@300 Rs Per Meter	1,44,000/-
TOTAL								4,67,000/-

4.6 SOCIO ECONOMIC

4.6.1 Anticipated Impact from Proposed Project

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

4.6.2 Mitigation Measures for Proposed Project

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

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

4.7 OCCUPATIONAL HEALTH AND SAFETY

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

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

4.7.1 Respiratory Hazards

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

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

4.7.2 Noise

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

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

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

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

4.7.4 Occupational Health Survey

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

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

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

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

4.8 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.9 MINE CLOSURE

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

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

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

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

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

4.9.1.2 Chemical Stability

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

4.9.1.3 Biological Stability

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

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

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

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

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

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

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

5.2 ANALYSIS OF ALTERNATIVE SITE

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

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

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

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

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

6. ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

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

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

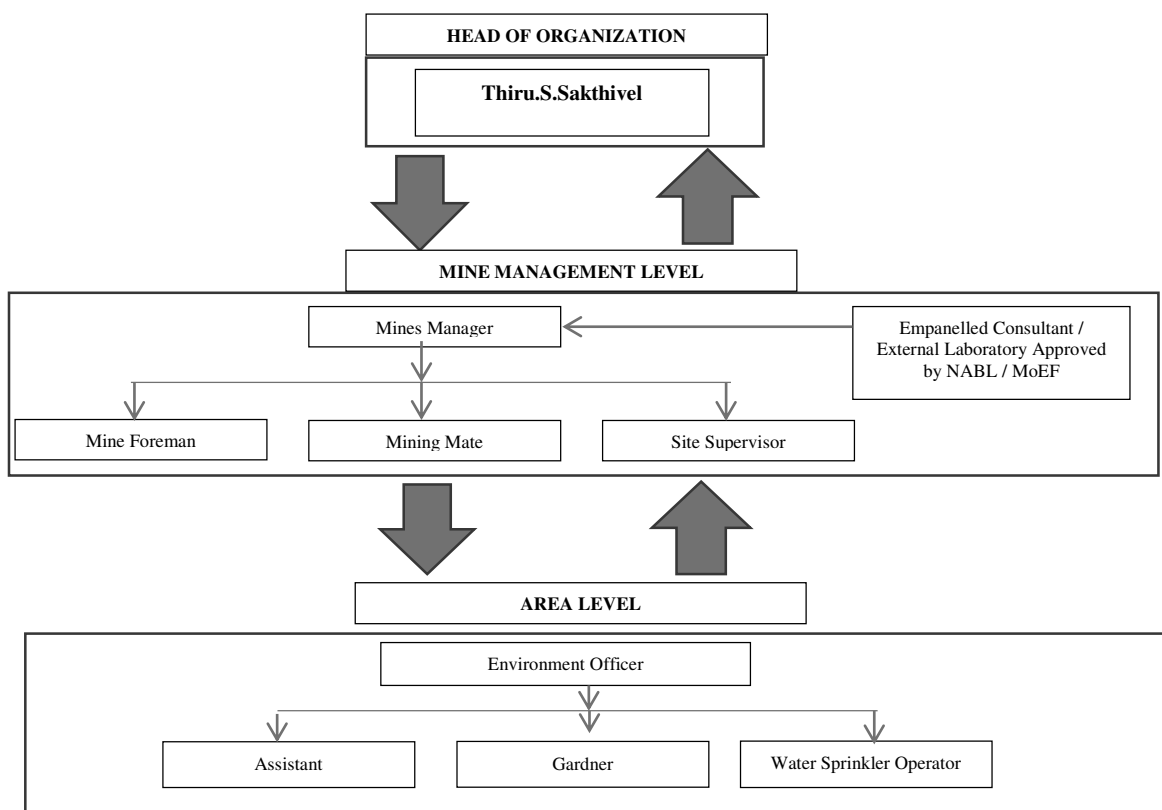
The responsibilities of this cell will be:

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

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

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

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

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL

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

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

TABLE 6.1 IMPLEMENTATION SCHEDULE FOR ALL PROPOSED PROJECT

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

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

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

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

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

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

6.4 BUDGETARY PROVISION FOR EMP

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

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

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Sl.No.	Parameter	Capital Cost	Recurring Cost
1	Air Quality	Rs. 76,000/-	Rs. 7,60,000/-
2	Meteorology		
3	Water Quality		
4	Hydrology		
5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
Total		Rs. 76,000/-	Rs. 7,60,000/-

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to: -

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

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

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

7. ADDITIONAL STUDIES

7.0 GENERAL

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

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

7.1. PUBLIC CONSULTATION

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

7.2 RISK ASSESSMENT

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

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

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

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

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

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

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN

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

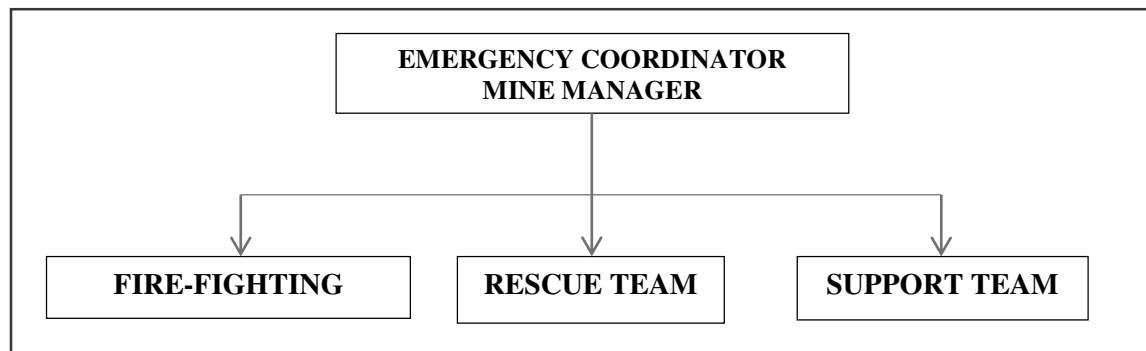
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

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

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

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

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



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

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

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

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

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

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

(f) Emergency security controller

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

Emergency control procedure –

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

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

Proposed fire extinguishers at different locations –

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

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS

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

Alarm system to be followed during disaster –

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

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

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

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

7.4 CUMULATIVE IMPACT STUDY

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

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

PROPOSED QUARRIES					
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
P1	S.Sakthivel	Pachapalayam	334/2B, 334/3B,334/4A &334/4B	1.64.0	File No.11521 TOR Identification No. TO24B0108TN5825060N Dated: 11.01.2025
P2	G.Thangavel		333/3	2.62.5	Pending with SEIAA
P3	A.Natarajan		342/7E(P)	1.04.0	Application in process
	TOTAL EXTENT			5.30.5	
EXISTING QUARRIES					
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status

E-1	M.Muralikrishnan	Pachapalayam	343/2A,343/2B1,3 43/3A & 343/4A	2.35.85	13.12.2022 to 12.12.2027
E-2	Maheshwari		344/4,344/6A & 344/6B1	1.61.5	27.08.2024 to 26.08.2029
E-3	Ram Mohan		337/4A,337/4B	3.10.0	23.08.2024 to 22.08.2029
	TOTAL EXTENT			7.07.35	
EXPIRED QUARRIES					
Ex-1	Meiyyarasu	Pachapalayam	333/1	2.61.5	12.08.2017 to 11.08.2022
Ex-2	S.Sakthivel		334/2B,334/3B,334 /4A& 334/4B	2.28.5	24.11.2018 to 23.11.2023
Ex-3	A.Selvaraj		342/7D	1.33.5	22.01.2019 to 21.01.2024
	TOTAL EXTENT			6.23.5	
	TOTAL CLUSTER EXTENT			12.37.85	

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

TABLE 7.5: SALIENT FEATURES OF PROPOSAL “P1”

Name of the Project	Thiru.S. Sakthivel Rough Stone & Gravel Quarry	
Land type	It is a Patta land (Barren land)	
Land owner details	It is a Patta land, Registered in the name of the applicant Thiru.S. Sakthivel vide Patta no.1374	
Toposheet No	58 - F/01	
Latitude between	10°53'22.23"N to 10°53'28.24"N	
Longitude between	77°04'47.52"E to 77°04'52.13"E	
Highest Elevation	418m AMSL	
Mining Plan period	5 years	
Proposed Depth of Mining	37m below ground level.	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	6,11,940	34,968
Mineable Reserves	Rough Stone in m ³	Gravel in m ³
	2,15,015	26,536
Yearwise Production 1 st Five Years	Rough Stone in m ³	Gravel in m ³
	1,22,900	26,536
Yearwise Production 2 nd Five Years	Rough Stone in m ³	Gravel in m ³
	92,115	-
Ultimate Pit Dimension	124m (L)*107m(W)*37m(D)	
Water Level in the surrounding areas	65-70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards Western side. The altitude of the area is 418m (Max) above Mean sea level. The area is covered by the Gravel which is about 2m thickness. Massive Charnockite is found after 2m (Gravel) which is clearly inferred from the existing quarry pits.	
Machinery proposed	Jack Hammer	4 Nos
	Compressor	1 Nos
	Excavator with Bucket and Rock Breaker	1 No
	Tippers	2 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	24 Nos	
Project Cost	Rs. 72,28,000/-	
EMP Cost	Rs. 15,14,000/-	
Total Project cost	Rs. 87,42,000/-	
CER Cost	Rs. 5,00,000,-/-	
Nearby Water Bodies	Odai	490m NW
	Odai	1.2km East
	Kothavadi Lake	8.5km SW
Greenbelt Development Plan	As per Mining plan it is Proposed to plant 820 trees in the 7.5 m Safety Zone, approach road and panchayat roads.	
Proposed Water Requirement	1.5 KLD	
Nearest Habitation	900m – North West	

SALIENT FEATURES OF PROPOSAL “E1”			
Name of the Project	M.Muralikrishnan Rough stone and Gravel quarry		
Toposheet No	58-F/01		
Latitude between	10 ⁰ 53’32.82” N to 10 ⁰ 53’40.43” N		
Longitude between	77 ⁰ 04’48.93” E to 77 ⁰ 04’54.52” E		
Highest Elevation	421m AMSL		
Proposed Depth of Mining	45 m bgl (1m Topsoil + 4m Gravel + 40m Rough Stone)		
Geological Resources	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	943400	94340	23585
Mineable Reserves	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	215125	57700	16126
Yearwise production	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	215125	57700	16126
Ultimate Pit Dimension	202m (L) x 137m (W) x 45m (D)		
Water Level measured in the surrounding area	55m-59m bgl		
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting		
Topography	The lease applied area is flat terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 421m (max) above mean sea level. The area is covered by 1m topsoil and 4m thickness of Gravel formation. Massive Charnockite is found after 1m of topsoil and 4m of Gravel formation which is clearly inferred from the nearby existing quarrying pit.		
Machinery proposed	Jack Hammer	6 Nos	
	Compressor	2 No	
	Hydraulic Excavator	1 No	
	Tipppers	3 No	
Blasting method and type of Explosives proposed	Controlled Blasting Method by shot hole drilling (30.-32mm dia hole) and small dia of 25mm slurry explosive are proposed to use for winning of Rough Stone. No deep hole drilling is proposed.		
Proposed Manpower Deployment	32 Nos		
Project Cost	Rs. 63,50,200/-		
CER Cost	Rs.5,00,000/-		

Source: Approved Mining Plan

SALIENT FEATURES OF PROPOSAL “E2”		
Name of the Project	S.Maheswari Rough stone and Gravel quarry	
Toposheet No	58-F/01	
Latitude between	10° 53'44.59" N to 10°53'50.95" N	
Longitude between	77° 04'52.24" E to 77°04'56.71" E	
Highest Elevation	400m AMSL	
Proposed Depth of Mining as per ToR	42 m bgl (2m Gravel + 40m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³
	490297	906
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	70486	-
Yearwise production as per ToR	Rough Stone in m ³	Gravel m ³
	65,191	-
Existing pit Dimension	153m (L) x 127m (W) x 22m (D) (Below the Ground level)	
Environmental Clearance	Lr.No. SEIAA-TN/F.No.3550/1(a)/EC.No.3154/2015 dated: 11.03.2016. Lr.No.DEIAA-CBE-V/F.No.407/1(a)/EC.No.60/2018 dated 10.12.2018	
Consent to Operate (CTO) from TNPCB	Proceedings No.F.1104CBS/RS/DEE/TNPCB/CBS/W/2019 DATED 04/02/2019	
Ultimate Pit Dimension	153m (L) x 127m (W) x 47m (D)	

Water Level measured in the surrounding area	65m-70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is flat terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 400m (max) above mean sea level. The area is covered by 2m thickness of Gravel formation. Massive Charnockite is found after 2m of Gravel formation which is clearly inferred from the existing quarrying pit.	
Machinery proposed	Jack Hammer	2 Nos
	Compressor	1 No
	Hydraulic Excavator	1 No
	Tippers	1 No
Blasting method and type of Explosives proposed	Controlled Blasting Method by shot hole drilling (30.-32mm dia hole) and small dia of 25mm slurry explosive are proposed to use for winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	13 Nos	
Project Cost	Rs. 46,31,000/-	
CER Cost	Rs.5,00,000/-	
Nearby Water Bodies	Odai	350m NW
	Odai	1.3km SE
	Kothavadi Lake	9.0km South
Greenbelt Development Plan	970 trees will be planned in safety area, approach road and panchayat roads	
Proposed Water Requirement	1.6 KLD	
Nearest Habitation	330m Northwest	

Source: Approved Mining Plan

SALIENT FEATURES OF PROPOSAL “E3”		
Name of the Project	Ram Mohan Rough stone and Gravel quarry	
Toposheet No	58-F/01	
Latitude between	10° 53' 01.51" N to 10° 53' 11.66" N	
Longitude between	77° 04' 48.90" E to 77° 04' 53.83" E	
Highest Elevation	402m AMSL	
Proposed Depth of Mining as per ToR	32 m bgl (2m Gravel + 30m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³
	701181	27830
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	290377	21172
Year wise production as per ToR	Rough Stone in m ³	Gravel m ³
	290377	21172
Existing pit Dimension	130m (L) x 90m (W) x 18m (D)	
Ultimate Pit Dimension	130m (L) x 90m (W) x 32m (D)	
Water Level measured in the surrounding area	65m-70m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is flat terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 402m (max) above mean sea level. The area is covered by 2m thickness of Gravel formation. Massive Charnockite is found after 2m of Gravel formation which is clearly inferred from the existing quarrying pit.	
Machinery proposed	Jack Hammer	2 Nos
	Compressor	1 No
	Hydraulic Excavator	1 No
	Tippers	1 No

Blasting method and type of Explosives proposed	Controlled Blasting Method by shot hole drilling (30.-32mm dia hole) and small dia of 25mm slurry explosive are proposed to use for winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	33 Nos	
Project Cost	Rs. 82,47,000/-	
CER Cost	Rs.5,00,000/-	
Nearby Water Bodies	Odai	250m SE
	Odai	400m N
	Kothavadi Lake	7.50km -South
Greenbelt Development Plan	1900 trees will be planned in safety area, approach road and panchayat roads	
Proposed Water Requirement	6.6 KLD	
Nearest Habitation	340m Northwest	

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

Air Environment –

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

TABLE 7.12: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

Quarry	Production for five-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day
P1	2,15,015	21,501	72	6
P2	-	-	-	-
P3	-	-	-	-
E1	2,15,125	43,025	143	12
E2	65,191	13,038	43	4
E3	2,90,377	58,075	194	16
Total	7,85,708	1,35,639	452	38

TABLE 7.13: CUMULATIVE PRODUCTION LOAD OF GRAVEL

Quarry	Production for five-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day
P1	26,536	8,845	29	3
P2	-	-	-	-
P3	-	-	-	-
E1	57,700	19,233	64	5
E2	-	-	-	-
E3	21,172	7,057	24	2
Total	1,05,408	35,135	117	10

On a cumulative basis considering the proposed quarries, it can be seen that the overall production of Rough Stone is 452m³ per day and overall production of Gravel is 117 m³ per day with a capacity of 38 trips of Rough Stone per day and 10 Trips per day of Gravel from the cluster.

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

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

TABLE 7.15: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

EMISSION ESTIMATION FOR QUARRY “P1”

Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.090785820	g/s
	Blasting	Point Source	0.001491779	g/s
	Mineral Loading	Point Source	0.042862801	g/s
	Haul Road	Line Source	0.002493107	g/s/m
	Overall Mine	Area Source	0.057064891	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.0007651	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000042366	g/s
EMISSION ESTIMATION FOR QUARRY "P2"				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.051567641	g/s
	Blasting	Point Source	0.000088207	g/s
	Mineral Loading	Point Source	0.037046279	g/s
	Haul Road	Line Source	0.002484706	g/s/m
	Overall Mine	Area Source	0.046626392	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000162998	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000006040	g/s
EMISSION ESTIMATION FOR QUARRY "P3"				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.061836363	g/s
	Blasting	Point Source	0.000218693	g/s
	Mineral Loading	Point Source	0.037895098	g/s
	Haul Road	Line Source	0.002485353	g/s/m
	Overall Mine	Area Source	0.047956272	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000217662	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000008550	g/s
EMISSION ESTIMATION FOR QUARRY "E1"				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.090785820	g/s
	Blasting	Point Source	0.001491779	g/s
	Mineral Loading	Point Source	0.042862801	g/s
	Haul Road	Line Source	0.002493107	g/s/m
	Overall Mine	Area Source	0.057064891	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.0007651	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000042366	g/s
EMISSION ESTIMATION FOR QUARRY "E2"				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.051567641	g/s
	Blasting	Point Source	0.000088207	g/s
	Mineral Loading	Point Source	0.037046279	g/s
	Haul Road	Line Source	0.002484706	g/s/m
	Overall Mine	Area Source	0.046626392	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000162998	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000006040	g/s
EMISSION ESTIMATION FOR QUARRY "E3"				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.061836363	g/s
	Blasting	Point Source	0.000218693	g/s
	Mineral Loading	Point Source	0.037895098	g/s
	Haul Road	Line Source	0.002485353	g/s/m
	Overall Mine	Area Source	0.047956272	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.000217662	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000008550	g/s

TABLE 7.19: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

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

Noise Environment –

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

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

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

Where:

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

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

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

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

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

TABLE 7.20: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	48.2	47.3	46.3	55
Habitation Near P2	34.6	46.5	46.7	
Habitation Near P3	46.5	53.2	54.0	
Habitation Near E1	35.4	47.4	47.7	
Habitation Near E2	36.7	50.0	50.2	
Habitation Near E3	34.6	46.5	46.7	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 46.5 – 53.2 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From

the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per The Noise Pollution (Regulation And Control) Rules, 2000(The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986).

Ground Vibrations

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

TABLE 7.21: NEAREST HABITATION FROM EACH MINE

Location ID	Distance & Direction
Habitation Near P1	900m- NW
Habitation Near P2	750m- N
Habitation Near P3	880m-NW
Habitation Near E1	600m - NW
Habitation Near E2	440m-NW
Habitation Near E3	1.7km- East

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

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 7.22: GROUND VIBRATIONS AT 6 MINES

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	20	900m- NW	0.103
P2	20	750m- N	0.138
P3	20	880m-NW	0.107
E1	20	600m - NW	0.197
E2	20	440m-NW	0.324
E3	20	1.7km- East	0.0037

Source: Blasting Calculations

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

Socio Economic Environment –

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

TABLE 7.23: SOCIO ECONOMIC BENEFITS FROM 6 MINES

Location ID	Project Cost	CER
P1	Rs. 72,28,000/-	Rs.5,00,000
P2	-	-

P3	-	-
E1	Rs. 63,50,200/-	Rs.5,00,000
E2	Rs. 46,31,000/-	Rs.5,00,000
E3	Rs. 82,47,000/-	Rs.5,00,000
Total	Rs. 2,64,56,200/-	Rs.20,00,000/-

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

- Proposed Projects shall fund towards CER – **Rs 5,00,000/-**
- Existing Projects shall fund towards CER – **Rs.15,00,000/-**
- Projects in Cluster shall fund towards CER – **Rs 20,00,000/-**

TABLE 7.24: EMPLOYMENT BENEFITS FROM 6 MINES

Description	Employment
P1	24
P2	-
P3	-
E1	25
E2	13
E3	33
Grand Total	95

A total of 24 people will get employment due to 1 proposed mines in cluster and 71 people are already employed at existing mines.

TABLE 7.25: GREENBELT DEVELOPMENT BENEFITS FROM 6 MINES

CODE	No of Trees proposed to be planted	Area to be covered in m ²	Name of the Species
P1	820	Plantation along 7.5m safety distance, along approach road.	Neem, Vilvam, Ashokha , Panai etc.,
P2	1315		
P3	520		
E1	1180		
E2	810		
E3	1550		
Total	6195		

Source: approved Mining Plan

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Casuarina, etc in the Cluster at a rate of 6195 Trees Planted over a period of 5 Years with Survival Rate of 80%

7.5 PLASTIC WASTE MANAGEMENT PLAN

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

Objective –

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

TABLE 7.26: ACTION PLAN TO MANAGE PLASTIC WASTE

Sl.No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance	Mines Manager

2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste	Mines Manager
3	Collection of plastic waste	Mines Foreman
4	Setting up of Material Recovery Facilities	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance	Mine Owner

Source: Proposed by FAE's and EC

7.6 Cluster Management Committee

The cluster management committee is proposed to form including of 3 Proposed quarries and 3 existing quarries total extent of the cluster is 12.37.85 Ha

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

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

Quarries in the Cluster Management Committee

PROPOSED QUARRIES					
CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
P1	S.Sakthivel	Pachapalayam	334/2B, 334/3B,334/4A &334/4B	1.64.0	Applied area (Rough Stone and Gravel)
P2	G.Thangavel		333/3	2.62.5	Pending with SEIAA
P3	A.Natarajan		342/7E(P)	1.04.0	Application in process
	TOTAL EXTENT			5.30.5	
EXISTING QUARRIES					

CODE	Name of the Owner	Village	S.F. Nos	Extent in Ha	Status
E-1	M.Muralikrishnan	Pachapalayam	343/2A,343/2B1,343/3A & 343/4A	2.35.85	13.12.2022 to 12.12.2027
E-2	Maheshwari		344/4,344/6A & 344/6B1	1.61.5	27.08.2024 to 26.08.2029
E-3	Ram Mohan		337/4A,337/4B	3.10.0	23.08.2024 to 22.08.2029
	TOTAL EXTENT			7.07.35	
EXPIRED QUARRIES					
Ex-1	Meiyyarasu	Pachapalayam	333/1	2.61.5	12.08.2017 to 11.08.2022
Ex-2	S.Sakthivel		334/2B,334/3B,334/4A& 334/4B	2.28.5	24.11.2018 to 23.11.2023
Ex-3	A.Selvaraj		342/7D	1.33.5	22.01.2019 to 21.01.2024
	TOTAL EXTENT			6.23.5	
	TOTAL CLUSTER EXTENT			12.37.85	

STANDARD OPERATING PROCEDURE FOR PACHAPALAYAM CLUSTER MANAGEMENT COMMITTEE

1. Maintenance of Haul Roads and Village Roads:

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

2. Maintenance of Drilling Activities

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.
- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;

-
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
 - Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
 - Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
 - Silencers / mufflers will be installed in all machineries;
 - Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
 - Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness.
 - Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

3. Maintenance of Blasting Activities

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
 - Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
 - Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e., at the time lunch hours (1.00 PM to 2.00 PM), controlled charge per hole as well as charge per round of hole
 - Before loading of material water will be sprayed on blasted material
 - Dust mask will be provided to the workers and their use will be strictly monitored
 - The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
 - Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
 - Adequate safe distance from blasting will be maintained as per DGMS guidelines;
 - Blasting shelter will be provided as per DGMS guidelines;
 - Blasting operations will be carried out only during day time;
 - The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
 - During blasting, other activities in the immediate vicinity will be temporarily stopped;
 - Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
 - A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
 - A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
 - Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
 - The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
 - The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
 - Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
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- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4. Maintenance of Greenbelt Activities

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

5. Maintenance of Occupational Health

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

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

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

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

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

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

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

6. Cluster Management Committee Policy

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

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

8.PROJECT BENEFITS

8.0 GENERAL

The Proposed Project for Quarrying Rough Stone at Pachapalayam Village aims to produce 2,15,015m³ Rough Stone over a period of 10 Years and 26,536m³ Rough Stone over a period of 3 Years This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

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

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 24 persons for carrying out mining operations and give preference to the local people in providing employment in the three proposed quarries in the cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

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

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

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

CORPORATE SOCIAL RESPONSIBILITY

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

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

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

CSR Cost Estimation

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

CORPORATE ENVIRONMENT RESPONSIBILITY

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

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

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

TABLE 8.1 CER – ACTION PLAN

CER
Rs 5,00,000/-

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

9. ENVIRONMENTAL COST BENEFIT ANALYSIS

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

10. ENVIRONMENTAL MANAGEMENT PLAN

10.0. GENERAL

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

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

10.1. ENVIRONMENTAL POLICY

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

The Proponent Thiru.S. Sakthivel will –

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

Description of the Administration and Technical Setup –

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

The said team will be responsible for:

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

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

TABLE 10.1.B: PROPOSED CONTROLS FOR LAND ENVIRONMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.3. SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

TABLE 10.2.B: PROPOSED CONTROLS FOR SOIL MANAGEMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.4. WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office. The quarrying operation is proposed upto a depth of 37 m BGL, the water table in the area is 70m – 65m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3.B: PROPOSED CONTROLS FOR WATER ENVIRONMENT

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

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

Source: Proposed by FAE's & EIA Coordinator

10.5. AIR QUALITY MANAGEMENT

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

TABLE 10.4.B: PROPOSED CONTROLS FOR AIR ENVIRONMENT

CONTROL	RESPONSIBILITY
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.6. NOISE POLLUTION CONTROL

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

TABLE 10.5.: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

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

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

Source: Proposed by FAE's & EIA Coordinator

10.7. GROUND VIBRATION AND FLY ROCK CONTROL

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

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

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

Source: Proposed by FAE's & EIA Coordinator

10.8. BIOLOGICAL ENVIRONMENT MANAGEMENT

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

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

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

10.8.1. Green Belt Development Plan

About 820 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7: PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

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

Source: Approved Mining plan

The objectives of the greenbelt development plan are –

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

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

10.8.2. Species Recommended for Plantation

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

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

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

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

Source: Proposed by FAE's & EIA Coordinator

10.9. OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.9.1. Medical Surveillance and Examinations –

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

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

- General Physical Examination and Blood Pressure

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

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

TABLE 10.9.B: MEDICAL EXAMINATION SCHEDULE

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

Medical Follow ups: - Work force will be divided into three targeted groups age wise as follows: -		
Age Group	PME as per Mines Rules 1955	Special Examination
Less than 25 years	Once in a Three Years	In case of emergencies
Between 25 to 40 Years	Once in a Three Years	In case of emergencies
Above 40 Years	Once in a Three Years	In case of emergencies
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.		

10.9.2 Proposed Occupational Health and Safety Measures –

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

FIGURE 10.1.: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS**10.9.3: Health and Safety Training Programme**

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

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

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

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

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

10.9.4.: Budgetary Provision for Environmental Management –

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

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

Activities	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	16400	16400
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 4 Units	100000	10000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2 Units	10000	500
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	32800
Noise Environment	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0

	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	559039
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Mine Closure	1. Progressive Closure Activity - Surface Runoff managment	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	16400	5000

	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	328000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 820 Trees - 410 Inside Lease Area & 410 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	82000	12300
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	123000	12300
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	114450	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budget and not necessarily implemented in the Project Site	1935135	0
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000

	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 24 Employees	96000	24000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	24000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	3280
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	82000	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
TOTAL			2313800	1676619

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

Year	Total Cost	Year	Total Cost
1 st year	₹ 39,90,419	6 th year	₹ 32,96,737/-
2 nd year	₹ 17,60,450	7 th year	₹ 23,04,674/-
3 rd year	₹ 18,48,472	8 th year	₹ 24,19,908/-
4 th year	₹ 19,40,896	9 th year	₹ 25,40,903/-
5 th year	₹ 20,37,941	10 th year	₹ 27,82,399/-
Total	249 Lakhs		

Cost inflation 5% per annum

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

10.10.: CONCLUSION –

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

11. SUMMARY AND CONCLUSION

Thiru.S.Sakthivel Rough Stone and Gravel Quarry (Extent 1.64.0 ha) consisting of 3 Proposed, 3 Existing Quarries falls under “B” category as per MoEF & CC Notification S.O. 3977 (E).

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

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

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

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months December 2024 to February 2025 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

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

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

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

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 24 people directly in the proposed projects and indirectly around 50 people.

As discussed, it is safe to say that the proposed quarries are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Thiru.S. Sakthivel Rough Stone and Gravel Quarry (Extent – 1.64.0 ha).

12. DISCLOSURE OF CONSULTANT

The Project Proponent –

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

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email:infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

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

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

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

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the Draft EIA/EMP for Thiru.S. Sakthivel Rough Stone & Gravel Quarry Project over an Extent of 1.64.0 ha in Pachapalayam Village of Suler Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

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

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

Designation: **EIA Coordinator**

Date & Signature:

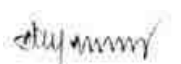
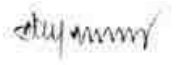


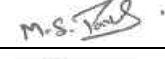
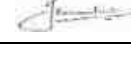
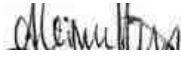
Period of Involvement: **May 2023 to till date**

Associated Team Member with EIA Coordinator:

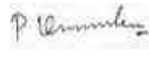
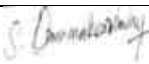
1. Mr.P. Viswanathan
2. Mr. M. Santhoshkumar
3. Mr. S. Ilavarasan

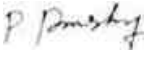
FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	- Identification of different sources of air pollution due to the proposed mine activity - Prediction of air pollution and propose mitigation measures / control measures	Mr. A. Jagannathan	
2	WP	- Suggesting water treatment systems, drainage facilities - Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.	Dr. M. Ifthikhar Ahmed	
			Mr. N. Senthilkumar	
3	HG	- Interpretation of ground water table and predict impact and propose mitigation measures. - Analysis and description of aquifer Characteristics	Dr. P. Thangaraju	
4	GEO	- Field Survey for assessing the regional and local geology of the area. - Preparation of mineral and geological maps. - Geology and Geo morphological analysis/description and Stratigraphy/Lithology.	Dr. M. Ifthikhar Ahmed	
			Dr. P. Thangaraju	
5	SE	- Revision in secondary data as per Census of India, 2011. - Impact Assessment & Preventive Management Plan - Corporate Environment Responsibility.	Mrs. K. Anitha	
6	EB	- Collection of Baseline data of Flora and Fauna. - Identification of species labelled as Rare, Endangered and threatened as per IUCN list.	Mrs. Amirtham	

		- Impact of the project on flora and fauna. - Suggesting species for greenbelt development.	Mr. Alagappa Moses	
7	RH	- Identification of hazards and hazardous substances - Risks and consequences analysis - Vulnerability assessment - Preparation of Emergency Preparedness Plan - Management plan for safety.	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	- Construction of Land use Map - Impact of project on surrounding land use - Suggesting post closure sustainable land use and mitigative measures.	Mr. A. Allimuthu	
9	NV	- Identify impacts due to noise and vibrations - Suggesting appropriate mitigation measures for EMP.	Mr. A. Jagannathan	
10	AQ	- Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. - Recommending mitigations measures for EMP	Mr. N. Senthilkumar	
11	SC	Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. M. Ifthikhar Ahmed	
12	SHW	- Identify source of generation of non-hazardous solid waste and hazardous waste. - Suggesting measures for minimization of generation of waste and how it can be reused or recycled.	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	- Site Visit with FAE - Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures - Provide inputs on Geological Aspects - Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures	
2	Mr. Viswathanan	AP; WP; LU	- Site Visit with FAE - Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures - Assisting FAE on sources of water pollution, its impacts and suggest control measures - Assisting FAE in preparation of land use maps	
3	Mr. Santhoshkumar	GEO; SC	- Site Visit with FAE - Provide inputs on Geological Aspects - Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan - Provide inputs & Assisting FAE with soil conservation methods and identifying impacts	
4	Mr. Umamahesvaran	GEO	- Site Visit with FAE - Provide inputs on Geological Aspects	

			Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan	
5	Mr. A. Allimuthu	SE	- Site Visit with FAE - Assist FAE with collection of data's - Provide inputs by analysing primary and secondary data	
6	Mr. S. Ilavarasan	LU; SC	- Site Visit with FAE - Assisting FAE in preparation of land use maps - Provide inputs & Assisting FAE with soil conservation methods and identifying impacts	
7	Mr. E. Vadivel	HG	- Site Visit with FAE - Assist FAE & provide inputs on aquifer characteristics, ground water level/table - Assist with methods of ground water recharge and conduct pump test, flow rate	
8	Mr. D. Dinesh	NV	- Site Visit with FAE - Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures - Assist FAE with prediction modelling	
9	Mr. Panneer Selvam	EB	- Site Visit with FAE - Assist FAE with collection of baseline data - Provide inputs and assist with labelling of Flora and Fauna	
10	Mrs. Nathiya	EB	- Site Visit with FAE - Assist FAE with collection of baseline data - Provide inputs and assist with labelling of Flora and Fauna	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the Draft EIA/EMP for Thiru.S. Sakthivel Rough Stone & Gravel Quarry Project over an Extent of 1.64.0 ha in Pachapalayam Village of Sulur Taluk, Coimbatore District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature& Date:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

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

Validity:

Valid till 06.08.2025

ANNEXURE

THIRU.S. SAKTHIVEL ROUGH STONE AND GRAVEL QUARRY

S.F. Nos: 334/1D & 334/2A

Pachapalayam Village,

Sulur Taluk,

Coimbatore District

CLUSTER EXTENT = 12.37.85 ha

Project Proponent

S. Nos.	Proponent	Extent (Ha)	ToR
1	Thiru.S. Sakthivel S/o Subramaniyam No.20, Panchayat Office Road Sulur Taluk Coimbatore District, Tamil Nadu – 641 402	1.64.0ha	File No. 11521 TOR Identification No. TO24B0108TN5825060N Dated:11.01.2025

LIST OF ANNEXURES

CODE	DESCRIPTION	PAGE NO.
Thiru S.Sakthivel	COPY OF TERMS OF REFERENCE	1A-25A
	COPY OF MINING PLAN APPROVED LETTER, 500M RADIUS QUARRIES DETAILS	26A – 29A
	COPY OF APPROVED MINING PLAN AND PLATES	30A – 92A
	COPY OF 300m RADIUS LETTER	93A-94A
	COPY OF EXPLOSIVE CERTIFICATE	95A-98A
	COPY OF INSPECTION REPORT	99A-112A
	COPY OF CER	113A
E-1	COPY OF TOR	114A – 126A
E-2	COPY OF TOR	127A- 147A
E-3	COPY OF TOR	148A-165A
	COPY OF BASE LINE MONITORING DATA	166A-207A
	COPY OF NABET CERTIFICATE	208A



File No: 11521
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 11/01/2025



To,

Thiru. S. Sakthivel
20, Panchayat Office Street, Sular, Coimbatore, Coimbatore , COIMBATORE, TAMIL NADU, 641402
sakthiagathiyar@gmail.com

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

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Proposed Rough Stone & Gravel quarry over an extent of 1.64.0Ha in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sular Taluk, Coimbatore District, Tamil Nadu by Thiru. S. Sakthivel - under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” of EIA Notification, 2006, as amended – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/508671/2024, Dated: 27/11/2024.

2. Your application submitted for Terms of Reference dated:29.11.2024.

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

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

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5825060N
(ii) File No.	11521
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals S. Sakthivel, Rough Stone and Gravel Quarry Project, Extent: 1.64.0ha, S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sular Taluk, Coimbatore District.
(vii) Name of Project	
(viii) Name of Company/Organization	SUBRAMANIAM SAKTHIVEL
(ix) Location of Project (District, State)	COIMBATORE, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no

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

Copy To

1. The Principal Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
5. The District Collector, Coimbatore District.
6. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 2,15,015m ³ of rough stone and 26,536m ³ of gravel upto the depth of 37m BGL and the annual peak production of 34,510m ³ of rough stone and 8,988m ³ of gravel for the period of 10 years as per 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, standard conditions stipulated by MoEF&CC & the following conditions.

S. No	Terms of Reference
	1. The PP shall carry out the studies assessing the impact of mining on drainage pattern and agricultural activities and submit the study report and the mitigation measures along with the EIA Report. 2. It was noted from the KML, agricultural activity is carried out around the proposed site. Hence the PP is requested to furnish the No Objection Certificate (NOC) from the competent Authority of Agricultural Department and submit along with the EIA Report.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	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 statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. 2. The PP shall erect the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds and submit the photographic/videographic evidence along with the EIA report. 3. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km 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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 4. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 5. The PP shall ensure that the material dumped within the leasehold area is removed before submitting the EIA report and the video/photographic images shall be furnished during the appraisal without fail. 6. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 7. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 8. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures. 9. The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report. 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. 9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences. 12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, 13. What was the period of the operation and stoppage of the earlier mines with last work permit

S. No	Terms of Reference
	issued by the AD/DD mines? 14. Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment. 20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. 21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study. 22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind. 23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted. 24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. 25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided. 26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required,

S. No	Terms of Reference
	clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible. 32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner 34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. 37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. 38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation. 39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. 40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. 41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB. 42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 43. Concealing any factual information or submission of false/fabricated data and failure to

S. No	Terms of Reference
	comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the 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)
1.5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics
1.6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority
1.7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report
1.8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided
1.9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period

S. No	Terms of Reference
1.10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given
1.11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given
1.12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the State Expert Appraisal Committees
1.13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished
1.14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted
1.17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished
1.18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost
1.19	Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or

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	State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)
1.21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report
1.22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given
1.23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map
1.24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided
1.26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided
1.27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided
1.28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact

S. No	Terms of Reference
	of mining activities on these aquifers. Necessary permission from State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out
1.30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same
1.31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution
1.32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report
1.35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed
1.36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations
1.37	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation
1.38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project
1.39	Public Hearing points raised and commitment of the Project Proponent on the same along with time

S. No	Terms of Reference
	bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area

SEIAA STANDARD CONDITIONS:

Cluster Management Committee

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

Agriculture & Agro-Biodiversity

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

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

Forests

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

Water Environment

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

24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
27. The EIA shall include the impact of mining activity on the following:
- a) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - b) Bio-geochemical processes and its foot prints including environmental stress.
 - c) Sediment geochemistry in the surface streams.

Energy

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

Climate Change

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

Mine Closure Plan

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

EMP

33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.

34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment

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

Disaster Management Plan

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

Others

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

STANDARD CONDITIONS

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.

- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be

prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna

present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-

dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form

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

- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and

grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also

have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

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

of the mined areas.

12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.

31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above-mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.

- The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.



From

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

To

Thiru.S.Sakthivel,
S/o.Subramaniam,
20, Panchayat office street,
Sulur,
Coimbatore.

Rc.No.554/Mines/2023 Dated: 12.11.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District – Sulur Taluk – Pachapalayam Village - Survey Nos.334/1D (0.28.0 hec) and 334/2A (1.36.0 hec) - over an extent of 1.64.0 hectares of patta land - Rough stone & Gravel quarry lease – Precise area communicated – Draft mining plan submitted by Thiru.S.Sakthivel – Approval of mining plan - Regarding.

Ref: 1. Application of Thiru.S.Sakthivel dated: 11.05.2023.
2. Precise area communication in Rc.No. 554/Mines/2023 dated: 09.10.2024.
3. Thiru.S.Sakthivel letter dt: 24.10.2024.

In the reference 1st cited, Thiru.S.Sakthivel has applied for the grant of lease to quarry rough stone & Gravel over an extent of 1.64.0 hectares of patta land in Survey Nos. 334/1D (0.28.0 hec) and 334/2A (1.36.0 hec) of Pachapalayam Village, Sulur Taluk, Coimbatore District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2) The precise area has been communicated to the applicant vide reference 2nd cited above, based on the recommendations of the Tahsildar, Sulur, Revenue Divisional Officer, Coimbatore South, Block Development Officer, Sultanpet and the Assistant Geologist of Geology and Mining, Coimbatore.

3) In exercise of powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru.S.Sakthivel for grant of lease to quarry rough stone & gravel, over an extent of 1.64.0 hectares of patta land in Survey Nos. 334/1D (0.28.0 hec) and 334/2A (1.36.0 hec) of Pachapalayam Village, Sulur Taluk, Coimbatore District for a period of Ten years and the proposed mineable reserves after leaving safety

distance is arrived as **2,15,015 M³** of rough stone and **26,536 M³** of gravel upto a depth of 37 m. This approval is subject to the following conditions:-

- (i). That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- (ii). This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii). That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv). No hindrance should be caused to the Public and nearby patta lands.
- (v). A safety distance of 7.5 meters should be provided for adjacent patta land from the lease applied area.
- (vi). The scheme of mining shall be submitted to the Assistant Director of Geology and Mining atleast 180 days before the expiry of the five years period for which it was approved on the last occation


Assistant Director,
Geology and Mining,
Coimbatore

Encl: 2 copies of Approved Mining Plan.

Copy submitted to :

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

From

To

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

Thiru.S.Sakthivel,
S/o.Subramaniam,
20, Panchayat office street,
Sulur,
Coimbatore.

Rc.No. 554/Mines/2023 Dated: 12.11.2024.

Sir,

Sub: Mines and Quarries – Minor Minerals – Coimbatore District - Sulur Taluk – Pachapalayam Village - Survey Nos.334/1D (0.28.0 hec) and 334/2A (1.36.0 hec) - over an extent of 1.64.0 hectares of patta land - Rough stone & Gravel quarry lease – Precise area communicated - 500 mts radius letter requested-regarding.

Ref: 1. Application of Thiru.S.Sakthivel dated: 11.05.2023.
2. Precise area communication in Rc.No. 554/Mines/2023 dated: 09.10.2024.
3. Thiru.S.Sakthivel letter dt: 24.10.2024

With reference to your letter in the reference 3rd cited, the details of existing and lease expired quarries located within 500 m radius from the proposed Rough stone & gravel quarry over an extent of 1.64.00 hectares of patta land in Survey Nos. 334/1D (0.28.0 hec) and 334/2A (1.36.0 hec) of Pachapalayam Village, Sulur Taluk, Coimbatore District are as follows:

Sl. No	Name of the quarry Owner	Name of the Village & Survey Number	Extent (in Hects)	Remarks
a. Existing Quarries				
1.	M.Muralikrishnan	Pachapalayam 343/2A, 343/2B1. 343/3A & 343/4A	2.35.85	13.12.2022 to 12.12.2027
2.	Maheshwarai	Pachapalayam 344/4, 344/6A & 344/6B1	1.61.5	27.08.2024 to 26.08.2029
3.	Ram Mohan	Pachapalayam 337/4A, 337/4B	3.10.0	23.08.2024 to 22.08.2029
b. Expired Quarries				
1.	Meiyyarasu	Pachapalayam 333/1	2.61.5	12.08.2017 to 11.08.2022

2.	S.Sakthivel	Pachapalayam 334/2B, 334/3B, 334/4A & 334/4B	2.28.5	24.11.2018 to 23.11.2023
3.	A.Selvaraj	Pachapalayam 342/7D	1.33.5	22.1.2019 to 21.01.2024
c. Abandoned Quarries				
-NIL-				
d. Present proposed Quarries				
1.	S.Sakthivel	Pachapalayam 334/1D & 334/2A	1.64.0	applied area (Rough Stone and gravel)
2.	G.Thangavel	Pachapalayam 333/3	2.62.5	Pending with SEIAA
3.	A.Natarajan	Pachapalayam 342/7E (P)	1.04.0	Application in process.


 Assistant Director,
 Geology and Mining,
 Coimbatore


 12/5/24

MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)



Patta Land/ Lease period = Ten years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 1.64.0 Ha
S.F.Nos. : 334/1D AND 334/2A
VILLAGE : PACHAPALAYAM
TALUK : SULUR
DISTRICT : COIMBATORE
STATE : TAMIL NADU

FOR

APPLICANT

Thiru. S. Sakthivel,
S/o. Subramaniam,
No.20 Panchayat office Street,
Sulur Taluk,
Coimbatore District,
Tamil Nadu State - 641 402.

PREPARED BY

B. VENGADAGIRI, M.Sc.,
Qualified Person
(As Per Rule 15(I)(a) and (I)(b) of MCR, 2016)
No.105, 5th Cross
Alagapuram
Salem District – 636 010.
Mobile No.: +91 86953 32233
E-Mail: vengatb6@gmail.com

ABBREVIATIONS



- EIA - Environmental Impact Assessment
- SEAC - State Expert Appraisal Committee
- SEIAA - State Level Environment Impact Assessment Authority
- MoEF&CC - Ministry of Environment, Forest and Climate changes
- MSL - Mean Sea Level
- CPCB - Central Pollution Control Board
- TNPCB - Tamil Nadu Pollution Control Board
- S.F.No. - Survey Field Number
- DMS - Director of Mines Safety
- DGMS - Director General of Mines Safety
- MMR - Metalliferous Mines Regulations
- MCR - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules
- TNMMCR - Tamil Nadu Minor Mineral Concession Rules
- EMP - Environment Management Plan
- NONEL - Non Electric
- PPV - Peak Particle Velocity
- CRZ - Coastal Regulatory Zone
- HACA - Hill Area Conservation Authority
- QP - Qualified Person

S. Sakthivel,
S/o. Subramaniam,
No.20 Panchayat office Street,
Sulur Taluk,
Coimbatore District,
Tamil Nadu- 641 402.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.64.0 Hectares Patta lands in S.F.No. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared by

B. Vengadagiri, M.Sc.,

Qualified Person

(As Per Rule 15(I)(a) and (I)(b) of MCR, 2016)

I have entrust the works to prepared the Mining Plan based upon the production requirements to me as per the Mines Acts, Rules, Regulations and Amendments as on date. I request to the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

B. Vengadagiri, M.Sc.,

No.105, 5th Cross

Alagapuram

Salem District – 636 010.

Mobile No.: +91 86953 32233.

I hereby undertake that all the responsibilities of contents in the Mining Plan and if any corrections made in the Mining Plan by the Qualified Person may be deemed to have been made with our knowledge and consent and shall be acceptable to me and binding on me in all respects. If there is any substantial change during operation we will carried out a Modified Mining plan and seek its approval from concerned Authorities.

Signature of the Applicant



(S. Sakthivel)

Place: Coimbatore

Date: 10.10.2024

S. Sakthivel,

S/o. Subramaniam,

No.20 Panchayat office Street,

Sulur Taluk,

Coimbatore District,

Tamil Nadu- 641 402.



DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to quarry from time to time as per Tamil Nadu Minor Mineral Concession Rules, 1959.

Signature of the Applicant


(S. Sakthivel)

Place: Coimbatore

Date: 15.10.2024

CERTIFICATE

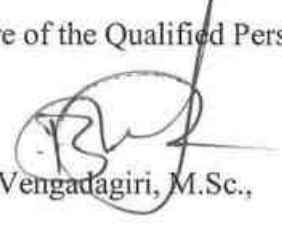


Certified that I am, **B. Vengadagiri, M.Sc.**, having an office at No.105, 5th Cross, Alagapuram, Salem District – 636 010, holding a Post Graduate Degree in Geology (M.Sc., Applied Geology) from Annamalai University, Chidambaram and I worked in the field of Mining in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) a degree in mining engineering or a post-graduate degree in geology granted by a university established” and (I)(b) “Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree”. Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I prepared this Mining Plan and Progressive Quarry Closure Plan in Respect of Pachapalayam Rough Stone and Gravel Quarry over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District for **Thiru. S. Sakthivel**, S/o. Subramaniam, residing at No.20 Panchayat office Street, Sulur Taluk, Coimbatore District, Tamil Nadu- 641 402. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person


B. Vengadagiri, M.Sc.,

Place: Salem

Date: 15.10.2024

B. Vengadagiri, M.Sc.,

No.105, 5th Cross

Alagapuram

Salem District – 636 010.

Mobile No.: +91 86953 32233.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. The preparation of Mining Plan and Progressive Quarry Closure Plan for Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared for

S. Sakthivel,

S/o. Subramaniam,

No.20 Panchayat office Street,

Sulur Taluk,

Coimbatore District,

Tamil Nadu- 641 402.

Whenever specific permissions / exemptions / relaxations and approvals are required, the applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

B. Vengadagiri, M.Sc.,

Place: Salem

Date: 15.10.2024

B. Vengadagiri, M.Sc.,

No.105, 5th Cross

Alagapuram

Salem District – 636 010.

Mobile No.: +91 86953 32233.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Pachapalayam Rough Stone and Gravel Quarry lease applied area over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State has been prepared for

S. Sakthivel,

S/o. Subramaniam,

No.20 Panchayat office Street,

Sulur Taluk,

Coimbatore District,

Tamil Nadu- 641 402.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of Director of Mines Safety (DMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu State for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person


B. Vengadagiri, M.Sc.,

Place: Salem

Date: 15.10.2024



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MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR PACHAPALAYAM ROUGH STONE AND GRAVEL

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDMENT OF TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The applicant **Thiru. S. Sakthivel**, S/o. Subramaniam, residing at No.20 Panchayat office Street, Sulur Taluk, Coimbatore District, Tamil Nadu State - 641 402 has entrust and given consent to preparation of Mining plan and Progressive Mine Closure Plan as per the provisions of Mines Act, Rules, Regulations and as amended till date.

The applicant has applied quarry lease for quarrying of Rough stone and Gravel over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu State for a period of ten years under Rules 19 of Tamil Nadu Minor Mineral Concession Rules, 1959. The following are the statutory requirements with respect to Rough stone and Gravel quarry (Refer Annexure No. I).

1. **Thiru. S. Sakthivel**, S/o. Subramaniam, No.20 Panchayat office Street, Sulur, applicant Dated: 11.05.2023.
2. Assistant Director, Department of Geology and Mining, Coimbatore, letter Rc.No. 554/Mines/2023 dated: 09.10.2024.
3. The Block Development Officer, Sulur letter R.c.No.2629/2023/A7 dated:16.03.2024.
4. The commissioner of Revenue, Coimbatore South applicant letter R.c.No. 5021/2023/A2 dated:24.06.2024
5. The District Development Officer, Sulthanpettai Panchayat Union's letter R.c.No. 2202/2023/A5 dated:06.02.2024.
6. Assistant Geologist, Department of Geology and Mining, Tiruppur, inspection report dated: 28.08.2024.
7. Other related Documents.

The application was examined, Scrutinized, Inspected and processed by the Assistant Director, Department of Geology and Mining, Coimbatore and issued a Precise Area Communication letter vide letter **R.C. No. 554/Mines/2023, dated: 09.10.2024** for preparation of Mining plan as per the Rule 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 within 90 days and getting approval from the Department of Geology and Mining, Coimbatore to obtain Environmental Clearance from the State Level Environment Impact Assessment Authority (SEIAA), Tamil Nadu, with the following conditions to provide (Refer Annexure No. I):

**General Conditions:**

- No hindrance shall be caused to the Patta lands and Public while carrying out Rough stone and Gravel quarrying operations.
- A safety distance of 7.5 meters should be provided to the adjacent patta lands from the lease applied area.
- Each boundary pillar should be planted via inspected by a government approved company in accordance with DGPS (Differential Global Positioning System) in the lease area.

This Mining Plan along with Progressive Mine closure Plan is prepared in full consultation with **Thiru. S. Sakthivel**, S/o. Subramaniam, residing at No.20 Panchayat office Street, Sulus Taluk, Coimbatore District, Tamil Nadu- 641 402 for Rough stone and Gravel quarry over an extent of 1.64.0 Hectares Patta lands in S.F.Nos. 334/1D and 334/2A of Pachapalayam Village, Sulus Taluk, Coimbatore District, Tamil Nadu State under Rules 19 of Tamil Nadu Minor Mineral Concession Rules, 1959 with obtained full consent as per the application and Production schedule in preparation of Mining plan as per the provisions of Mines Act, Rules, Regulations as on date.

The Mining plan has been prepared after carrying the field survey, collection of Primary & secondary data, environmental setting, geological features and tentatively estimated the Resources & Reserves, depth of mining as identified in the field with best our knowledge and experience. This mining plan is prepared by considering the Rule 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendments.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12-13 of 2011 in Special Leave Petition (SLP) (C) No 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal is require prior environmental clearance. As per amendment in EIA Notification 2006 vide S.O. 1886(E), Dated:20.04.2022 "All mining lease area in respect of minor mineral mining leases and ≤ 250 ha mining lease area in respect of major mineral mining lease other than coal" would be treated as category B and will be considered by the state notified by Ministry of Environment, Forest and Climate Change as prescribed procedure under EIA notification 2006.

The field survey carried out by the Qualified Person and Team as on 17.10.2024.

Short Notes of Mining plan:

- Village Panchayat - Pachapalayam
- Panchayat Union - Annur
- Total extent of the lease applied area is 1.64.0Ha.
- Topography of the area - The area is exhibits Plain topography.
- The Estimated Geological Resources are $6,11,940\text{m}^3$ of Rough stone and $34,968\text{m}^3$ of Gravel in the entire area.
- Tentative Mineable Reserves are $2,15,015\text{m}^3$ of Rough stone and $26,536\text{m}^3$ of Gravel in the entire area.

- g. The proposed quantity of reserves/ (level of production) to be mined are **2,15,015m³** of Rough stone and **26,536m³** of Gravel for **ten years (1,22,900m³ of Rough stone and 26,536m³ of Gravel for first five years and 92,115m³ of Rough stone for second five years)** in the entire area.
- h. Proposed Depth of mining = 37m [2m Gravel + 35m Rough stone].
- i. Lease Period = Ten years
- j. Mining Plan Period = Five years
- k. It is a fresh lease applied area, at present the area is virgin. Hence no existing pit.
- l. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting with NONEL initiation.
- m. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with bucket and rock breaker.
Hand Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity).
- n. No trees will be uprooted due to this quarry operation.
- o. The approach road from the main road to quarry will be constructed and same has been maintained in a good condition for the haulage of quarry materials and machineries.
- p. There is No Export of this Rough stone and Gravel.
- q. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IB.
- r. The lease applied area is about 1.64.0Ha bounded by eleven corners; the corners are designated as 1 – 11 clockwise from the Southwestern corner and the Co – ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.
- s. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III, and IV.
- t. General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,
- Interstate Boundary,*
 - Protected area under wild life protection ACT, 1972,*
 - Critically polluted areas as identified by CPCB,*
 - Notified Eco sensitive areas.*
- u. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 24 employees are proposed to deploying the quarrying operation.
- w. Total Cost of the project is about **Rs. 89,17,000/-**.

**2.0 GENERAL INFORMATION****2.1 a) Name of the Applicant :** Thiru. S. Sakthivel,

S/o. Subramaniam

b) Address of the Applicant (With Phone No and Aadhaar No.)

Address : No. 20 Panchayat office Street,
Sulur Taluk,
Coimbatore District,

State with Pin Code : Tamil Nadu- 641 402

Mobile No : +91 98422 13206 and 63818 91408

Aadhaar No : 3178 9832 2825 (Refer Annexure No. VII)

E-mail : sakthiagathiyar@gmail.com

c) Status of the Applicant (Individual / Company / Firm):

The applicant is an individual

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Coimbatore District vide **R.C. No. 554/Mines/2023, dated: 09.10.2024** (Refer Annexure No. I) and was given to us for the preparation of mining plan to meet out the applicant production schedule.

c) Period of permission / lease to be granted:

Ten Years as mentioned in Precise area Communication letter.

d) Name and address of the Qualified Person who preparing the Mining Plan:Name : **B. VENGADAGIRI, M.Sc.,**

Qualified Person (As Per Rule 15(I)(a) and (I)(b) of MCR, 2016)

Address : No.105, 5th Cross,
Alagapuram,
Salem District – 636 010.

Mobile : +91 86953 32233

Email : vengatb6@gmail.com

(Please Refer Annexure Nos. VIII and IX)

3.0 LOCATION**a) Details of the area with location map:**

The lease applied area is about 20km Southeastern side of Coimbatore, 15km Southwestern side of Sulur and 1km Southeastern side of Pachapalayam Village.

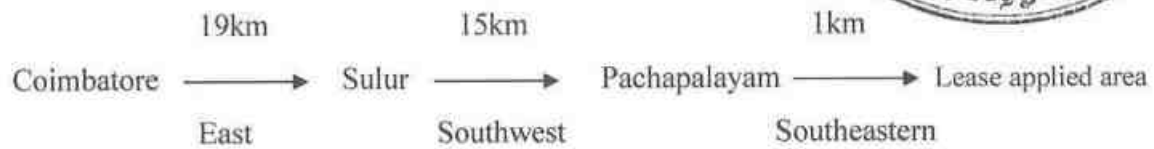
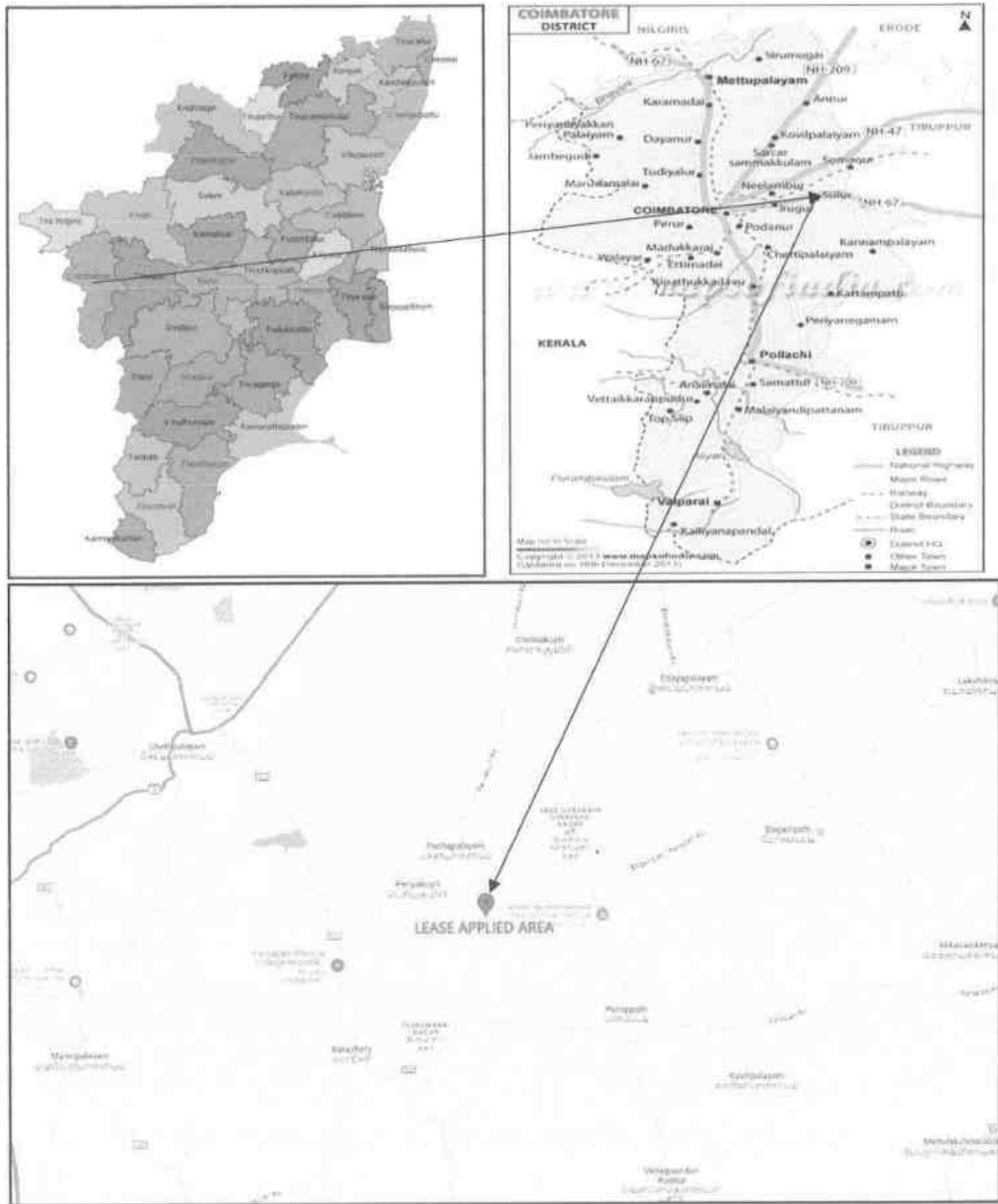
**Location Map of the Lease Applied area**

Table – 1

District	Taluk	Village	S.F. No.	Area (Ha.)	Patta No.
Coimbatore	Sulur	Pachapalayam	334/1D	0.28.0	1374
			334/2A	1.36.0	
Total Extent				1.64.0	

Source: As per the FMB and 'A' register record furnished by the applicant.

b) Classification of the area (Ryotwari/ Poramboke / others):

It is Patta lands, classified as Punsei (Barren land) (Refer Annexure Nos. IV & VI).

c) Ownership / Occupancy of the applied area (surface right):

It is Patta lands, S.F.Nos. 334/1D and 334/2A registered in the name of applicant **Thiru. S.Sakthivel** vide patta No. 1374 (Refer Annexure Nos. IV & VI).

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: **58 F/01** Latitude between: **10°53'22.23"N** to **10°53'28.24"N** and Longitude between: **77°04'47.52"E** to **77°04'52.13"E** on WGS datum-1984. Please refer the Plate Nos. I to II as per the GSI Toposheet.

e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the Eastern side which is connects to the Village road located at 670m on Northeastern side of the lease applied area.

Road access is available from the quarry to State Highways and National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough stone and Gravel.

The approach road from the quarry will be constructed and the same has been utilized for haulage and maintained during the entire lease period.

The Nearest Railway line is Coimbatore - Pollachi which is located about 5.0km on the western side of the area as per the GSI Toposheet and Google Map.

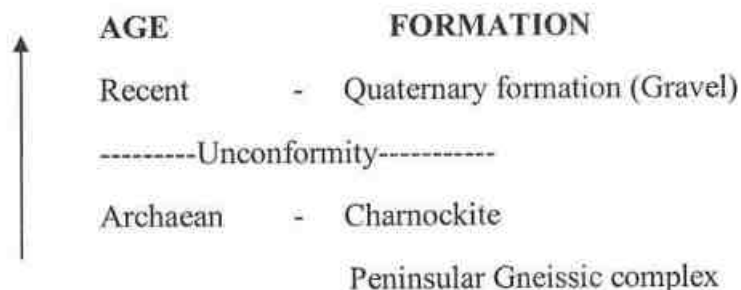
PART – A

4.0 GEOLOGY AND MINERAL RESERVES

4.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is exhibits plain topography. The area has gentle sloping towards western side and altitude of the area is 418m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from then nearby existing quarry pit. The Water level in the surrounding area is 65m - 70m below from general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 1206mm.

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale of the Charnockite body is N30°E – S30°W with dipping towards SE60°. The general geological sequences of the rocks in this area are given below:



4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the nearby existing quarry pit.

4.3 Estimation of Reserves:

a) Geological Resources with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally two sections have been drawn, one cross sections drawn length wise as (X-Y) and another one cross section is drawn as Width wise (A-B) to cover the maximum area considered for lease upto 37m depth.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate Nos. III & III-A). As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage. No Exploration has been carried out.

Estimation of Geological Resources (Plate No. III):

The Geological Resources of Rough Stone and Gravel are calculated upto a depth of 37m [2m Gravel + 35m Rough stone]. The total **Geological Resources** are calculated by **cross sectional method**. The total geological resources are given table below:

TABLE – 2

GEOLOGICAL RESOURCES						
Section	Bench	Length (m)	Width (m)	Depth (m)	Rough stone in (m³) 100%	Gravel (m³)
XY-AB	i	141	124	2	-	34968
	ii	141	124	5	87420	-
	iii	141	124	5	87420	-
	iv	141	124	5	87420	-
	v	141	124	5	87420	-
	vi	141	124	5	87420	-
	vii	141	124	5	87420	-
	viii	141	124	5	87420	-
Total					611940	34968

The Geological Resources of Gravel : **34,968m³**

The Geological Resources of Rough Stone : **6,11,940m³**

Geological Resources has been computed based on the physical investigation and filed survey data.

Tentative Mineable Reserves:

The mineable reserves are calculated after leaving the safety distance and Bench loss.

TABLE – 3

MINEABLE RESERVES						
Section	Bench	Length (m)	Width (m)	Depth (m)	Rough stone in (m³) 100%	Gravel (m³)
XY-AB	i	124	107	2	-	26536
	ii	117	101	5	59085	-
	iii	107	91	5	48685	-
	iv	97	81	5	39285	-
	v	87	71	5	30885	-
	vi	77	61	5	23485	-
	vii	34	51	5	8670	-
	viii	24	41	5	4920	-
Total					215015	26536

The mineable reserves have been computed as **2,15,015m³** of Rough stone at the rate of 100% recovery and **26,536m³** of Gravel for a period of Ten years upto a depth of 37m [2m Gravel + 35m Rough stone].



5.0 MINING

5.1. Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

5.2. Mode of working (mechanized/ manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by shallow jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3. Proposed Bench Height and Width:

The bench height is proposed 5.0meter vertical bench the width of the bench is not less than the Height. After obtaining relaxation as per 106 2(b) and 111(3) of Metalliferous Mines Regulations, 1961 from the DMS, the realignment of benches will be carried out.

5.4. Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate Nos. III & III-A.

Year wise Development and Production

TABLE – 5

YEARWISE DEVELOPMENT AND PRODUCTION FOR FIRST FIVE YEARS							
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m ³) 100%	Gravel (m ³)
XY-AB	I	i	41	107	2	-	-
		ii	34	101	5	17170	-
		iii	16	91	5	7280	-
	Total					24450	8774
	II	i	41	107	2	-	8774
		ii	35	101	5	17675	-
		iii	37	91	5	16835	-
	Total					34510	8774
	III	i	42	107	2	-	8988
		ii	16	101	5	8080	-
		iii	22	91	5	10010	-
		iv	10	81	5	4050	-
	Total					22140	8988
	IV	iv	50	81	5	20250	-
	Total					20250	-
	V	iv	5	81	5	2025	-
		v	55	71	5	19525	-
	Total					21550	-
	Grand Total					122900	26536

The Recoverable reserves have been computed as 1,22,900m³ of Rough stone at 100% recovery and 26,536m³ of Gravel for first three years upto a depth of 37m below from the ground level (Refer Plate No. III). The peak production capacity in the quarry is 34,510m³ of Rough stone on 2nd year and the proposed production schedule is arrived as per applicant's requirement.

TABLE – 5A

YEARWISE DEVELOPMENT AND PRODUCTION FOR SECOND FIVE YEARS						
Section	Year	Bench	Length (m)	Width (m)	Depth (m)	Recoverable Reserve of Rough stone in (m ³) 100%
XY-AB	VI	ii	32	101	5	16160
		iii	8	91	5	3640
		Total				19800
	VII	iii	24	91	5	10920
		iv	19	81	5	7695
		Total				18615
	VIII	iv	13	81	5	5265
		v	32	71	5	11360
		Total				16625
	IX	vi	60	61	5	18300
		Total				18300
	X	vi	17	61	5	5185
		vii	34	51	5	8670
		viii	24	41	5	4920
	Total					18775
	Grand Total					92115

The Recoverable reserves have been computed as **92,115m³** of Rough stone only at 100% recovery to a depth of 37m below from the ground level for remaining five years of the lease period (Refer Plate No. III-A). Total excavation will be proposed **2,15,015m³** of Rough stone and **26,536m³** of Gravel for the period of ten years. The peak production capacity in the quarry is **34,510m³** of Rough stone on 2nd year and the proposed production schedule is arrived as per applicant's requirement and the EIA and EMP will be prepared an annual peak production.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of Director of Mine Safety, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load	=	6m ³ (approx.)
Total No of Working days	=	300 Days per year
Total quantity to be removed during the ten years lease period=		2,15,015m ³
Peak production capacity during the 2 nd year	=	34,510m ³
Hence total Lorry loads per day	=	34,510m ³ /6m ³
	=	5,752 Lorry loads
	=	5,752/300 days
Rough Stone (Maximum)	=	19 Lorry loads per day
Total Gravel to be removed during ten years lease period	=	26,536m ³
Peak production capacity during the 3 rd year	=	8,988m ³
Hence total Lorry loads per day	=	8,988m ³ /6m ³
	=	1,498 Lorry loads
	=	1,498/300 days
Gravel (Maximum)	=	5 Lorry loads per day

Working hours = 9.00 am to 6.00 pm (with 1.00-2.00 P.M. lunch break).

5.5. Machineries to be used:

For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE – 6

I. DRILLING MACHINE:

S. No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack-Hammer	4	32	1.2m to 2.0m	Compressed air
2	Compressor	1	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	1	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos	Capacity	Power
1	Tippers	2	20 Tonnes	Diesel Drive
2	Water Sprinkling Tanker	1	6,000 Litres	Diesel Drive

5.6. Disposal of Overburden/Waste:

There is no Waste anticipated during this plan period hence, disposal of waste does not arise. The overburden in the form of Gravel, the Gravel will be directly loaded into Tippers for the filling and levelling of low-lying areas. The excavated rough stone (100%) will be directly loaded into Tippers to the needy customers.

5.7. Use of the Mineral:

The excavated rough stone (100%) will be directly loaded into Tippers as raw form to the needy nearby crushing unit to making Road metals and construction materials.

5.8. Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations:

Conceptual mining plan is prepared with an object of long-term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

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

As the applicant has applied quarry lease for Ten years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

Table – 7

Length (m) (Max.)	Width (m) (Max.)	Depth (m) (Max.)
124	107	37m below ground level

All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF & CC Norms. Please refer Plate Nos. III, III-A & IV. As per the NGT orders the applicant is directed to plant 500 trees per hectares along the quarry site and in the haul road either at the regular or the phased manner by planting native species.

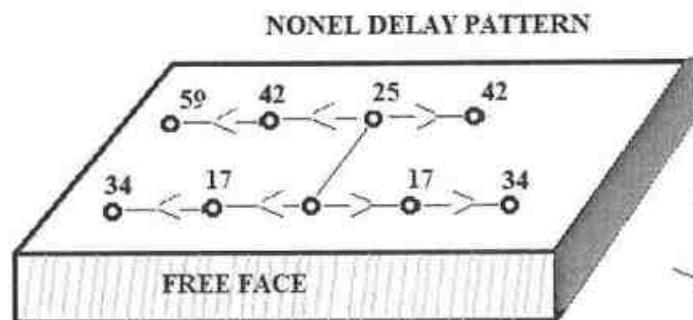
There is no waste anticipated during the entire life of quarry. Hence, backfilling is not proposed in this Rough stone quarry. After completion of quarry operation the quarried out pit will be allowed to collect the seepage and rainwater and the water storage will be kept as temporary reservoir for charging the nearby wells and the water will be utilized for Green belt development purpose. The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate No. IV and V). The Conceptual Mining is based upon the entire ROM proposed for the life of the quarry.

6.0 BLASTING**6.1 Blasting pattern:**

Selection of drilling pattern for blasting varies with the type and size of the drills used, depth of hole, kind of rock, quantity, rapidity of the explosives and amount of stemming. The quarrying operation is proposed to be carried out with conventional method of drilling using shallow Jack hammer drilling and mild blasting with NONEL initiation of shattering effect for loosen the Rough stone. Nonel initiation provides reasonably good solution to fly rock problem. The main objectives of Nonel Blasting are to reduce the ground vibration, noise, fly rocks generated due to blasting operations. The overall cost of blasting in NONEL is very less compared to electrical blasting and hence it optimizes the cost of blasting.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Diameter of hole	:	32mm
Pattern of hole	:	Staggered pattern
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	NONEL
Hole to Hole	:	17 milli second delay (ms)
Row to Row	:	25 milli second delay (ms)

BLASTING PATTERN DRAWING

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day (Peak Production)	=	100 Holes

6.2 Type of explosives to be used:

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or secondary blasting is proposed. NONEL blasting and muffle blasting may be adopted after permission from DGMS.

6.3 Measures proposed to minimize ground vibration due to blasting

The quarry is situated more than 300m away from the nearby villages. Controlled blasting measures of NONEL initiation is being adopted for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect in rough stone for easy excavation and to control fly rock.

NONEL Delay detonators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of NONEL blasting are:

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day (As per Peak production capacity):

The Hydraulic excavators are attached with rock breakers for breaking the rock mass to reduce the blasting and explosive usage also to avoid secondary blasting. Anyhow, as per day's production schedule the maximum blasting program proposed as given below

Peak production (2 nd Year)	= 34,510m ³ x 2.6(Bulk Density) = 89,726 Tons
No of Holes	= 100 Holes
Yield	= 299Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 50 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 1.00 – 1.30 P.M. (whenever required)

Anticipated theoretical calculation of PPV

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

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

PREDICTED PPV VALUES DUE TO BLASTING

Table – 8

Maximum Charge per day (kg)	Number of Round Blast per day	Maximum Charge per Round (kg)	Number of holes blasted per round	Number of holes blasted per day	Maximum Charge blast at a time by NONEL (kg)	Nearest Infrastructure (m)	BPV (mm/s)
50	1	50	100	100	1 (2 Holes)	310	1.180

From the above table, the charge per blast of 50kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. Anyhow, the applicant ensures that carry out the **blasting thrice a day** under the supervision of competent qualified statutory personnel employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be having the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. The Competent Qualified Statutory personnel appointed by the applicant will maintain the records of Explosives as per the Indian Explosives Act.

7.0 MINE DRAINAGE**7.1 Depth of water table (based on nearby wells and water bodies):**

The area is a Plain topography; since the lease applied area consists the most common type of dendritic drainage pattern. The water table in the area is about 65m – 70m which is observed from the existing private boreholes. The lease area is fully covered by Massive Charnockite formation. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt. Anyhow, Garland drain will be constructed all along the boundary to prevent surface run-off water entering into the quarry.

TABLE – 9

Type	Distance & Direction	Location
Bore Well	130m Northeast side	10°53'30.80"N 77°04'54.28"E

7.2 Arrangements and places where the mine water is finally proposed to be discharged:

The quarry operations are confined to well above the water table during the entire lease period. If water is encountered at quarry due to rain water and seepage, the same will be pumped out by 5HP water pump and discharge to the Green belt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

8.0 OTHER PERMANENT STRUCTURES (also shown in the map)**TABLE – 10**

S.No.	Description	Particulars	Actual Distance & Direction															
1	Nearest National Highway	(NH-83) Coimbatore – Trichy	8km – NW															
2	State Highways	(SH-163) Palladam– Chettipalayam	5km – NW															
3	Railway station	Chettipalayam Railway station	6km – NW															
4	Airport	Coimbatore Airport	16km – NW															
5	Nearest Habitation	310m – NW																
6	Nearest Town	Chettipalayam	5km – NW															
7	Nearest Government School	Ponnakkani - Govt. School	2km – East															
8	Government Hospital	Coimbatore	16km – NW															
9	Reserved Forest	Solakarai R.F. – 15m – NW																
10	Defense Installation/Historical Monuments/ Archaeological	Nil within 500m radius.																
11	Nearby Water Bodies	Odai – NW side – 480m																
12	Interstate Boundary	Around 22 km – SW (Kerala State Boundary)																
13	Critically Polluted areas identified by the CPCB	Around 20km – NW (Coimbatore – SIDCO)																
14	Protected areas Notified under wildlife (Protection) Act, 1972.	Around 41km – SW (Indira Gandhi Annamalai wildlife Sanctuary) and 42km – NE (Nanjarayan lake birds Sanctuary)																
15	Applicability of CRZ, Notification 2011 as amended.	Not Applicable																
16	Applicability of Hill Area Conservation Authority (HACA) Clearance.	Not Applicable																
17	Housing area, EB line (HT & LT Line)	There is no EB-HT and LT line or Housing area situated within 50m radius from the lease area.																
18	Boundaries of the permitted area.	The boundaries of the permitted areas are as follows (Refer Plate No. II): North - S.F.No. 334/1C East - S.F.Nos. 334/3A South - S.F.Nos. 334/2B West - S.F.No. 335																
19	Adjacent Patta lands / Govt. Land	<table><tr><th>Direction</th><th>Classification</th><th>Safety Distance</th></tr><tr><td>North</td><td>Patta land</td><td>7.5m</td></tr><tr><td>East</td><td>Patta land</td><td>7.5m</td></tr><tr><td>South</td><td>Patta land</td><td>7.5m</td></tr><tr><td>West</td><td>Patta land</td><td>7.5m</td></tr></table>		Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Patta land	7.5m	South	Patta land	7.5m	West	Patta land	7.5m
Direction	Classification	Safety Distance																
North	Patta land	7.5m																
East	Patta land	7.5m																
South	Patta land	7.5m																
West	Patta land	7.5m																

STRUCTURE WITHIN 0 - 100m

Number of Structures - 1 Nos.

TABLE - 11

Number of Structure	Type of Structure	Usage Purpose	Commercial / industrial / residential / farm house / Govt. building	Occupants of Building / Structure	Remarks
1	Crusher plant (1 No.)	Stone crushing	Industry	Nil	No resident
STRUCTURE WITHIN 100 - 200m					
Number of Structures - 1 Nos.					
1	Labour shed (1 No.)	Labour rest shed	Non residential	Nil	No resident
STRUCTURE WITHIN 200 - 300m					
Number of Structures - 5 Nos.					
1	Labour shed (3 No.)	Labour rest shed	Non residential	Nil	No resident
2	Crusher plant (1 No.)	Stone crushing	Industry	Nil	No resident
3	House (1Nos)	Form house	Form house	Nil	No resident

9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

9.1 Employment potential (skilled, semi-skilled, un skilled):

TABLE - 12

Designation	Present Employment position	Employees Requirement	Total
a) Supervisory category			
Geologist	-	1	1
b) Skilled labour			
Mine Foreman	-	1	1
Blaster/Mate	-	1	1
Excavator - Operator	-	1	1
Tipper Driver	-	2	2
Water sprinkler Driver	-	1	1
Jack-Hammer Drillers	-	8	8
c) Unskilled			
Security	-	1	1
Labour & Helper	-	4	4
Co-operator and Cleaner	-	4	4
Total	-	24	24

The proposed output per man shift:

TABLE - 13

Peak Production at 2 nd year	34,510m ³
No. of days likely to be worked	300 days
Average ROM production per day	115m ³
O/S = Average Production per day / Average employment per day	115m ³ / 24 = 4.8m ³

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

9.2 Welfare Measures:**a) Drinking Water:**

Packaged drinking water is available from the nearby water vendors. Chudupalayam which is located about 5km on the Northwest side of the lease applied area.

b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed in the safety area as semi permanent structure and it will be maintained periodically.

c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/mate will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Coimbatore located at a distance of 16km on the Northwestern side.

d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e) Precautionary safety measures to the labourers:

- Helmets,
- Reflector Jackets,
- Dust mask,
- Mine Goggles,
- Ear plugs,
- Ear muffs,
- Safety Shoes,

All personnel protective equipment as per the DGMS standard will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

PART – B**10.0 ENVIRONMENT MANAGEMENT PLAN**

The EMP is prepared based on the Mines act, Rules & amendment from by state & central government. If the SEIAA/SEAC instructed the modification and alter the EMP the outcome of their recon would be final and the applicant is instructed to followed the EIA / EMP for its compliance as per the CPCB / TNPCC Norms.

Environment	Anticipated impact	Mitigation measure
Land Environment	i. Topography of the area will change due to mining activity. ii. Soil quality and agriculture land on surrounding land environment will impact due to; a) Dust propagation during quarry operation like drilling, blasting, loading, unloading and movement of men, Vehicle and machineries. b) Vehicular and machineries emissions and spillage of oil and grease. c) Propagation of foreign material like	i. Backfilling is the only source for mitigation measure for topographical changes, but no waste will be anticipated during entire life of the Rough stone quarrying operation hence, backfilling is not proposed. ii. The Mining benches will not exceed beyond the approved height and width. iii. At the end of life of mine, the pit will be allowed to collect the seepage and rain water and the water storage will be kept as temporary reservoir for charging the nearby wells also the water utilized for greenbelt development purpose iii. Regular water sprinkling on dust prone area like haul road and other active area to arrest the dust generation. iv. Green belt will be developed in the safety zone with thick long leave plants to arrest the fugitive dust and vehicular emissions. v. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. vi. Excavated benches shall be developed by planting with grasses, herbs and shrubs of local species to prevent soil erosion and landslides. vii. PUC (Pollution under control) certified vehicles will be used for



	polythene bag, jute bag, Plastic water and cool drink containers and undecomposed waste materials dumping.	viii. Oiling and greasing will be managed in respective places at vehicle maintenance shed and oil tray will be use to collect the spillage during maintenance and the same will be disposed in manner. ix. Leftover foreign material like polythene bag, jute bag, undecomposed materials or ill managed dumping will not be allowed.
Water Environment	Surface Mining can have direct impact on physico-chemical characteristics of the local drainage and groundwater resources. The detrimental effects, if any, to water resources resulting from surface mining are caused by following: i. Flow direction of Surface run off water will interrupting during rainy season due to modification of topography. ii. Surface water will be contaminated due to dust propagation and vehicle emission..	i. Garland drain with check dam will be constructed all along the boundary barrier to prevent surface run off rain water entering into the pit. ii. The pit water due to rain and seepage will be utilized for water sprinkling on haul Roads and plantations. iii. Greenbelt will be developed in the safety zone with thick long leaves plants and water sprinkling on dust prone area to arrest the fugitive dust and vehicular emissions. iv. Further mining will be completely stopped during the monsoon for free flow of surface run off and allowing natural recharge of groundwater. v. No wastewater will be generated from the quarry activity. Proper drainage will be Maintained to eliminate inundation of working pit during rain from run-off water. vi. Septic tanks and soak pits will be provided for the disposal of domestic effluents, the same will be disposed in manner.
Air Environment	In surface mining operations, the source of air pollution may cause deterioration of air	i. Regular water sprinkling on haul road and dust prone area to arrest the dust generation.



	quality due to: a) The fugitive dust emissions from drilling/blasting, scooping, loading-unloading operation of extracted mineral and its transportation. Drilling/blasting and loading of quarry material would be associated with the fugitive dust emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to the road side. Another source of air pollution would be emission from the drilling machinery and excavators/tippers vehicles to be used for loading	ii. Green belt will be developed in the safety zone with thick long leaves plants to arrest the fugitive dust and vehicular emissions. iii. Wet drilling with dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Quarry material will be handled under wet condition during scooping, loading and unloading to minimize the dust propagation, besides loaded materials are covered by Tarpaulin until to reaches its destination. v. Provision of dust filters/ Nose mask to workers working at dust prone areas. vi. Vehicular emission as a result of combustion of diesel generates particulate matter (PM10 & PM2.5), Nitrogen oxides and Sulphur dioxide (NO2 & SO2). High quality diesel will be used in the motor vehicles to control these pollutants. vii. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested the pollutant concentrations. viii. CPCB Prescribed emission standards for the vehicles would be followed.
Noise and Vibration	i. In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement. Noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board as adopted and	i. Selection of new low – noise equipments for the quarry operation. ii. The noise levels shall be maintained within the permissible levels by investing all the noise regulating measures in vehicles and drilling/blasting operations. iii. To ensure minimum vibrations and noise due to blasting, detonators in continuous sequence is proposed. iv. Personnel Protective Equipment (PPE) like earmuffs and earplugs shall be



	enforced by the Govt. of India through Noise Pollution (Regulation and Control) Rules, 2000.	provided to the employees whose in critical operation like drilling, blasting and excavation as occupational safety measures. v. Proper maintenance done with regular interval by the Oiling and greasing for the machineries and vehicles to control the Source of noise during operation and transportation. vi. Regular and proper maintenance of machinery and transportation vehicles shall be ensured. vii. Transporting vehicles are enforcing the speed limits of 20km/hour within quarry area and not exceed 40km per hour from quarry to destination to reduce Noise and vibration level. viii. There would be restrictions on mining activity and vehicular movement during night hours.
Biological Environment	The area having main floras are Neem, Pongamia pinnata, Palm, Arali, Cocos nucifera, Cactus, Bushes and shrubs. No plants of botanical interest or animals of zoological interest recorded within 500m radius. The anticipated impacts on biological environment as follows: - Cattles may die/injured by entering the pit. - Diversity of living insects and soil organism due to vibration. - Natural habitats of the existing faunas and its breeding will change due to the noise	- Barbed wire fencing and safety bund will be constructed around the quarry to prevent inadvertent entry of public and cattle. - The natural habitats of the existing flora and fauna will not be disturbed. - No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many species - Fruit bearing trees will be planted to survive the existing faunas. - No clearance of vegetation will be done during the entire mining operations. - Regular Water sprinkling on haul roads would be reduces the dust propagation, thus avoiding damage to the crops and plants. - No night hour mining will be carried out which may catch the attention of fauna



	and vibration during operation. iv. The mining activities can also disrupt the ecological diversity. v. Deposition of dust on the plant and crop leaves is affecting the photosynthesis, Pollination, growth ratio and reduction of yield in agriculture.	
Socio Economic Environment	- Any activity during mining will have adverse impact on Environment, careful mitigation measures are proposed to balance the impact on the existing environment and the applicant is always instruct to carry out safe, sustainable, eco-friendly mining operations at all times. The following positive impact on the society due to this mining activity. i. It is proposed to provide employment to about 24 persons for carrying out mining operations and give preference to the local people in providing employment. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project. ii. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities. iii. Improvement of Physical structure like Road Transport facilities, Communications, Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine. iv. The continuation of opportunity for the employments, the nearby villages, living peoples and their life style would be improved. v. The applicant is advised to invest the CER cost (@ 2% from the total Project Cost) to develop the local Panchayat.	Does not arise.



10.1 Environmental impact assessment statement describing impact of mining on the next Ten years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B Category mine. The compliance monitoring will be carried out for every six months as prescribed by the MOEF&CC and with state concerned authorities.

10.2 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%). The maintenance of machineries & fuelling will be carried out as per the TNPCB Norms and the waste will be disposed in the Norms.

10.3 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 37m has been envisaged as workable depth for safe & economic quarrying operation during entire life of quarry. There is no waste generated hence, backfilling is not possible. After completion of quarry operation the quarried out pit will be allowed to collect the seepage and rainwater and the water storage will be kept as temporary reservoir for charging the nearby wells and the water will be utilized for Green belt development purpose. The quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle.

10.4 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. Around 3200m² area will be utilized for green belt development by planting 1000 numbers along the safety zone during entire lease period also around 300 tree saplings in the approach road at first year of the plan period and 1000 tree saplings from third year onwards in quarried out top benches with 2m height tree saplings with an anticipated survival rate of 80% with maintain atleast 1840 plants during the entire life of the quarry.

As per the SEIAA Recommendation the plantation will be carried out based on the output Environmental Clearance and the recommended species will be carried out for green belt development. Appropriate species of trees will be planted in a phased manner as described below.

TABLE – 14

Year	No. of tress proposed to be planted	Area to be covered (m ²)	Name of the species	Survival	No. of tress expected to be grown
I	140	447	Neem, Pongamia Pinnata, Cordia dichotoma, Mango, Thespesia populnea, Mantharai, etc.,	80%	112
II	140	446		80%	112
III	140	446		80%	112
IV	140	446		80%	112
V	140	446		80%	112
VI	60	194		80%	48
VII	60	194		80%	48
VIII	60	194		80%	48
IX	60	194		80%	48
X	60	193		80%	48

10.5 Proposed financial estimate / budget for the Project:

A. Operational Cost / Project Cost / Investment:					Approximate Cost (Rs.)
i) Land cost	The Land value as per the Government Guideline land cost is about,				22,09,000
	SF. Nos	Extent	Cost / Ha	Total Cost	
	334/1D	0.28.0	1347000	377160	
	334/2A	1.36.0		1831920	
		1.64.0		2209080	
	Round of Rs. 22,09,000/- (Source: https://tnreginet.gov.in/portal/)				
ii) Machinery cost	The machineries are proposed on rental basis to meet out the productions. The rental cost would be around (Including Fuel, oil, grease, spares, etc.,)				40,00,000
iii) Refilling/ Fencing	Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattle cost would be around (Total Peripheral length 530m x Rs. 300/meter)				1,59,000
iv) Labourers shed	Labour shed will be constructed as semi-permanent structure. The cost is around				5,00,000
v) Sanitary facility	Adequate latrine and urinal accommodation has provided at conveniently accessible places the cost would be around				1,00,000
vi) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around.				1,00,000
vii) Sanitary	The latrine and urinal will keep clean and sanitary				80,000

arrangement	condition. The maintenance cost would be around.	
viii) Safety kit	All the Safety kit such as Helmet, Ear muffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around.	
Total Cost		72,28,000
B. EMP Cost:		Cost (Rs.)
1. Environmental Monitoring Program (Air Quality, Water Quality Sampling, Noise and Ground vibration test) Rs. 76,000/ year.		7,60,000
2. Water will be sprinkled in the haul roads by rental water sprinkler for dust suppression. The cost would be around.		1,00,000
3. Construction of Garland drain with check dam to prevent surface run-off rain water entering to the quarry pit, the construction cost is around (Total Peripheral length 480m x Rs. 300/meter).		1,44,000
4. First aid room & accessories		50,000
5. Greenbelt development for dust suppression & Noise control measures	Greenbelt development and maintenance will be carried out in the boundary barriers the cost would be around (1000 saplings x Rs. 200/sapling).	2,00,000
	Greenbelt development and maintenance will be carried out in the quarried out top benches (1000 saplings x Rs. 200/sapling).	2,00,000
	Greenbelt development and maintenance will be carried out in the Panchayat Road (300 saplings x Rs. 200/sapling).	60,000
Total EMP Cost		Rs. 15,14,000/-
Description		Cost (Rs.)
A. Operational Cost		Rs. 72,28,000/-
B. EMP Cost		Rs. 15,14,000/-
Total Project Cost (A+ B)		Rs. 87,42,000/-
C. The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Plantation, Books to Library, sanitary facility, Smart class Board, class room painting and as per requirement to the Ponnakkani Government School at 2.0% from the total project cost. The Cost would be around Rs. 1,75,000/- . If the concerned authority is directed to modify the CER cost and mode of utilization of the cost, the same will be implement by the applicant.		Rs. 1,75,000/-
Total Cost (A+B+C)		Rs. 89,17,000/-
The total cost would be around eighty nine lakh and seventeen thousand only.		

**11.0 PROGRESSIVE QUARRY CLOSURE PLAN****11.1 Introduction:**

The entire area is proposed for a short period of 10 years only hence, the progressive quarry closure plan may not be applicable to this quarry. Anyhow, during temporary discontinuance of quarry the following measures will be taken.

- Barbed wire fencing will be constructed around the quarry.
- Benches will be smoothening.
- Quarry will be closed & sentries will be posted round the clock.
- Green belt development will be maintained.
- Machineries will be removed from pit and engaged in another site.

11.2 Present and Post Land use pattern:LAND USE TABLE – 16

Description	Present area (Ha)	Area required during the first five year (Ha)	Area at the end of lease period (Ha)
Area Under Quarry	Nil	1.28.00	1.28.00
Site Services	0.02.00	Nil	0.02.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.22.31	0.32.00
Unutilized Area	1.62.00	0.11.69	Nil
Grand Total	1.64.00	1.64.00	1.64.00

11.3 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations as per the DGMS, Department of Geology and Mines, Labour Enforcement officer, controller of Explosives etc., circulars, Norms, Rules, Regulations and Act.

11.4 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name, address and register number of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : **B. VENGADAGIRI, M.Sc.,**
 Qualified Person (As Per Rule 15(I)(a) and (I)(b) of MCR, 2016)

Address : No.105, 5th Cross
 Alagapuram
 Salem District

State with PIN Code : Tamil Nadu – 636 010.

Mobile : +91 86953 32233

Email : vengatb6@gmail.com

The applicant will himself implement the closure plan; no outside agency will be involved.

(i) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0 m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.
- Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities.

(ii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

**Environmental Monitoring Cell:**

A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

Disaster Management Cell:

The Competent Qualified Statutory managers appointed by the applicant as per the Director of Mines Safety will be responsible for Disaster Management. It care any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.

(iii) Disposal of mining machinery

All the Machineries will be purchased fresh; the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all machineries will be utilized at another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.

(iv) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Quarry roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Quarry office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(v) **Economic Repercussion of Closure of Quarry and manpower Retrenchments:**

The quarry lease is granted for a period of ten years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(vi) **Abandonment Cost:**

As at present mining is not going to be closed so abandonment cost could not be assessed. However, based on the progressive quarry closure activities during the plan period, cost is assessed as given below at present scenario:

TABLE – 17

ACTIVITY		YEAR										RATE	COST (Rs.)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	No. of sapling	140	140	140	140	140	60	60	60	60	60	Rs.200 Per sapling	2,00,000
	Cost	28000	28000	28000	28000	28000	12000	12000	12000	12000	12000		
Plantation in quarried out top benches and approach road	No. of sapling	Approach Road		Quarried out top Benches								Rs.200 Per sapling Rs.200 Per sapling	2,60,000
		300	-	200	200	100	100	100	100	100	100		
	Cost	60000	-	40000	40000	20000	20000	20000	20000	20000	20000		
Wire Fencing for 530 Mtrs length		159000	-	-	-	-	-	-	-	-	-	Rs. 300 Per Meter	1,59,000
Garland Drain with settling tanks for 480 Mtrs length		144000	-	-	-	-	-	-	-	-	-	Rs. 300 Per Meter	1,44,000
Total													7,63,000

12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

This Mining Plan and mine design is prepared based on the requirement instructed by the applicant to me. If there is any change in the production schedule, change of technology, change in product mix during the course of operations, the applicant is advice to prepare a modified mining plan and get approval by the concerned authority for subsequent clearance and approval. The same will be monitored by the inspecting authority of Department of Geology and mining and other Concerned Departments under Rule 25 and sub rule (5)(d) in Rule 36 of Tamil Nadu Minor Mineral Concession Rules, 1959.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the applicant and is presented as the form as submitted by the applicant. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations after the grant of lease. The document may be scrutinized by the competent authority before approval.

Prepared by


B. Vengadagiri, M.Sc.,
Qualified Person

Place: Salem

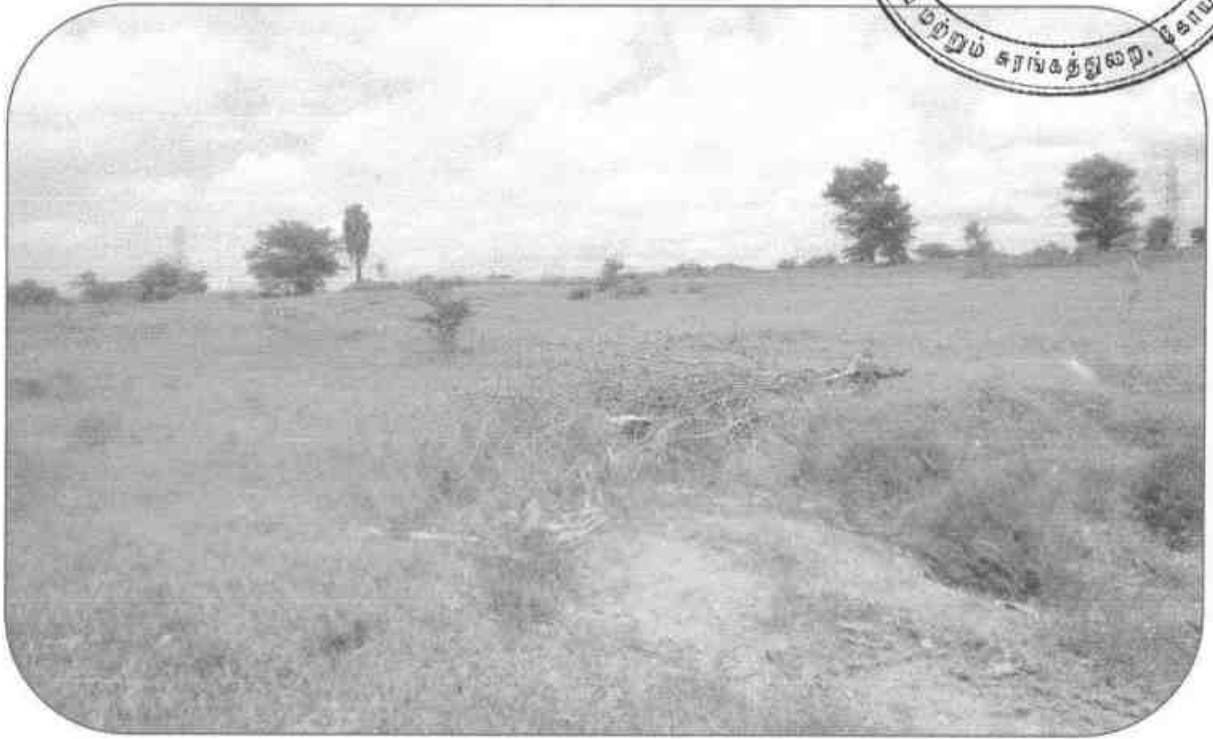
Date: 15.10.2024

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 554/Mines/2023 dt 12.11.24
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the
incorporation of the particulars specified
in the letter of the commissioner of Geology
and Mining, Chennai ref No: 3863/LC/2012
Dated 19.11.2012 and subjected to further
fulfillment of the condition laid down under
Tamilnadu Minor Mineral Concession Rules 1959


ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

TOPOGRAPHICAL VIEW OF PACHAPALAYAM ROUGH STONE AND
GRAVEL QUARRY LEASE APPLIED AREA.



உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலக வளாகம்,
கோயம்புத்தூர் - 18.

12 NOV 2024

ந.க.எண்.554/கனிமம்/2023

நாள்: 09.10.2024

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - துலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்கள். 334/1D-ல் 0.28.0 ஹெக்டேர் மற்றும் 334/2A-ல் 1.36.0 ஹெக்டேர் ஆக மொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க திரு.S.சக்திவேல் என்பவர் விண்ணப்பம் செய்தது - வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் - தொடர்பாக.

- பார்வை: 1. திரு.S.சக்திவேல், த/பெ.சுப்பிரமணியம், 20, பஞ்சாயத்து ஆபீஸ் வீதி, துலூர் என்பவரின் விண்ணப்பம் நாள்: 11.05.2023.
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 19.05.2023 மற்றும் 12.12.2023.
3. வட்டாட்சியர், துலூர் அவர்களின் கடிதம் ந.க.எண்.2629/2023/அ7 நாள்: 16.03.2024
4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் தெற்கு அவர்களின் கடிதம் மூ.மு.எண்.5021/2023/அ2 நாள்: 24.06.2024.
5. வட்டார வளர்ச்சி அலுவலர் (கி.ஊ), சுல்தான்பேட்டை ஊராட்சி ஒன்றியம் அவர்களின் கடிதம் ந.க.எண். 2202/2023/அ5 நாள்: 06.02.2024.
6. கோயம்புத்தூர் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் அவர்களின் தணிக்கை குறிப்பு நாள்: 28.08.2024

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், 20, பஞ்சாயத்து ஆபீஸ் வீதி, துலூர் என்ற முகவரியில் வசிக்கும் திரு.சுப்பிரமணியம் என்பவரின் மகன் திரு.S.சக்திவேல் என்பவர் கோயம்புத்தூர் மாவட்டம், துலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள். 334/1D-ல் 0.28.0 ஹெக்டேர் மற்றும் 334/2A-ல் 1.36.0 ஹெக்டேர் ஆக மொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3, 4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் துலூர் வட்டாட்சியர், கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர், சுல்தான்பேட்டை வட்டார வளர்ச்சி அலுவலர் (கி.ஊ) மற்றும் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், துலூர் வட்டம்,



பச்சாபாளையம் கிராமம், புல எண்கள். 334/1D-ல் 0.28.0 ஹெக்டேர் மற்றும் 334/2A-ல் 1.36.0 ஹெக்டேர் ஆக மொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பரப்பளவுள்ள பட்டா பூமியில் திரு.S.சக்திவேல் என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

எனவே, கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்கள். 334/1D-ல் 0.28.0 ஹெக்டேர் மற்றும் 334/2A-ல் 1.36.0 ஹெக்டேர் ஆக மொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ம் வருடாந்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19 & 20(2)(a)-ன் கீழ் 10 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிம அனுமதி வழங்க உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

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

நிபந்தனைகள்

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

பெறுநர்:

திரு.S.சக்திவேல்,
த/பெ.திரு.சுப்பிரமணியம்,
20, பஞ்சாயத்து ஆபீஸ் வீதி,
சூலூர் வட்டம்,
கோயம்புத்தூர் மாவட்டம்.


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.


9/10/24

ANNEXURE II



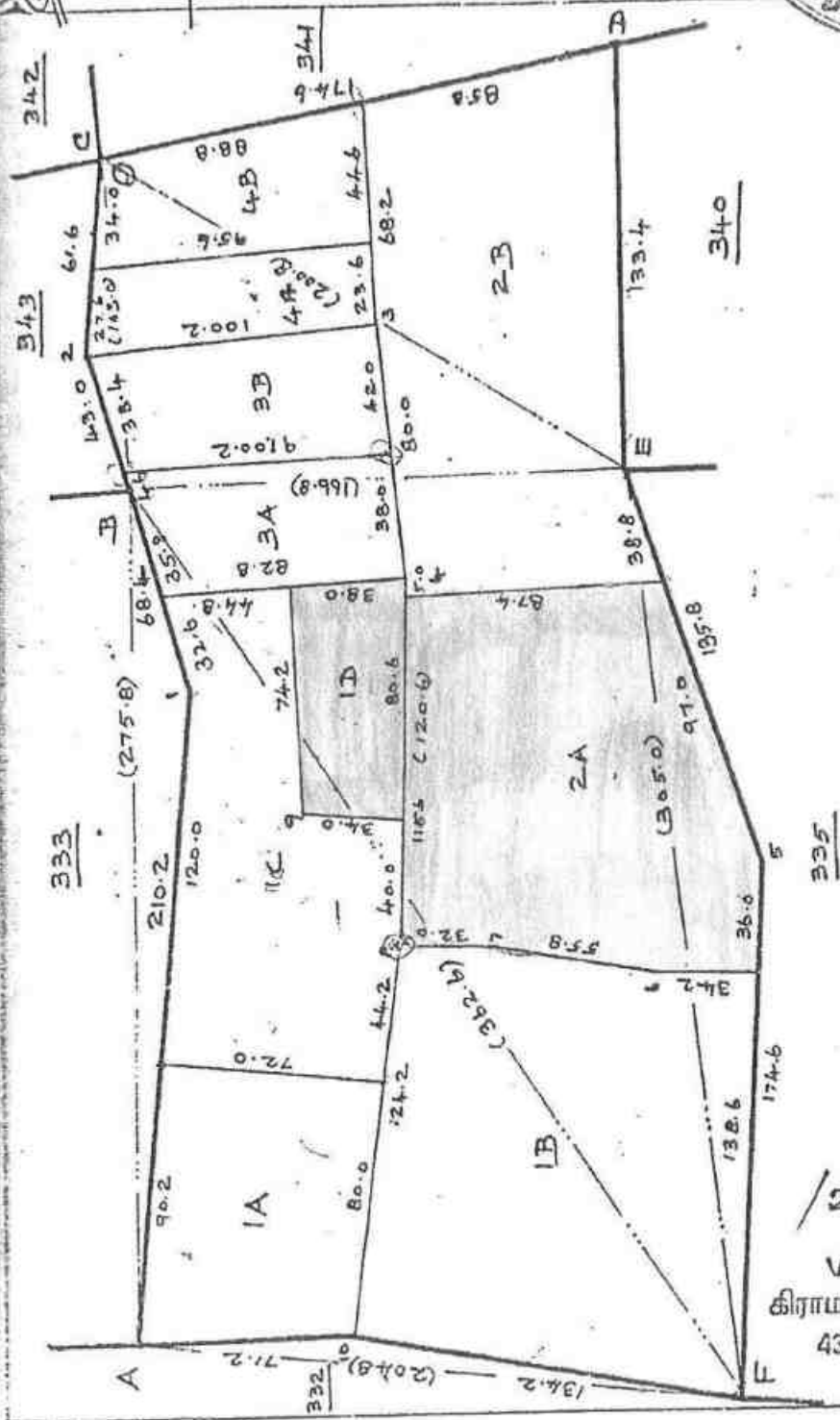
பெட்டி. சிவசுப்பிரமணியன்

கிராமம்

பெட்டி. பல்லடம்

பட்டி: தெற்கே

புல எண். 334



/2 ஸ்டாம்பு/

V. Jayaram

கிராம நிர்வாக அலுவலர்

43, பச்சையப்பன்

சுற்றுலா

சிறுபான்மை இனம்.

அளவு. 1:2000

இதரத் தரம்

பெ. 12/11/2024

பெ. 12/11/2024

21/11/84

Lease Applied Area-

26

பச்சாபாயம் கிராமம்



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க. எண்:- 44,
பாண்டிச்சேரி

/2 ஸ்ரீமதி கல்/
V. Jayaram
8.4.2023
கிராம நிர்வாக அலுவலர்
43, பச்சாபாயம்,
சுலாபர் வட்டம்.

பாண்டிச்சேரி
வட்டம்.

Lease Applied Area-



தமிழ்நாடு அரசு
வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : குதுர

வருவாய் கிராமம் : பச்சாபாளையம்

பட்டா எண் : 1374

உரிமையாளர்கள் பெயர்

1. சுப்பிரமணியம்

மகன்

சக்திவேல்



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
334	1D	0 - 28.00	0.78	--	--	--	--	2017/0103/12/054703- -- ----- 01-04-2017
334	2A	1 - 36.00	0.94	--	--	--	--	2017/0103/12/057182- -- ----- 04-05-2017
334	2B	1 - 31.50	3.64	--	--	--	--	2017/0103/12/057182- -- ----- 04-05-2017
334	3B	0 - 38.50	1.05	--	--	--	--	2017/0103/12/057182- -- ----- 04-05-2017
334	4A	0 - 24.50	0.68	--	--	--	--	2017/0103/12/057182- -- ----- 04-05-2017
334	4B	0 - 34.00	2.64	--	--	--	--	2017/0103/12/057182- -- ----- 04-05-2017
		3 - 92.50	9.73					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/10/025/01374/30545 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 22-10-2024 அன்று 07:08:09 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



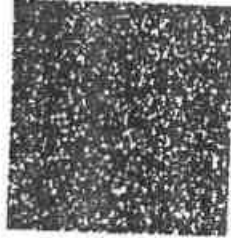
இந்திய அரசாங்கம் Unique Identification Authority of India

பதிவேட்டு எண் / Enrolment No.: 0654/11215/52771

To
சக்திவேல் சுப்ரமணியம்
Sakthivel Subramaniyam
S/O: Subramaniyam
20
PANCHAYAT OFFICE STREET
SULUR TALUKA
SULUR
Sulur (TP)
Sulur
Coimbatore Tamil Nadu - 641402
9842213206

Coimbatore District: 0654/2019
Coimbatore District: 2019/2019

Signature valid



உங்கள் ஆதார் எண் / Your Aadhaar No. :

6498 3417 2626

VID : 9155 5619 2294 6747

எனது ஆதார், எனது அடையாளம்



இந்திய அரசாங்கம்

Government of India



சக்திவேல் சுப்ரமணியம்
Sakthivel Subramaniyam
பிறந்த நாள்/DOB: 03/06/1969
ஆண் / MALE

6498 3417 2626

VID : 9155 5619 2294 6747

எனது ஆதார், எனது அடையாளம்



Government of India



தகவல்

- ஆதார் அடையாளத்திற்கான சான்று, குடியுரிமைக்கு அல்ல.
- அடையாள சான்றை ஆன்லைன் ஆதர்ப்புகேஷன் மூலமாகப் பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.

- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.

- Aadhaar is valid throughout the country.

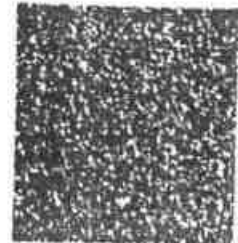
- Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய அரசாங்கம்
Unique Identification Authority of India

முகவரி:
S/O: சுப்ரமணியம், 11/20, பஞ்சாயத்து
ஆபீஸ்ஸ்த்ரீட், சூலூர், சூலூர் தாலுக்கா, சூலூர்
(ஃபி), கோயம்புத்தூர்,
தமிழ் நாடு - 641402

Address:
S/O: Subramaniyam, 20, PANCHAYAT
OFFICE STREET, SULUR, SULUR TALUKA,
Sulur (TP), Coimbatore,
Tamil Nadu - 641402



6498 3417 2626

VID : 9155 5619 2294 6747

QR Code with Photograph

आयकर विभाग
INCOME TAX DEPARTMENT



**S SAKTHIVEL
SUBRAMANIAM**

03/06/1969

Permanent Account Number

AZZPS0887P


Signature

593
7
OTH5755



Sakthiagathiyar@gmail.com

அண்ணாமலைப்



பல்கலைக்கழகம்

ANNAMALAI

UNIVERSITY



அறிவியற்புலம்
FACULTY OF SCIENCE

மே, 2011 இல்

பயன்பாட்டு நிலத்தியல்

பிரிவினம்

நடத்திய தேர்வுகளில்

வெங்கடகிரி பா✓

சு. 6 துஸ்

மதிப்புப்புள்ளிகள் 10.00 க்கு சராசரியாக 6.03 பெற்று

இரண்டாம் வகுப்பில்

தேர்ச்சியடைந்து

முறையாக

அமைச்சுப்பெற்று

தேர்வுக்குழுவினர்

சான்றளித்துபடி.

அறிவியல் நிறைஞர்

$\mathcal{L}H^1(\mathcal{L}H^1)$

பெறுவதற்கு

உரியவர்

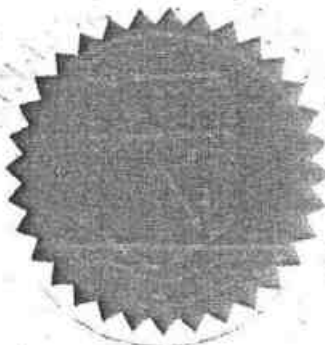
ஆகின்றார்.

என அண்ணாமலைப் பல்கலைக்கழக ஆளவை இதன்வழி அறிவிக்கின்றது.

The Senate of the **ANNAMALAI UNIVERSITY** hereby makes known that **VENGATAGIRI B** has been admitted to the Degree of **MASTER OF SCIENCE in APPLIED GEOLOGY**, he/she having secured **OGPA of 6.03** out of **10.00** been certified by duly appointed Examiners at the Examination held in **MAY, 2011** to be qualified to receive the same, and that he/she was placed in **SECOND CLASS.**

பல்கலைக்கழக முத்திரை பெறுகின்றது

Given under the seal of the University



அண்ணாமலைநகர்
Annamalainagar

தூள்:

Dated: 09/11/2011

துணை தேர்வாளையர் (கல்வியாளர்) 81A
Dy. Controller of Examinations (Academic)

Ch. Nitralp

Dr. M. Rathinasabapathi
L.D.S. (ENT)
Registrar

MA

Dr.M.Ramanathan
துணை வேந்தர்
Vice-Chancellor

ANNEXURE 12

GOVERNMENT OF INDIA
MINISTRY OF LABOUR AND EMPLOYMENT
DIRECTORATE GENERAL OF MINES SAFETY



Certificate of Practical Experience granted by the Manager to a Candidate for a Manager's/ Surveyor's/ Mining foreman/ Mining Mate/ Blasters certificate of competency examination under Metalliferous Mines Regulation, 1961.

I, M.S.Pavel being the Manager of K.Pitchampatti Multicolour Granite Mine belong to M/s. Anupkumar Lohia do hereby certify that **Thiru. B.Vengadagiri** son of **Thiru. Balasubramanian** (whose signature is appended) worked in the above mine from 10.07.2012 to 15.08.2018 and is still working. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved continuous attendance at the mine and have been efficiently performed by him.

I believe him to be of good character and a fit and proper candidate to be examined for certificate of competency.

M.S. Pavel

(Signature with date and official seal)

(Mines Manager's class)
MANAGER (MINES)
MULTICOLOUR GRANITE MINE
K. PITCHAMPATTI,
KARUR - TALUK & DIST.

(Signature of Candidate)

State the name of the mineral works: Multi Colour Granite

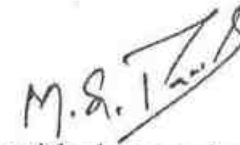


S. No.	Particulars of Practical experience (a)	Place of Experience (b) Opencast	Period of Practical experience (c)		Total Experience (e)		
			From	To	Yrs.	Months	Days
1.	As a trainee in drilling operation	Open cast	10.07.2012	24.10.2013	01	03	16
2.	As a trainee in deep hole blasting operation	Open cast	25.10.2013	31.12.2014	01	02	07
3	Production incharge quality control and Supervisor of Earth moving Mining Machinery	Open cast	01.01.2015	15.08.2018	3	7	14
GRAND TOTAL					06	1	5
In words : Six years one month ten days					Six	One	five

In below ground working	In open cast working	In all
Nil	Average monthly output 250m ³	250m ³
Nil	Average daily employment 25Nos	25Nos

Note: The average employment is less because this is mechanized mines having deep hole drilling, blasting and Heavy Earth Moving Machineries operation.


(Signature of Candidate)


(Signature with date and official seal)

(Mines Manager 1st class)
MANAGER (MINES)
MULTICOLOUR GRANITE MINE
K. PITCHAMPATTI,
KARUR - TALUK & DIST.

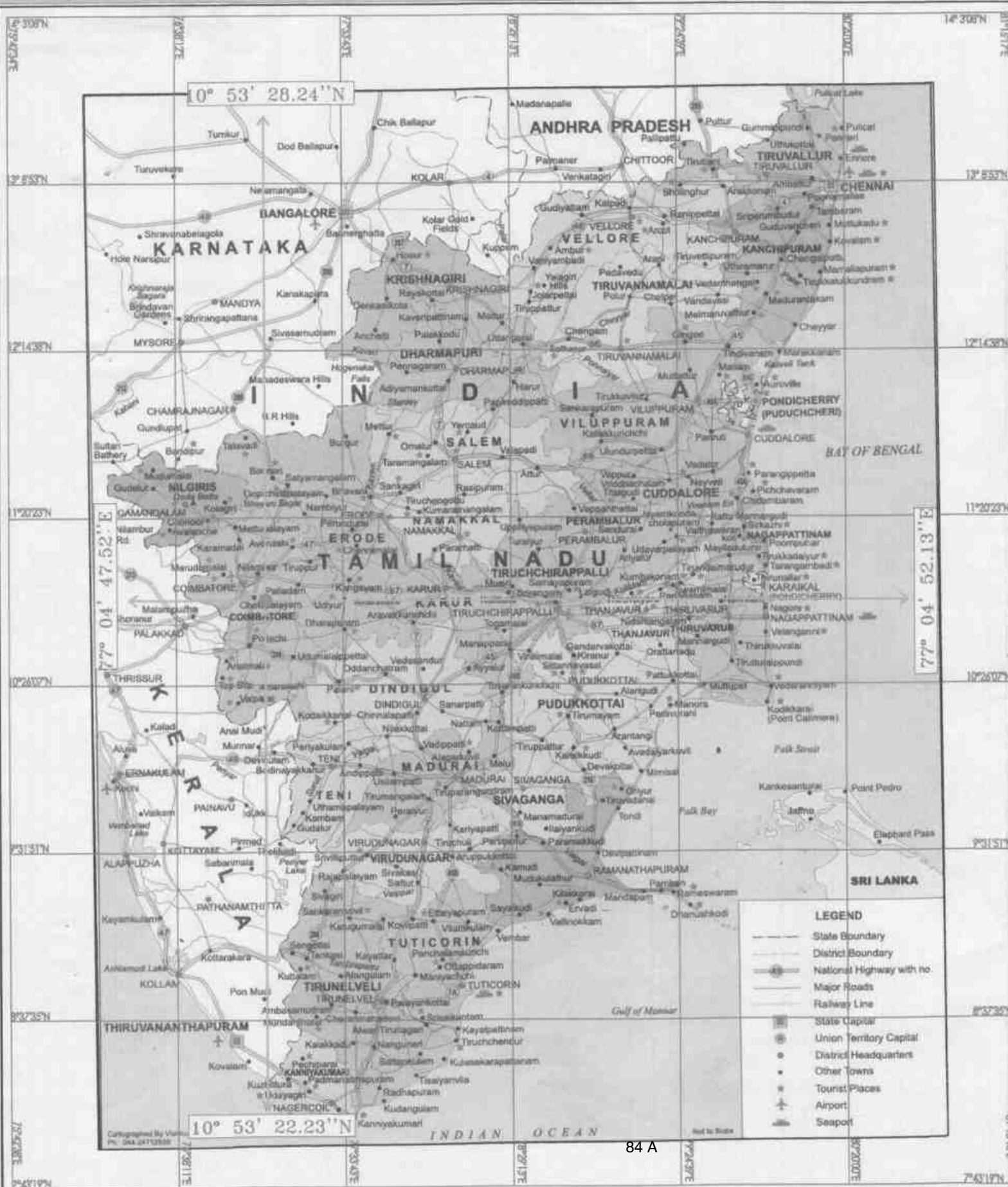


PLATE NO - I

DATE OF SURVEY : 14.10.2024

APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 402..

LOCATION OF QUARRY:

S.F.NO : 334/1D & 334/2A
EXTENT : 1.64.0 HA,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

INDEX

Q. L. AREA:

TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 53' 22.23'' N TO 10° 53' 28.24'' N

LONGITUDE : 77° 04' 47.52'' E TO 77° 04' 52.13'' E

LOCATION PLAN

SCALE 1 : 24,00,000

PREPARED BY :

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

(Signature)
B. V. S. SAKTHIVEL M.Sc.,
QUALIFIED PERSON

As Per Rule 15(i) and (b) of MCR, 2016



PLATE NO - I-A

DATE OF SURVEY : 14.10.2024

APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 402..



LOCATION OF QUARRY:

S.F.NO : 334/1D & 334/2A
EXTENT : 1.64.0 HA,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

INDEX

Express Highway with toll with bridge with double carriageway			
Roads, indicated according to importance			
Roads, inside cartage area, according to importance			
Unimproved road, Cart track, Path track with poor drainage			
Stream, with rain in tank, unimproved, Canal			
Canal, marked in field, Red, unimproved, Well			
River, dry with water channel, with dam & rock, Tidal river			
Submerged water, Small, Swamp, Road			
Water, forest, unfilled, Tidal, well, Spring, Tank, pond, etc.			
Embankment, road or rail, bank, Shaded ground			
Railways, level gauge, double single with station, water station			
Railways, other gauge, double single with station, water station			
Mineral for or for sale, Mts. Owing with tank			
Contours with spot heights, Rocky slopes, Cliff			
Bank, Terrace (Top of bank) (Depression) (Bottom) (Slope)			
Tree or Village, marked, Shaded, Tree			
Hydro, permanent, temporary, Tank, Artesian			
Temple, Church, Mosque, Jain, Temple, Grove			
Lighthouse, Light, Buoy, Light, unimproved, Anchorage			
Ship, Vessel, in tank, Green, Boat			
Palace, temple, other, Fort, Canal, Barrage, Other, tank			
Area, indicated, marked, Shaded, tree			
Boundary, indicated			
Area, indicated, unimproved			
Area, indicated, unimproved, Shaded, tree			
Boundary, indicated, unimproved			
Height, indicated, station, point, unimproved			
Height, indicated, station, point, unimproved			
Post office, Telegraph office, Clubhouse, etc.			
Rail, Road, or Transport, long, short, Road, Post, Police station			
Camping ground, Forest, reserved, protected			
Forest, reserved, unimproved, locally, or, tank			
Hospital, Dispensary, Veterinary, Hospital, Dispensary			
Airplane, Helicopter, Tank, etc.			
Power, line, with pylons, unimproved, with poles, unimproved			

TOPO SKETCH OF QUARRY LEASE
AREA FOR 10Km RADIUS

SCALE- 1:100000

PREPARED BY:

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

S. VENKATESH, M.Sc.,
QUALIFIED PERSON

As Per Rule 15(i)(a) and (b) of MCR, 2016

10° 58' 53.61"N

77° 10' 21.32"E

76° 59' 18.30"E



10° 47' 56.86"N

TOPO SHEET NO. : 58 F/01

LATITUDE : 10° 53' 22.23"N TO 10° 53' 28.24"N

LONGITUDE : 77° 04' 47.52"E TO 77° 04' 52.13"E

10km RADIUS:



Q.L.A AREA :





1Km Radius

500m Radius

Q.L.Applied Area

TOPO SHEET NO. 1586/101

LATITUDE : 10° 53' 28.28"N TO 10° 53' 28.24"N

LONGITUDE : 77° 04' 47.52"E TO 77° 04' 47.52"E



APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIYAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 402..

LOCATION OF QUARRY:

S.F.NO : 334/1D & 334/2A
EXTENT : 1.64.0 HA.
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

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APPROACH ROAD	
VILLAGE ROAD	
HABITATION	
TREES	
AGRICULTURAL LAND	
WIND DIRECTION	
QUARRY PIT	
WIND MILL	
ODAI	
CRUSHER PLANT	

ENVIRONMENTAL AND

LANDUSE PLAN (FOR 1Km RADIUS)

SCALE- 1:10,000

PREPARED BY:

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

B. VENKATAGIRI, M.Sc.,
QUALIFIED PERSON

As Per Rule 15(i)(a) and (b) of MCR, 2015

77° 04' 14.60"E

77° 04' 31.06"E

77° 05' 08.59"E

77° 05' 28.59"E

Towards
Edaiyarpalayam 54° 00.78"N

Towards
Pachapalayam

10° 53' 44.51"N

10° 52' 05.90"N

10° 52' 49.70"N

Towards
Thirumarai Nagar

LANDUSE PATTERN	
DESCRIPTION	PERCENTAGE
ROADS	(10%)
HABITATION	(10%)
TREES	(15%)
AGRICULTURAL LAND	(35%)
QUARRY PITS /CRUSHER	(30%)

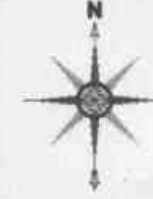


PLATE NO:I-C

DATE OF SURVEY :14.10.2024

APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 402..

LOCATION OF QUARRY:

S.F.NO : 334/1D & 334/2A
EXTENT : 1.64.0 HA,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

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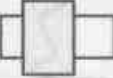
Q.L.APPLIED AREA



APPROACH ROAD



VILLAGE ROAD



ROUTE MAP

Not To Scale

PREPARED BY :

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PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT


B. VENKAGAGIRI, M.Sc.,
QUALIFIED PERSON

As Per Rule 15(1)(a) and (b) of MCR, 2016



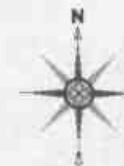
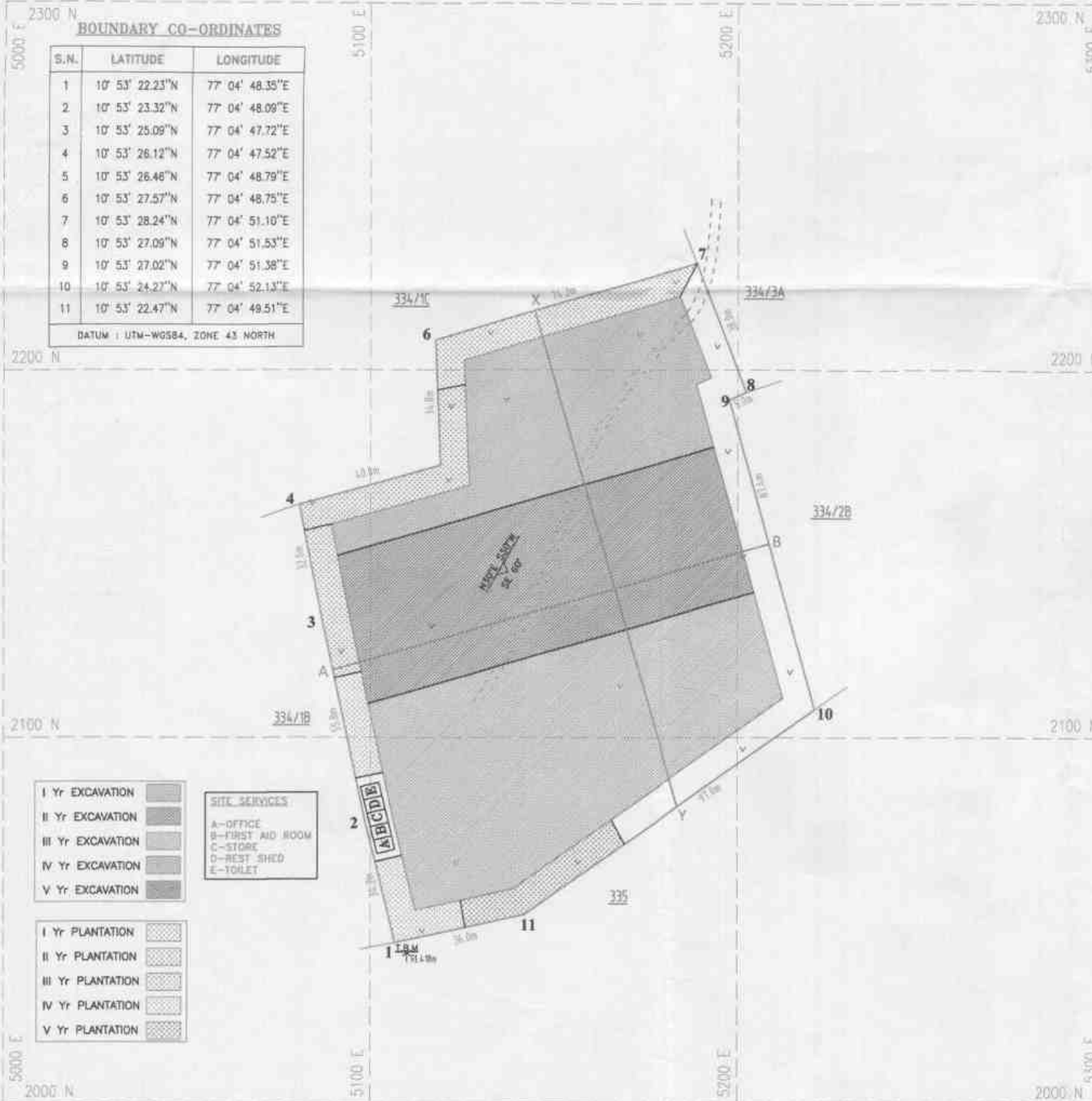


PLATE NO-III
DATE OF SURVEY : 14.10.2024

APPLICANT:
THIRU.S.SAKTHIVEL
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU-641 492

LOCATION OF QUARRY:
S.F.NO : 334/1D & 334/2A
EXTENT : 1.640 HA,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

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7.5m SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
GRAVEL	
ROUGH STONE	
STRIKE & DIP	
QUARRY ROAD	

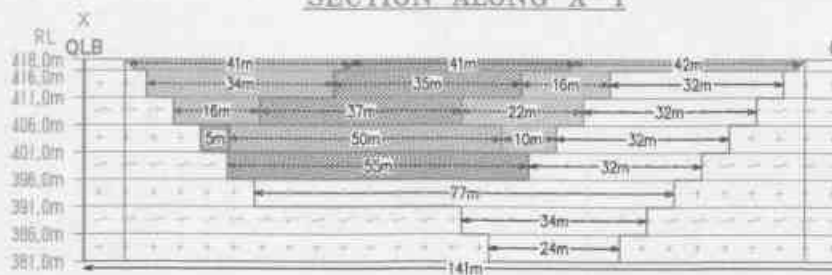
**TOPOGRAPHY, GEOLOGICAL,
YEARWISE DEVELOPMENT &
PRODUCTION PLAN & SECTIONS
FIRST "FIVE" YEAR
SCALE 1 : 1000**

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

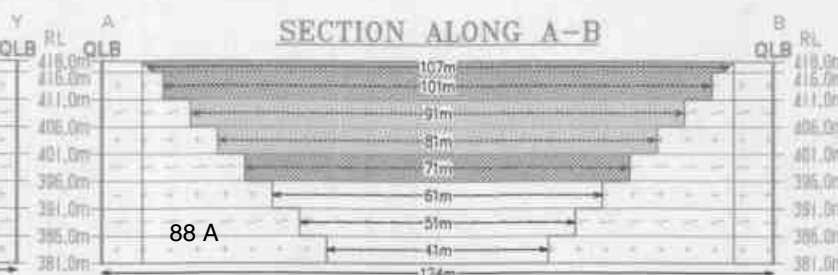
S. V. S. SAKTHIVEL, Sc.,
QUALIFIED PERSON

As Per Rule 15(i)(a) and (b) of MCR, 2016

SECTION ALONG X-Y



SECTION ALONG A-B



88 A

BOUNDARY CO-ORDINATES

DATUM : UTM-WGS84, ZONE 43 NORTH



1-V Yr PLANTATION

VI Yr EXCAVATION

VII Yr EXCAVATION

VIII. Yr. EXCAVATION

IX Yr EXCAVATION

X Yr EXCAVATION

VI Yr PLANTATION

VII Yr PLANTATION

VIII Yr PLANTATION

IX Yr PLANTATION

X Yr PLANTATION

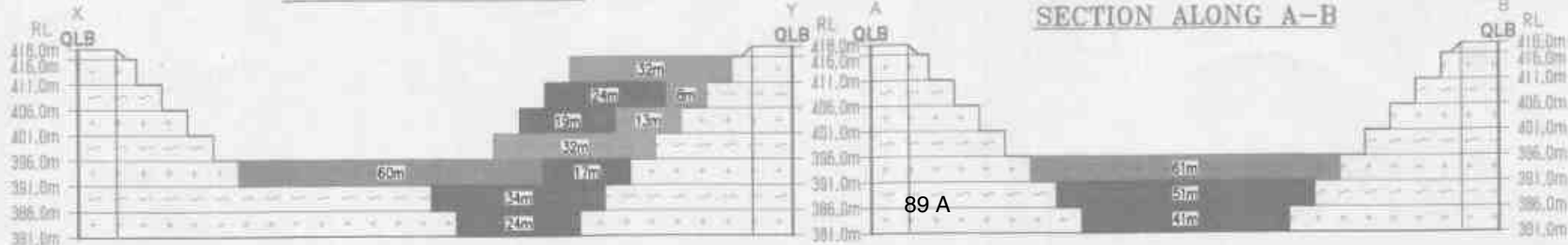


PLATE NO-III A

DATE OF SURVEY : 14.10.2024

APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU 640 024

LOCATION OF QUARRY

SE NO : 334/1D & 334/2A
EXTENT : 1.64 GHA.
VILLAGE : PACHAPALAYAM
TALUK : SULLUR.
DISTRICT : COIMBATORE.
STATE : TAMILNADU.

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Q.L. APPLIED AREA BOUNDARY

7.5m SAFETY DISTANCE

APPROACH ROAD

TEMPORARY BENCH MARK

GRAVEL

ROUGH STONE

STRIKE & DIP

TOPOGRAPHY, GEOLOGICAL,
YEARWISE DEVELOPMENT &
PRODUCTION PLAN & SECTIONS
SECOND FIVE YEAR

PREPARED BY:

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

B. VENEKATGIRI, M.Sc.
QUALIFIED PERSON

As Per Rule 15(i)(a) and (b) of MCR, 2016

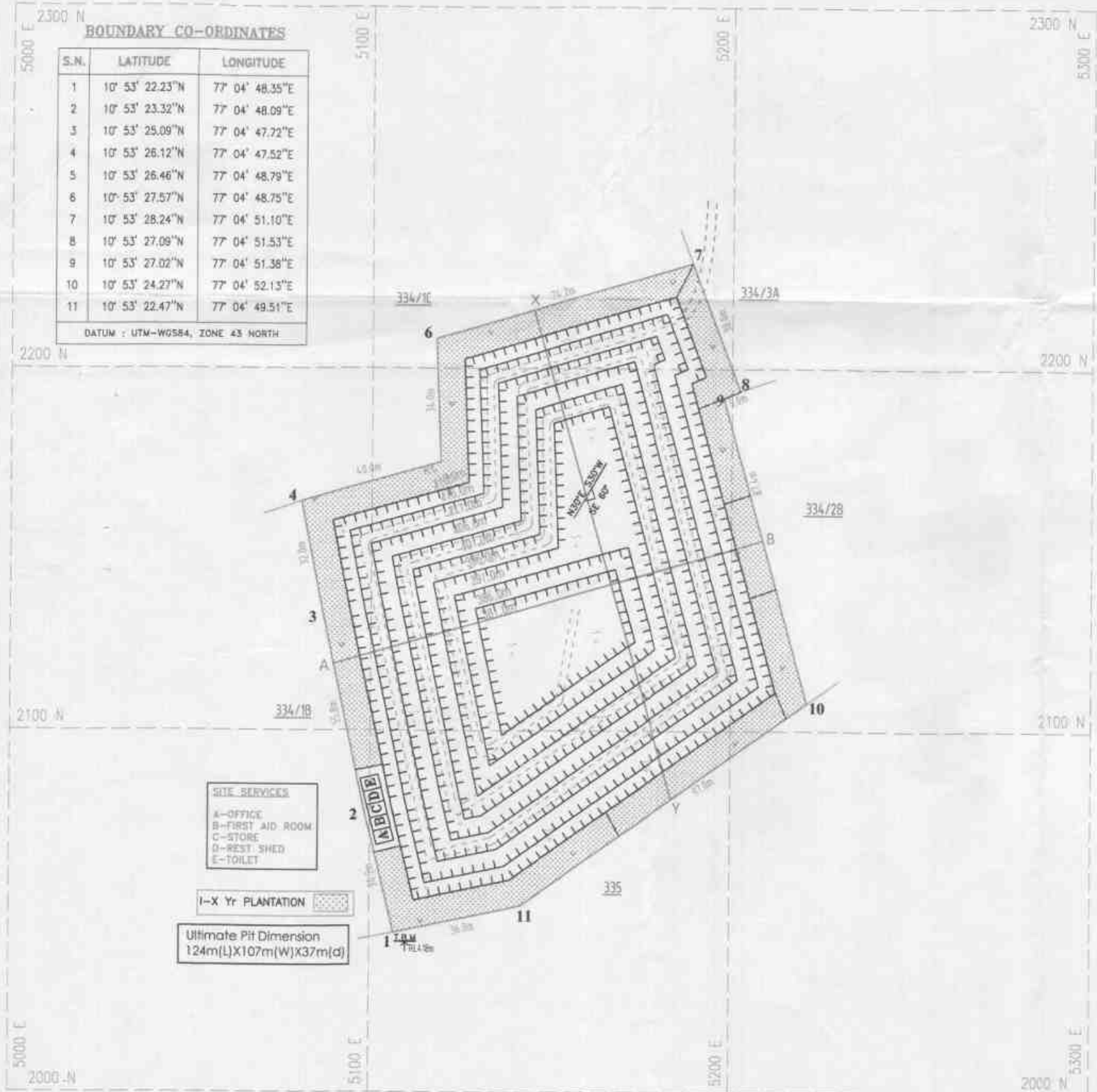


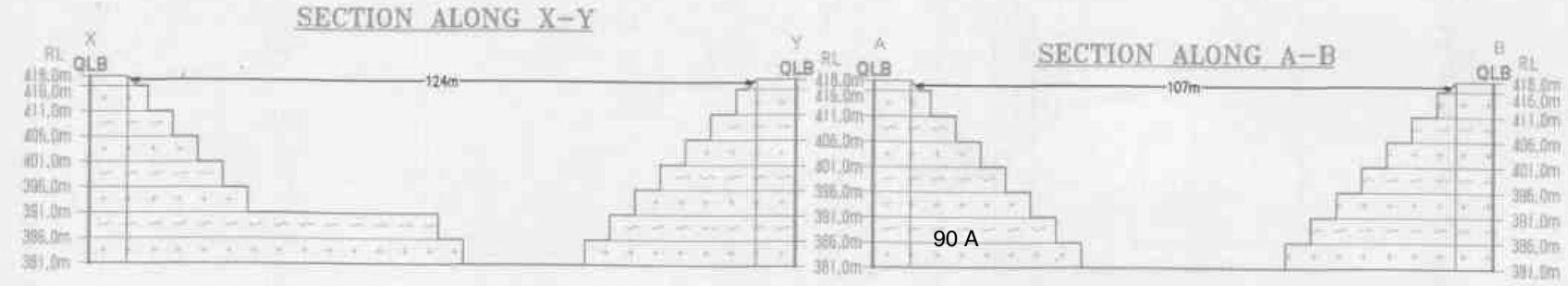
PLATE NO-V
DATE OF SURVEY : 14.10.2024

APPLICANT:
THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 022

LOCATION OF QUARRY
S.F.NO : 334/1D & 334/2A
EXTENT : 12 HECTARE
VILLAGE : PACHAPALAYAM
TALUK : SULUR,
DISTRICT : COIMBATORE
STATE : TAMIL NADU

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Q.L. APPLIED AREA BOUNDARY	
7.5m SAFETY DISTANCE	
APPROCH ROAD	
TEMPORARY BENCH MARK	
GRAVEL	
ROUGH STONE	
STRIKE & DIP	
QUARRY PIT	
QUARRY ROAD	



CONCEPTUAL PLAN & SECTIONS
SCALE 1 : 1000

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

QUALIFIED PERSON
As Per Rule 150(x)(v)(c) of MCR,2018

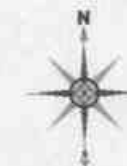
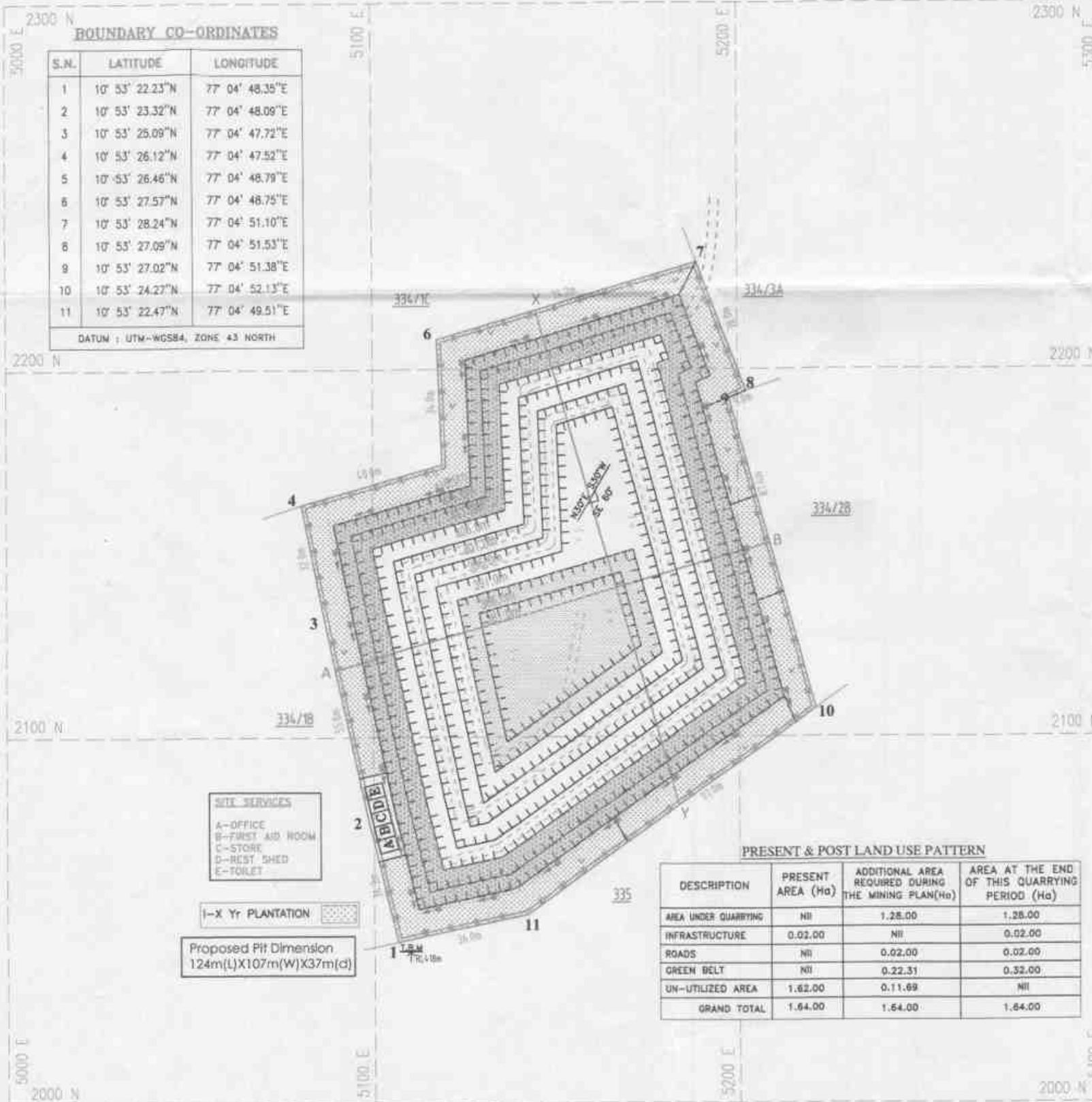


PLATE NO-IV

DATE OF SURVEY : 14.10.2024

APPLICANT:

THIRU.S.SAKTHIVEL,
S/o.SUBRAMANIAM,
20, PANCHAYAT OFFICE STREET,
SULUR TALUK,
COIMBATORE DISTRICT,
TAMIL NADU - 641 402.

LOCATION OF QUARRY:

S.F.NO : 334/1D & 334/2A
EXTENT : 1.64.0 HA,
VILLAGE : PACHAPALAYAM,
TALUK : SULUR,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

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Q.L. APPLIED AREA BOUNDARY

7.5m SAFETY DISTANCE

APPROACH ROAD

TEMPORARY BENCH MARK

GRAVEL

ROUGH STONE

STRIKE & DIP

QUARRY PIT

QUARRY ROAD

TREES

EXISTING LANDFORM

OLD SURFACE LEVEL

FINISHED SURFACE LEVEL

RAIN WATER STORAGE

REHABILITATED LANDFORM

FENCING

PROPOSED GARLAND DRAIN

PROGRESSIVE QUARRY CLOSURE PLAN & SECTIONS SCALE 1 : 1000

PREPARED BY:

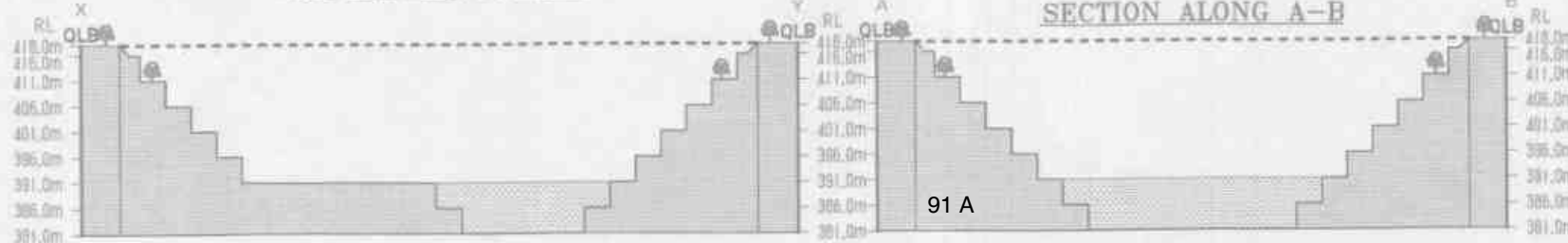
THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

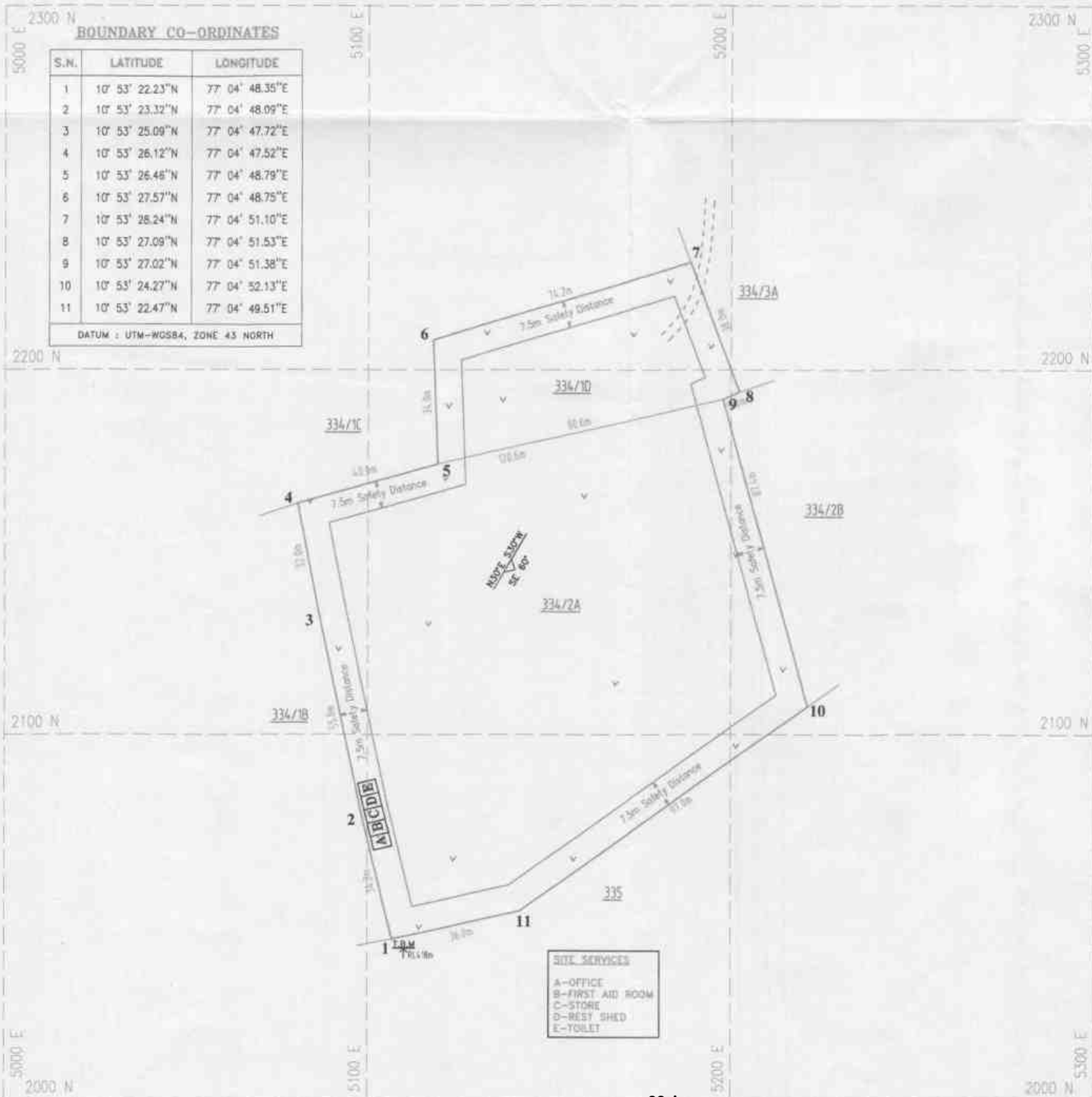
[Signature]
B.VINODAKUMAR,
QUALIFIED PERSON

As Per Rule 15(i)(a) and (b) of MCR, 2016

SECTION ALONG X-Y

SECTION ALONG A-B





BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	10° 53' 22.23"N	77° 04' 48.35"E
2	10° 53' 23.32"N	77° 04' 48.09"E
3	10° 53' 25.09"N	77° 04' 47.72"E
4	10° 53' 26.12"N	77° 04' 47.52"E
5	10° 53' 26.46"N	77° 04' 48.79"E
6	10° 53' 27.57"N	77° 04' 48.75"E
7	10° 53' 28.24"N	77° 04' 51.10"E
8	10° 53' 27.09"N	77° 04' 51.53"E
9	10° 53' 27.02"N	77° 04' 51.38"E
10	10° 53' 24.27"N	77° 04' 52.13"E
11	10° 53' 22.47"N	77° 04' 49.51"E

DATUM : UTM-WGS84, ZONE 43 NORTH

PLATE NO. 92A
DATE OF SURVEY : 14.10.2024

APPLICANT:
 THIRU.S.SAKTHIVEL
 S/o.SUBRAMANIYAM,
 20, PANCHAYAT OFFICE STREET,
 SULUR TALUK,
 COIMBATORE DISTRICT,
 TAMIL NADU - 641 402.

LOCATION OF QUARRY:
 S.F.NO : 334/1D & 334/2A
 EXTENT : 1.64.0 HA,
 VILLAGE : PACHAPALAYAM,
 TALUK : SULUR,
 DISTRICT : COIMBATORE,
 STATE : TAMILNADU.

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Q.L. APPLIED AREA BOUNDARY	
7.5m SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
GRAVEL	
STRIKE & DIP	

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.

 SURVEYOR, S. S. SAKTHIVEL, S/o. SUBRAMANIYAM,
 QUALIFIED PERSON
 As Per Rule 15(i)(a) and (b) of MCR, 2016

ப.அ

கோவை மாவட்டம், காயூர் வட்டம், பச்சையாண்டியல்

கிராமம், க.ச. எண். 334/2A - 1.36.0 ஏக்கர் ,

க.ச. எண். 334/1A - 4.80 ஏக்கர், 0.28.0 சைட் டிரை

4.80 ஏக்கர், 1.64.0 ஸ்டீரோய்ட்ஸ் கிராமம்

காயூர் கிராமத்திலுள்ள பச்சையாண்டியல்

எண் 9450/2016 தான் 1.09.2016 - டிசம்பர்

1319/2017 தான் 2.3.2017 - டிசம்பர் பச்சையாண்டியல்

-பட்டி, கெட்டி, கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

110 மீ கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

2K, கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி கெட்டி

க.ச. எண் 335 ரெ.காண்டியல், கெட்டி

க.ச. எண் 334/1C " - கெட்டி

க.ச. எண் 334/1B " - கெட்டி

க.ச. எண் 334/2B, 4 - கெட்டி.

இதன் மூத்தியல் மேற்படி படி உண்டாக .

பிரதான புலத்தியலுக்கு 300 மீட்டர் சூழ்நிலை
நீர்நீர் விடமுடியும்கூட, அங்கும்காங்கப்படி
உட்கொண்டுகொள் , பன்னி கட்டிடங்களை

அங்கு கிவ்வை அமைப்ப , 300 மீட்டர் சூழ்நிலை
உயர் மண்ணுக்கு கட்டிடங்களை , 50.0 மீட்டர் சூழ்நிலை
அங்கு அங்கு மண் கட்டிடங்களை . கிவ்வைவ்வை
அமைப்ப , 300.0 மீட்டர் சூழ்நிலை சூழ்நிலை மூன்று
மூன்று மூன்றுமூன்றுகள் அங்கு கிவ்வை

நில அமைப்பு கட்டம் 1984 மூன்று நேரப்படி உச்ச
அமைப்பு கட்டம் 1978-ன் கீழ் கவரப்படவில்லை அங்கு
நிலம் கீழ்க்கிடைக்கக் கட்டம் 1968-ன் கீழ் கவரப்பட
வில்லை அங்கு . பிரதான புலத்தில் கோலங்களை,
கூழ்நிலை, கீழ்க்கொண்டுகொள் அங்கு அங்கு
கூலங்களை அங்கு கிவ்வை . மேற்படி நிலத்தில்
அங்கு அங்கும்கி கிவ்வை அங்கு கிவ்வை அங்கு
அங்கு கிவ்வை கிவ்வை , அங்கு அங்கு கிவ்வை
அங்கு கிவ்வை அங்கு கிவ்வை .

மேற்படி
கிராம நிர்வாக அலுவலர் 28/10/2014
25, பச்சையங்கோட்டை
கோலம் வட்டம்.

SENTHIL EXPLOSIVES

20, PANCHAYAT OFFICE STREET, SULUR, COIMBATORE - 641 402

Date: 25/10/24

To

S.Sakthivel,
S/O.Subramaniam,
NO.20 Panchayat office street,
Sulur Taluk,
Coimbatore District,
Tamilnadu -641402.

Sir,

Sub: Regarding blasting work using Explosives in your proposed quarry.

We are having explosives license in from 22 holding No.E42667 situate in survey number SF.NO: 126/2(V) NO:80, Sulur village, Sulur Taluk, Coimbatore District, our office functioning at address.

Senthil Explosives ,20, Panchayat office street, Sulur, Coimbatore-641402.

We are enacting 7 explosives vans for transporting detonators and class: 2 separately for our magazine to our work site and well experienced and licensed blasters and mate for safe blasting work since 5 years without untoward incident.

We are willing to undertake blasting work on contract basic at your proposed quarry at SF.No: 334/1D,334/2A , Pachapalayam Village, Sulur Taluk , Coimbatore District, Tamilnadu.

Enclosure: 1. Licence Copies

For SENTHIL EXPLOSIVES

Partner

Cert No. BR /SZ/0285

भारत सरकार/Government of India
खान अधिनियम, 1952/Mines Act, 1952

खनन परीक्षा बोर्ड/Board of Mining Examinations

विस्फोटकर्ता सक्षमता प्रमाण-पत्र

BLASTER'S CERTIFICATE OF COMPETENCY

(केवल ओपनकास्ट खानों तक सीमित)

(Restricted to mines having opencast workings only)

(धात्विकीय खान विनियम, 1961 के अन्तर्गत)

(Under the Metalliferous Mines Regulations, 1961)

श्री एन.मारिमुथु

सुपुत्र नल्लप्पन

जिनकी जन्म तिथि 30.05.1966

है, को अपनी आयु, स्वस्थता, सदाचार,

साक्षरता और धात्विकीय खानों में काम करने के विहित अनुभव का सन्तोषजनक प्रमाण प्रस्तुत करने एवं दिनांक

24.01.2021 को जीवीटीसी, त्रिची

केन्द्र पर आयोजित विहित परीक्षा में

उत्तीर्ण होते पर एतद्वारा केवल ओपनकास्ट खानों तक सीमित विस्फोटकर्ता सक्षमता प्रमाण-पत्र प्रदान किया जाता है।

Shri N. MARIMUTHU

son of NALLAPPAN

born on 30.05.1966

having given satisfactory evidence of his age,

medical fitness, good character, literacy and prescribed experience of working in metalliferous

mines and having passed the prescribed examination held at

GVTC, TRICHY

centre on 24.01.2021

is hereby granted BLASTER'S CERTIFICATE OF COMPETENCY

restricted to mines having opencast workings only.

बाएँ हाथ का अंगूठ का निशान
Left hand thumb impression

अंचल सचिव
खनन परीक्षा बोर्ड
Zonal Secretary
Board of Mining
Examinations

अंचल सचिव
खनन परीक्षा बोर्ड
Zonal Secretary
Board of Mining
Examinations

अध्यक्ष
खनन परीक्षा बोर्ड
Chairman
Board of Mining
Examinations

Signed and Sealed

Date 26.07.2021



To

SHRI N. MARIMUTHU

S/o SHRI NALLAPPAN

Home Address

Village CHELLAPILLAKUTTAI
PO NALLAGOUNDAMPATTI
Thana OMALUR
District SALEM
State TAMILNADU

PIN : 636304

प्रमाणित किया जाता है कि उनकी सक्षम चिकित्सा अधिकारी द्वारा स्वास्थ्य परीक्षा कर
खान में कार्य करने के लिए स्वस्थ घोषित किया जाता है।
Certified that he has been examined by qualified medical
officer and declared fit for employment in mines.

1 _____ को 2 _____ को
On On

3 _____ को 4 _____ को
On On

5 _____ को 6 _____ को
On On

7 _____ को 8 _____ को
On On

9 _____ को 10 _____ को
On On

Prepared by संजीव कुमार

Checked by संजीव कुमार 2

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

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

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

अनुज्ञापि सं. (Licence No.) : E/HQ/TN/22/377(E42667)

वार्षिक फीस रुपए (Annual Fee Rs): 9800/-

1. Licence is hereby granted to

M/s Senthil Explosives. (अधिभोगी / Occupier : S.SAKTHIVEL), 20, PANCHAYAT OFFICE STREET, SULUR, COIMBATORE.
Dist., Town/Village -, SULUR, District-COIMBATORE, State-Tamil Nadu, Pincode - 641402



को अनुज्ञापि अनुदत्त की जाती है।

2. अनुज्ञापिधारी की प्रास्थिति | Status of licensee : Partnership Firm

3. अनुज्ञापि निम्नलिखित प्रयोजनों के लिए विधिमान्य है।

possess for use of Slurry Explosives, Safety Fuse, Detonating Fuse, Detonators, - के उपयोग के लिए

Licence is valid only for the following purpose.

4. अनुज्ञापि विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।

Licence is valid for the following kinds and quantity of explosives: -- (क) (a)

क्र Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Slurry Explosives	2,0	0	4900 Kg.
2.	Safety Fuse	6,1	0	20000 Mtrs
3.	Detonating Fuse	6,2	0	10000 Mtrs
4.	Detonators	6,3	0	44000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञापि के लिए]

(b) Quantity of explosives to be purchased in a calendar month[applicable for licence under article 3(b) and (c)] :

20 times
as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापि परिसर की पुष्टि होती है।

The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/377(E42667)

दिनांक (Dated) 23/09/1991

6. अनुज्ञापि परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:

Survey No(s). 126/2,(v) No. 80 , ग्राम (Town/Village) : SULUR

पुलिस थाना (Police Station) : COIMBATORE

जिला (District)

COIMBATORE

राज्य (State)

Tamil Nadu

पिनकोड (Pincode)

दूरभाष (Phone)

ई. मेल (E-Mail)

फैक्स (Fax)

7. अनुज्ञापि परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं।

The licensed premises consist of following facilities.

: a main magazine room, a lobby and a detonator storage room.

8. अनुज्ञापि समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबद्धों के अधीन रहते हुए अनुदत्त की जाती है।

The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures.

1. उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।

Drawings (showing site, constructional and other details) as stated in serial No. 5 above.

2. अनुज्ञापि प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापि की शर्तें और अतिरिक्त शर्तें।

Conditions and Additional Conditions of this licence signed by the licensing authority.

3. दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञापि तारीख 31 मार्च 1993 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 1993.

यह अनुज्ञापि, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञापि की शर्तों का अधिक्रमण करने या यदि अनुज्ञापि परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंशुद्ध की जा सकती है, जहां वह लागू हो।

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 23/09/1991

Sd/-
मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 27/08/2013
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 29/08/2018
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 07/01/2019
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 20/01/2022
- Change in Authorized Signatory/Occupier/Partners/Directors dated : 07/11/2023

नवीनीकरण के पृष्ठानक के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
01/02/2024	31/03/2029	Jt. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडिक अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

Note :- This is system generated document does not require physical signature. Applicant may take printout for their records.

அனுப்புநர்
திரு.வே.பண்டரிநாதன்.B.Sc.,
வருவாய் கோட்டாட்சியர்,
கோயம்புத்தூர் தெற்கு.

பெறுநர்
துணை இயக்குநர்,
புவியியல் மற்றும்
சுரங்கத்துறை,
கோயம்புத்தூர்.

மூ.மு.எண் : 5021/2023/அ2,

நாள் : 24.06.2024

ஐயா,

பொருள் : கனிமங்களும் சுரங்கங்களும் - கோயம்புத்தூர்
மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் -
புல எண்கள்.334/2A நெ.காலையில் 1.36.0 ஹெக்டேர்
மற்றும் 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆக
மொத்தம் 1.64.0 ஹெக்டேர் பரப்புள்ள பட்டா பூமியில்
- திரு.சக்திவேல் என்பவர் சாதாரணக்கற்கள் மற்றும்
கிராவல் குவாரி குத்தகை உரிமம் அனுமதி கோரியது
- அறிக்கை கோரியது - அறிக்கை அனுப்புதல் -
தொடர்பாக.

- பார்வை :
1. திரு.சக்திவேல், த/பெ.சுப்பிரமணியம் என்பவரின்
விண்ணப்பம் நாள்:11.05.2023.
 2. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை,
கோயம்புத்தூர். ந.க.எண்.557/கனிமம்/2023,
நாள்:19.05.2023.
 3. இவ்வலுவலக குறிப்பாணை ந.க.5120/2023/அ2,
நாள்:29.05.2024.
 4. வட்டாட்சியர், சூலூர் ந.க.2629/2023/அ7,
நாள்:16.03.2024.

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல
எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0
ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்புள்ள பட்டா பூமியில் சூலூர் கிராமம்,
பஞ்சாயத்து ஆபிஸ் வீதி, கதவு எண்:20 என்ற முகவரியில் வசித்து வரும் திரு.சக்திவேல்
த/பெ.சுப்ரமணியம் என்பவர் சாதாரணக்கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம்
கோரி பார்வை 1-இல் விண்ணப்பித்துள்ளதை தொடர்ந்து, மேற்படி விண்ணப்பத்தில்
குறிப்பிட்டுள்ள புலத்தை புலத்தணிக்கை செய்து சாதாரணக்கற்கள் மற்றும் கிராவல் எடுக்க
குவாரி குத்தகை உரிமம் வழங்குவது தொடர்பான குறிப்பான பரிந்துரை அறிக்கையை
அனுப்பி வைக்குமாறு பார்வை 2-இல் காணும் கடிதத்தில் கோரப்பட்டதன் பேரில், பார்வை 4-

இல் காணும் சூலூர் வட்டாட்சியரின் அறிக்கை வரப்பெற்றுள்ளதை தொடர்ந்து, மேற்காண் புலத்தினை புலத்தணிக்கை செய்து எனதறிக்கையினை பின்வருமாறு சமர்ப்பிக்கிறேன்.

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் விஸ்தீரணமுள்ள பூமியானது சூலூர் சார்பதிவாளர் அலுவலக கிரைய ஆவண எண்:9450/2016 நாள்:01.09.2016 மற்றும் ஆவண எண்:1319/2017 நாள்:02.03.2017இன்படியும், கிராம கணிணி பட்டா எண்:1374இன்படியும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவருக்கு தனியாக பாத்தியப்பட்டுள்ளது. மேற்படி கல்குவாரி அமையவுள்ள இடத்திற்கு வடமேற்கே 100 மீ சுற்றளவில் J.K குவாரியும், 120 மீ சுற்றளவில் J.K கிரஷரும் அமைந்துள்ளது. மேற்கே 150 மீ சுற்றளவில் பெரியகுயிலி to பனப்பட்டி செல்லும் தார்சாலை அமைந்துள்ளது. தென்கிழக்கே 250 மீ சுற்றளவில் காற்றாடி மின்கோபுரம், மேற்கே 20 மீ தொலைவில் திரு.சக்திவேல் குவாரியும், 210 மீ தொலைவில் PMP கிரஷரும், 150 மீ தொலைவில் லேபர் ஷெட் மற்றும் வடகிழக்கே 230 மீ தொலைவில் திரு.அய்யாசாமி குவாரியும் அமைந்துள்ளது.

மேற்படி குவாரி அமையவுள்ள இடத்திற்கான புல எல்லைகள்:

புல எண்:335 நெ.காலைக்கு வடக்கிலும், புல எண்:334/1C நெ.காலைக்கு தெற்கிலும், புல எண்கள்:334/1B மற்றும் 334/1C நெ.காலைகளுக்கு கிழக்கிலும் மற்றும் புல எண்கள்:334/2B, 3A நெ.காலைகளுக்கு மேற்கிலும் அமைந்துள்ளது. இதன் மத்தியில் புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ளனர். மேற்படி நெ.காலைகளில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க அனுமதி கோரியது தொடர்பாக 05.02.2024 அன்று பச்சாபாளையம் கிராமத்தில் அ-1 அறிவிப்பு விளம்பரம் செய்யப்பட்டது நாளது வரை ஆட்சேபணை ஏதும் வரப்பெறவில்லை என வட்டாட்சியரின் அறிக்கையில் தெரிவிக்கப்பட்டுள்ளது.

மேற்படி குவாரி குத்தகை உரிமம் கோரும்

1. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவுக்குள் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் மற்றும் பள்ளி கட்டிடங்கள் ஏதுமில்லை.
2. பிரஸ்தாப புலத்திலிருந்து 300மீ சுற்றளவில் உயர்மின்னழுத்த கம்பிகள் மற்றும் 50மீ சுற்றளவில் தாழ்மின்னழுத்த கம்பிகள் ஏதும் செல்லவில்லை.
3. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதுமில்லை.

4. மேற்படி பூமியானது நில எடுப்பு சட்டம் 1984 மற்றும் நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன்கீழ் கவரப்படவில்லை.
5. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றில் கோவில்களோ வேறு வழிபாட்டு தளங்களோ ஏதுமில்லை.
6. பிரஸ்தாப புலத்தில் அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.
7. மேற்படி பூமியானது நில சீர்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.
8. பிரஸ்தாப புலத்தில் புராதன சின்னங்கள் மற்றும் விலை உயர்ந்த மரங்கள் ஏதுமில்லை.

எனவே, கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் அரசு விதிமுறைகளை பின்பற்றி சாதாரண கற்கள் மற்றும் கிராவல் வெட்டி எடுக்க திரு.சக்திவேல் என்பவருக்கு குவாரி குத்தகை உரிமம் வழங்கலாம் என்பதை தெரிவித்துக்கொள்கிறேன். மேலும் குலூர் வட்டாட்சியரின் அறிக்கை மற்றும் கிராம ஆவணங்களை இத்துடன் இணைத்து அனுப்பியுள்ளேன் என்பதையும் தெரிவித்துக் கொள்கிறேன்.

இணைப்பு: தொடர்புடைய ஆவணங்கள்

தங்கள் உண்மையுள்ள

வருவாய் கோட்டாட்சியர்,
கோயம்புத்தூர் தெற்கு.

24/06/2024

புலத்தணிக்கைக் குறிப்பு

தணிக்கை அலுவலர்
தணிக்கை நாள்
தணிக்கை கிராமம்
தணிக்கைக் புலங்கள்
தணிக்கையின் நோக்கம்

- : வருவாய் கோட்டாட்சியர்; கோயம்புத்தூர் தெற்கு
: 22.06.2024
: சூலூர் வட்டம், பச்சாபாளையம் கிராமம்
: புல எண்.334/2A, 334/1D
: கனிமங்களும் சுரங்கங்களும் - கோயம்புத்தூர் மாவட்டம் - சூலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்கள்.334/2A நெ.காலையில் 1.36.0 ஹெக்டேர் மற்றும் 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆக மொத்தம் 1.64.0 ஹெக்டேர் பரப்புள்ள பட்டா பூமியில் - திரு.சக்திவேல் என்பவர் சாதாரணக்கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் அனுமதி கோரியது - அறிக்கை கோரியது - அறிக்கை அனுப்புதல் - தொடர்பாக.
: 1. உள்வட்ட நிலவருவாய் ஆய்வாளர், செலக்கரிச்சல்.
2. கிராம நிருவாக அலுவலர், பச்சாபாளையம் கிராமம்.

தணிக்கையின் போது
உடனிருந்தவர்கள்

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சூலூர் கிராமம், பஞ்சாயத்து ஆபிஸ் வீதி, கதவு எண்:20 என்ற முகவரியில் வசித்து வரும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவர் சாதாரணக்கற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளதை தொடர்ந்து, மேற்படி விண்ணப்பத்தில் குறிப்பிட்டுள்ள புலத்தை புலத்தணிக்கை செய்து சாதாரணக்கற்கள் மற்றும் கிராவல் எடுக்க குவாரி குத்தகை உரிமம் வழங்குவது தொடர்பான குறிப்பான பரிந்துரை அறிக்கையை அனுப்பி வைக்குமாறு பார்வை கோரப்பட்டதன் பேரில், சூலூர் வட்டாட்சியரின் அறிக்கை வரப்பெற்றுள்ளதை தொடர்ந்து, மேற்காண் புலத்தினை 22.06.2024 அன்று புலத்தணிக்கை செய்து எனதறிக்கையினை பின்வருமாறு சமர்ப்பிக்கிறேன்.

மேற்படி கல்குவாரி அமையவுள்ள இடத்திற்கு வடமேற்கே 110 மீ சுற்றளவில் J.K குவாரியும், 120 மீ சுற்றளவில் J.K கிரவுரும் அமைந்துள்ளது. மேற்கே 150 மீ சுற்றளவில் பெரியகுயிலி to பனப்பட்டி செல்லும் தார்சாலை அமைந்துள்ளது. தென்கிழக்கே 250 மீ சுற்றளவில் காற்றாடி மின்கோபுரம், மேற்கே 20 மீ தொலைவில் திரு.சக்திவேல் குவாரியும், 210 மீ தொலைவில் PMP கிரவுரும், 150 மீ தொலைவில் லேபர் ஷெட் மற்றும் வடகிழக்கே 230 மீ தொலைவில் திரு.அய்யாசாமி குவாரியும் அமைந்துள்ளது.

மேற்படி குவாரி அமையவுள்ள இடத்திற்கான புல எல்லைகள்:

புல எண்:335 நெ.காலைக்கு வடக்கிலும், புல எண்:334/1C நெ.காலைக்கு தெற்கிலும், புல எண்கள்:334/1B மற்றும் 334/1C நெ.காலைகளுக்கு கிழக்கிலும் மற்றும் புல எண்கள்:334/2B, 3A நெ.காலைகளுக்கு மேற்கிலும் அமைந்துள்ளது. இதன் மத்தியில் புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ளனர்.

மேற்படி குவாரி குத்தகை உரிமம் கோரும்

1. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவுக்குள் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் மற்றும் பள்ளி கட்டிடங்கள் ஏதுமில்லை.
2. பிரஸ்தாப புலத்திலிருந்து 300மீ சுற்றளவில் உயர்மின்னழுத்த கம்பிகள் மற்றும் 50மீ சுற்றளவில் தாழ்மின்னழுத்த கம்பிகள் செல்லவில்லை.
3. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதுமில்லை.
4. மேற்படி பூமியானது நில எடுப்பு சட்டம் 1984 மற்றும் நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன்கீழ் கவரப்படவில்லை.
5. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றில் கோவில்களோ வேறு வழிபாட்டு தளங்களோ ஏதுமில்லை.
6. பிரஸ்தாப புலத்தில் அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.
7. மேற்படி பூமியானது நில சீர்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.
8. பிரஸ்தாப புலத்தில் புராதன சின்னங்கள் மற்றும் விலை உயர்ந்த மரங்கள் ஏதுமில்லை.

எனவே, கோயம்புத்தூர் மாவட்டம், குலுர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் அரசு விதிமுறைகளை பின்பற்றி சாதாரண கற்கள் மற்றும் கிராவல் வெட்டி எடுக்க திரு.சக்திவேல் என்பவருக்கு குவாரி குத்தகை உரிமம் வழங்கலாம் என்பதை தெரிவித்து துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை கடித வரைவு வைக்கவும்.


வருவாய் கோட்டாட்சி
கோயம்புத்தூர் தெற்கு

அனுப்புநர்

திரு.சு.தனசேகர்
வட்டாட்சியர்,
வட்டாட்சியர் அலுவலகம்,
குலூர்

பெறுநர்

வருவாய் கோட்டாட்சியர்,
கோயம்புத்தூர் (தெற்கு)
வருவாய் கோட்டாட்சியர் அலுவலகம்,
கோயம்புத்தூர்

2668/24

ந.க.2629/2023/அ7

நாள்:16.03.2024

ஐயா,

பொருள்: கனிமங்கள் மற்றும் சுரங்கங்கள் - கோயம்புத்தூர் மாவட்டம் - குலூர் வட்டம் - பச்சாபாளையம் கிராமம் - புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் - திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவர் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரியது - அறிக்கை அனுப்புதல்- தொடர்பாக.



பார்வை:

1. கோயம்புத்தூர் (தெற்கு) வருவாய் கோட்டாட்சியர், அவர்களின் குறிப்பாணை ந.க.5021/2023/அ2, நாள்: 29.05.2023
2. பச்சாபாளையம் கிராம நிர்வாக அலுவலர் அறிக்கை நாள்:20.02.2024
3. செலக்கரிச்சல் உள்வட்ட வருவாய் ஆய்வாளர் அறிக்கை நாள்:20.02.2024

கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் குலூர் கிராமம், பஞ்சாயத்து ஆபிஸ் வீதி, கதவு எண்:20 என்ற முகவரியில் வசித்து வரும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவர் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரியது தொடர்பாக விசாரணை மற்றும் புலத்தணிக்கை மேற்கொண்டு எனதறிக்கையினை கீழ்க்காணுமாறு சமர்ப்பிக்கிறேன்.

கோயம்புத்தூர் மாவட்டம், குலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் விஸ்தீரணமுள்ள பூமியானது குலூர் சார்பதிவாளர் அலுவலக கிரைய ஆவண எண்:9450/2016 நாள்:01.09.2016 மற்றும் ஆவண எண்:1319/2017 நாள்:02.03.2017இன்படியும், கிராம கணினி பட்டா எண்:1374இன்படியும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவருக்கு தனியாக

பாத்தியப்பட்டுள்ளது. மேற்படி கல்குவாரி அமையவுள்ள இடத்திற்கு வடமேற்கே 110 மீ சுற்றளவில் J.K குவாரியும், 120 மீ சுற்றளவில் J.K கிரவுரும் அமைந்துள்ளது. மேற்கே 150 மீ சுற்றளவில் பெரியகுயிலி to பனப்பட்டி செல்லும் தார்சாலை அமைந்துள்ளது. தென்கிழக்கே 250 மீ சுற்றளவில் காற்றாடி மின்கோபுரம், மேற்கே 20 மீ தொலைவில் திரு.சக்திவேல் குவாரியும், 210 மீ தொலைவில் PMP கிரவுரும், 150 மீ தொலைவில் லேபர் ஷெட் மற்றும் வடகிழக்கே 230 மீ தொலைவில் திரு.அய்யாசாமி குவாரியும் அமைந்துள்ளது.

மேற்படி குவாரி அமையவுள்ள இடத்திற்கு புல எல்லைகளாக,

புல எண்:335 நெ.காலைக்கு வடக்கிலும், புல எண்:334/1C நெ.காலைக்கு தெற்கிலும், புல எண்கள்:334/1B மற்றும் 334/1C நெ.காலைகளுக்கு கிழக்கிலும் மற்றும் புல எண்கள்:334/2B, 3A நெ.காலைகளுக்கு மேற்கிலும் அமைந்துள்ளது. இதன் மத்தியில் புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ளனர். மேற்படி காலைகளில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க அனுமதி கோரியது தொடர்பாக 05.02.2024 அன்று பச்சாபாளையம் கிராமத்தில் அ-1 அறிவிப்பு விளம்பரம் செய்யப்பட்டது நாளது வரை ஆட்சேபணை ஏதும் வரப்பெறவில்லை.

மேற்படி சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ள பூமியில்

1. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவுக்குள் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் மற்றும் பள்ளி கட்டிடங்கள் ஏதுமில்லை.
2. மேற்படி சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரும் இடத்திலிருந்து 300மீ சுற்றளவில் உயர்மின்னழுத்த கம்பிங்களோ மற்றும் 50மீ சுற்றளவில் தாழ்மின்னழுத்த கம்பிங்களோ ஏதும் செல்லவில்லை.
3. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதுமில்லை.
4. மேற்படி பூமியானது நில எடுப்பு சட்டம் 1984 மற்றும் நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன்கீழ் கவரப்படவில்லை.
5. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றில் கோவில்களோ வேறு வழிபாட்டு தளங்களோ ஏதுமில்லை.
6. பிரஸ்தாப புலத்தில் அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

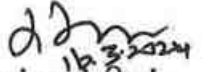
7. மேற்படி பூமியானது நில சீர்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.

8. பிரஸ்தாப புலத்தில் புராதன சின்னங்கள், விலை உயர்ந்த மரங்கள் ஏதுமில்லை

எனவே, வருவாய் ஆய்வாளர், கிராம நிர்வாக அலுவலர் ஆகியோரின் அறிக்கையின்படி பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவருக்கு சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்து தொடர்புடைய ஆவணங்களை இத்துடன் இணைத்து அனுப்பியுள்ளேன் என்பதை பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு: தொடர்புடைய ஆவணங்கள்

தங்கள் உண்மையுள்ள


வட்டாட்சியர்.
குலூர்


16/03/2024

புலத்தணிக்கை குறிப்பு
நாள்:20.02.2023
கிராமம்: பச்சாபாளையம்
புல எண்கள்:334/2A, 334/1D

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், புல எண்:334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சூலூர் கிராமம், பஞ்சாயத்து ஆபிஸ் லீதி, கதவு எண்:20 என்ற முகவரியில் வசித்து வரும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவர் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரியது தொடர்பாக புலத்தணிக்கை மேற்கொண்டு எனதறிக்கையினை கீழ்க்காணுமாறு சமர்ப்பிக்கிறேன்.

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் விஸ்தீரணமுள்ள பூமியானது சூலூர் சார்பதிவாளர் அலுவலக கிரைய ஆவண எண்:9450/2016 நாள்:01.09.2016 மற்றும் ஆவண எண்:1319/2017 நாள்:02.03.2017இன்படியும், கிராம கணினி பட்டா எண்:1374இன்படியும் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவருக்கு தனியாக பாத்தியப்பட்டுள்ளது. மேற்படி கல்குவாரி அமையவுள்ள இடத்திற்கு வடமேற்கே 110 மீ சுற்றளவில் J.K குவாரியும், 120 மீ சுற்றளவில் J.K கிரவுரும் அமைந்துள்ளது. மேற்கே 150 மீ சுற்றளவில் பெரியகுயிலி to பனப்பட்டி செல்லும் தார்சாலை அமைந்துள்ளது. தென்கிழக்கே 250 மீ சுற்றளவில் காற்றாடி மின்கோபுரம், மேற்கே 20 மீ தொலைவில் திரு.சக்திவேல் குவாரியும், 210 மீ தொலைவில் PMP கிரவுரும், 150 மீ தொலைவில் லேபர் ஷெட் மற்றும் வடகிழக்கே 230 மீ தொலைவில் திரு.அய்யாசாமி குவாரியும் அமைந்துள்ளது.

மேற்படி குவாரி அமையவுள்ள இடத்திற்கு புல எல்லைகளாக,

புல எண்:335 நெ.காலைக்கு வடக்கிலும், புல எண்:334/1C நெ.காலைக்கு தெற்கிலும், புல எண்கள்:334/1B மற்றும் 334/1C நெ.காலைகளுக்கு கிழக்கிலும் மற்றும் புல எண்கள்:334/2B, 3A நெ.காலைகளுக்கு மேற்கிலும் அமைந்துள்ளது. இதன் மத்தியில் புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ளனர். மேற்படி

காலைகளில் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க அனுமதி கோரியது தொடர்பாக 05.02.2024 அன்று பச்சாபாளையம் கிராமத்தில் அ-1 அறிவிப்பு விளம்பரம் செய்யப்பட்டது நாளது வரை ஆட்சேபணை ஏதும் வரப்பெறவில்லை.

மேற்படி சாதாரணகற்கள் மற்றும் கிராவல் குவாரி அமைக்க உத்தேசித்துள்ள பூமியில்

1. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவுக்குள் நத்தம் குடியிருப்புகளோ, அங்கீகரிக்கப்பட்ட வீட்டுமனைகள் மற்றும் பள்ளி கட்டிடங்கள் ஏதுமில்லை.
2. மேற்படி சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோரும் இடத்திலிருந்து 300மீ சுற்றளவில் உயர்மின்னழுத்த கம்பிங்களோ மற்றும் 50மீ சுற்றளவில் தாழ்மின்னழுத்த கம்பிங்களோ ஏதும் செல்லவில்லை.
3. மேற்படி, பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் தேசிய மற்றும் மாநில நெடுஞ்சாலைகள் ஏதுமில்லை.
4. மேற்படி பூமியானது நில எடுப்பு சட்டம் 1984 மற்றும் நகர்ப்புற நில உச்சவரம்பு சட்டம் 1978-ன்கீழ் கவரப்படவில்லை.
5. பிரஸ்தாப புலத்திலிருந்து 300 மீட்டர் சுற்றில் கோவில்களோ வேறு வழிபாட்டு தளங்களோ ஏதுமில்லை.
6. பிரஸ்தாப புலத்தில் அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.
7. மேற்படி பூமியானது நில சீர்திருத்த சட்டம் 1961-ன் கீழ் கவரப்படவில்லை.
8. பிரஸ்தாப புலத்தில் புராதன சின்னங்கள், விலை உயர்ந்த மரங்கள் ஏதுமில்லை

எனவே, வருவாய் ஆய்வாளர், கிராம நிர்வாக அலுவலர் ஆகியோரின் அறிக்கையின்படி பச்சாபாளையம் கிராமம், புல எண்:334/2A நெ.காலையில் 1.36.0 ஹெக்டேர், 334/1D நெ.காலையில் 0.28.0 ஹெக்டேர் ஆகமொத்தம் 1.64.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் திரு.சக்திவேல் த/பெ.சுப்ரமணியம் என்பவர் சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் கோருவது தொடர்பாக கோயம்புத்தூர் தெற்கு வருவாய் கோட்டாட்சியர் அவர்களுக்கு கடித வரைவு தயார் செய்யவும்.

(அ/ந)

16/03/24
வட்டாட்சியர்
குலுர்

16/03/24

ப. சி.

கோய்க்குத்தூர் மாவட்டம், கீழாடி வட்டம், பச்சாபாளையம்

கிராமம் க.ச. ராணி 334/2A - 1.36.0 ஏக்கர்

க.ச. 334 / 1B - 0.28.0 ஏக்கர் பீசு 1.64.0 ஏக்கர்

பூமியின் சாதாரண கற்கள் மற்றும் சுவாரி மரம்

கோரி மஞ்சு குடிசைகளில் இருந்து மண்மருந்து

செய்க்கப்பட்டிருக்கிறது.

கோய்க்குத்தூர் மாவட்டம், கீழாடி வட்டம், கீழாடி

கிராமம் க.ச. ராணி 20, பச்சாபாளையம் வட்டம் கீ.க. சக்திவேலி 5/வா.

பின்னர் பூமியின் வசதிக்கு மரம் கீ.க. சக்திவேலி 5/வா.

செய்க்கப்பட்டிருக்கிறது கோவை மாவட்டம், கீழாடி

வட்டம், பச்சாபாளையம் கிராமம் க.ச. ராணி 334/2A - 1.36.0 ஏக்கர்

334 / 1B - 0.28.0 ஏக்கர் பீசு 1.64.0 ஏக்கர் மண்மருந்துகள்

பூமியானது கீழாடி குடிசைகளில் இருந்து கையா

பத்திர வரலாறு 9450/2016 நாள் 01.09.2016 மற்றும்

1319 / 2017 நாள் 2.3.2017 விவர பாத்திரப்படி படிப்பு

க.ச. கிராம ப.ப. ராணி 1314-ல் மஞ்சுதரன் சக்திவேலி

மேல் தனியாக தூக்காளி மரங்களை மஞ்சுதரன் மேல்

பூமியில் கிடைக்க பிணக்க மத்தியத்திலிருந்து பெறப்ப

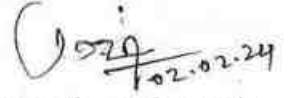
பூமிக்கு வட்டமருக 110.0 மீ சிற்றில் J.K. இவரையும்

120.0 மீ சிற்றில் J.K. கிராமம் மரங்களை மீட்ட 150.0 மீ

சிற்றில் மரங்களுக்கும் 109 A to மரங்களை மீட்ட தான் சிலை மரங்களை

அ) அறிவிப்பு

கோயம்புத்தூர் மாவட்டம், சூலூர் வட்டம், பச்சாபாளையம் கிராமத்தில் வசிக்கும் பொதுமக்களுக்கு ஓர் அறிவிப்பு என்னவென்றால், சூலூர் வட்டம் பச்சாபாளையம் கிராமம் க.ச. எண்கள் 334/2A, 334/1D நெ. காலையில் சாதாரண கற்கள் மற்றும் கிராவல் எடுக்க குவாரி உரிமம் கோரி சுப்பிரமணியம் மகன் சக்திவேல் என்பவர் மனு செய்துள்ளார் அது சமயம் மேற்படி நபர்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் எடுக்க குவாரி உரிமம் வழங்கும் பொருட்டு ஆட்சேபணை ஏதும் இருப்பின் இக்கடிதம் கண்ட 15 தினங்களுக்குள் சூலூர் வருவாய் வட்டாட்சியர் அவர்களுக்கோ அல்லது செலக்கரச்சல் உள்வட்ட வருவாய் ஆய்வாளருக்கோ நேரிலோ அல்லது கடிதம் மூலமாகவோ தெரிவிக்கலாம் என்பதை இதன் மூலம் தெரிவித்துக்கொள்கிறேன்.



நில வருவாய் ஆய்வாளர்
செலக்கரச்சல்

திருப்பி அனுப்பப்படுகிறது.

பச்சாபாளையம் கிராம நிர்வாக அலுவலர் கிராமத்தில் ஒலிபெருக்கி மூலம் பிரசித்தம் செய்து குடிமக்கள் கையொப்பம் பெற்று மீளச் சமர்ப்பிக்குமாறு கேட்டுக்கொள்ளப்படுகிறார்.



நில வருவாய் ஆய்வாளர்
செலக்கரச்சல்

- 112 A

அனுப்புநர்

தலைமையாசிரியர்,

ஊராட்சி ஒன்றிய நடுநிலைப் பள்ளி, பெரியகுயிலை,

தூலூர் வட்டம்,

கோயம்புத்தூர் மாவட்டம் - 641201.

பெறுநர்

உறுப்பினர் செயலர் அவர்கள்,

மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம்,

பனகல் மாளிகை, சென்னை.

மதிப்பிற்குரிய ஐயா,

பொருள்: கோயம்புத்தூர் மாவட்டம் சுல்தான்பேட்டை ஒன்றியம்,

ஊராட்சி ஒன்றிய நடுநிலைப் பள்ளி, பெரியகுயிலை

பள்ளி வளாகம் சீரமைப்பு பணிகளுக்கு பங்களிப்பு செய்வது

- சார்பு

வணக்கம். கோயம்புத்தூர் மாவட்டம், தூலூர் வட்டம், பச்சாபாளையம் கிராமம், புல எண் 334/2A மற்றும் 334/1D காலையில் 1.64.0 ஹெக்டேர் பரப்பளவில் கல்குவாரி அமைக்க மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்திடம் திரு. S. சக்திவேல் அவர்கள் விண்ணப்பித்துள்ளார். அதன் தொடர்ச்சியாக, பள்ளியின் தலைமையாசிரியர் கேட்டுக்கொண்டதன் பேரில், ஓட்டுக் கட்டடத்திற்கு FALSE CEILING அமைத்து தரவும் பழுதடைந்துள்ள மின் விசிறிகள் மற்றும் மின் விளக்குகளை மாற்றித் தரவும் விண்ணப்பதாரர் திரு. S. சக்திவேல் அவர்கள் சம்மதம் தெரிவித்துள்ளார் என்பதை தெரிவித்துக் கொள்கிறேன்.

இடம் : பெரியகுயிலை

தேதி : 29.10.2024


தலைமை ஆசிரியர்
ஊராட்சி ஒன்றிய நடுநிலைப்பள்ளி
பெரியகுயிலை, செட்டிபாளையம் (வழி)
கோயம்புத்தூர் - 641 201.



DR.JAYANTHLM, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai-15.

Phone No. 044-24359973

Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.7180/SEAC/ToR-748/2020 Dated: 15.09.2020

To

Thiru. M. Muralikrishnan
No. 5/118 - B, J.K.Farms
Thegani,
Sulur Taluk
Periyakuyilai
Coimbatore District - 641 201

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference (ToR) for the Proposed Rough stone & Gravel quarry lease over an extent of 2.35.85Ha at S.F.No. 343/2A, 343/2B1, 343/3A & 343/4A in Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Thiru. M. Muralikrishnan under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report –Regarding.

- Ref:** 1. Online proposal No.SIA/TN/MIN/43425/2019 Dated: 23.09.2019
2. Your application submitted for Terms of Reference dated: 10.10.2019
3. Minutes of the 168th SEAC Meeting held on 05.08.2020
4. Minutes of the 396th SEIAA Meeting held on 15.09.2020

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




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The proponent, Thiru. M. Muralikrishnan has submitted application for ToR on 10.10.2019, in Form-I, Pre- Feasibility report for the Rough stone & Gravel quarry lease over an extent of 2.35.85Ha at S.F.No. 343/2A, 343/2B1, 343/3A & 343/4A in Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed in the 168th SEAC Meeting held on 05.08.2020. Based on the presentation given by the project proponent and document furnished by the project proponent, the SEAC decided to recommend the proposal for the grant of Terms of Reference (ToR) to SEIAA with Public Hearing, subject to the following specific conditions in addition to the points mentioned in the standard Terms of Reference for conducting Environmental Impact Assessment study for non-coal mining projects and information to be included in EIA/EMP report issued by the MoEF&CC.

1. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
2. The proponent shall conduct the hydro-geological study to evaluate the impact of proposed mining activity on the groundwater table, agriculture activity, and water bodies such as rivers, tanks, canals, ponds etc. located nearby by the proposed mining area.
3. The proponent shall furnish the details on number of groundwater pumping wells, open wells within the radius of 1 km along with the water levels in both monsoon and non-monsoon seasons. The proponent would also collect the data of water table level in this area during both monsoon and non-monsoon seasons from the PWD / TWAD.
4. The Proponent shall conduct the Cumulative impact study on the agricultural area due to Mining, Crushers and other activities around the site area.
5. The details of surrounding well and the cumulative impact on the ground water shall be part of EIA study.
6. The Socio-economic impact assessment due to the project needs to be carried out within 10 km buffer zone from the mines.
7. A detailed report on the green belt development already undertaken is to be furnished. They also need to submit the proposal for green belt activities for the proposed mine(s).



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8. Proposal for CER activities should be furnished taking into consideration the requirement of the local habitants available within the buffer zone as per Office Memorandum of MoEF& CC dated 01.05.2018.
9. A Detailed mining closure plan for the proposed project shall be submitted.
10. A detail report on the safety and health aspects of the workers and for the surrounding habitants during operation of mining for drilling and blasting shall be submitted.
11. The recommendation for the issue Terms of Reference is subject to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981 /2016, M.A.No.982/2016 & M.A.No.384/2017).
12. Details of the lithology of the mining lease area shall be furnished.
13. A study shall be conducted on the number of trees (name of the species, age) present in the mining lease applied area and how, it will be managed during mining activity.
14. The depth of the mining is restricted from 45m to 40m below ground level considering the hydrogeological regime of the surrounding area. Accordingly mining plan shall be revised.

Discussion by SEIAA and the Remarks:-

The proposal was placed before the 396th SEIAA Meeting held on 15.09.2020. After detailed discussion the Authority decided to grant Terms of Reference along with public hearing for the preparation of EIA Report with additional ToR as recommended by SEAC in addition to the following conditions:

1. Details of study on social impact, including livelihood of local people.
2. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
3. Reserve funds should be earmarked for proper closure plan.
4. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department Dated 25.06.2018 regarding ban on one time use and throw away




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plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

5. A detailed post-COVID health management plan for workers as per ICMR and MHA guidelines or the State Govt. guideline may be followed and report shall be furnished.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of




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- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked



out with cost implications and submitted.

- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government.




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It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the



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working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

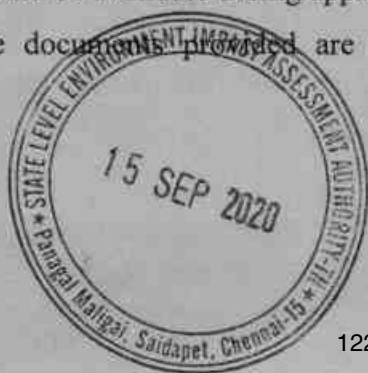
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific




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occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc, using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English



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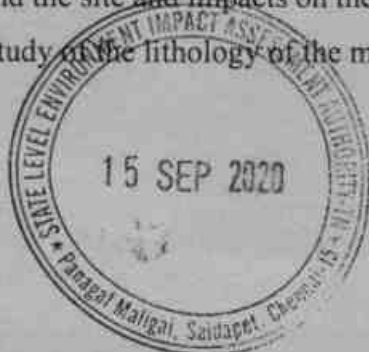
translation should be provided.

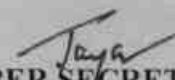
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

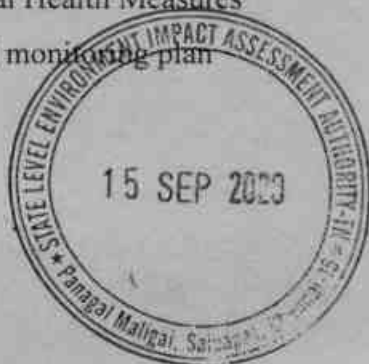
The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:

1. Project name and location (Village, District, State, Industrial Estate (if applicable).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.




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7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan



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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December,




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2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

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


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Copy to:

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





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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9391/ToR-1288/2022 Dated:08.10.2022.

To

Tmt. S.Maheshwari
W/o. Subramaniyam,
No. 2/3,Panchayat Office Street,
Periya Kuylai Post,
Sulur Taluk,
Coimbatore- 641201

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough stone & gravel quarry lease over an extent of 1.61.5 Ha at S.F.No. 344/4, 344/6A & 344/6B1 of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu by Tmt.S.Maheshwari - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No. SIA/TN/MIN/79909/2022 dated 11.07.2022.
 2. Your application submitted for Terms of Reference dated: 14.07.2022.
 3. Minutes of the 312th meeting of SEAC held on 16.09.2022.
 4. Minutes of the 557th SEIAA meeting held on 08.10.2022.

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


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The proponent, Tmt.S.Maheswari has submitted application for Terms of Reference (ToR) in Form-I, Pre- Feasibility report for the Proposed Rough stone & gravel quarry lease over an extent of 1.61.5 Ha at S.F.No. 344/4, 344/6A & 344/6B1 of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamilnadu.

Discussion by SEAC and the Remarks:-

Proposed Rough stone & gravel quarry lease over an extent of 1.61.5 Ha at S.F.No. 344/4, 344/6A & 344/6B1 of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu by Tmt.S.Maheswari - For Terms of Reference.

(SIA/TN/MIN/79909/2022 Dt.11.07.2022)

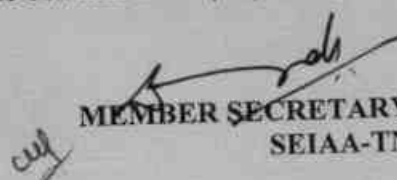
The proposal was placed in 312th SEAC meeting held on 16.09.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Tmt.S.Maheswari has applied for Terms for Reference for the proposed Rough stone & gravel quarry lease over an extent of 1.61.5Ha at S.F.No. 344/4, 344/6A & 344/6B1 of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 70,486 m³ of Rough stone with a ultimate depth of mining is 47m below ground level.

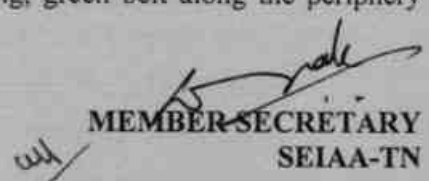
Based on the presentation made by the proponent, SEAC has decided to recommend grant of **Terms of Reference (TOR) with Public Hearing** for the production of 67,591m³ of Rough Stone(depth restricted considering Safety parameters) in 5 years with an ultimate depth 47m BGL, subject to the following TORs, in addition to the standard terms of reference for EIA study and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The PP shall furnish DFO letter in regard to shortest distance of Reserve Forest & protected areas/Wildlife sanctuaries & wild life corridors etc within 25 Km radius.
2. The PP shall submit certified compliance report for EC already obtained vide Lr.No.SEIAA-TN/F.No.5391/1(a)/EC.No.3544/2016 dated 10.08.2016.
3. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry


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lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.

4. The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
5. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
6. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
7. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
8. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.
 - g. If EC and CTO already obtained, the copy of the same shall be submitted.
 - h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
9. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
10. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
11. The proponent shall furnish photographs of adequate fencing, green belt along the periphery


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including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.

12. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
13. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
14. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
15. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
16. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
17. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
18. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.


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19. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
20. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
21. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
22. Impact on local transport infrastructure due to the Project should be indicated.
23. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
24. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
25. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
26. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
27. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
28. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
29. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.


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30. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
31. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
32. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
33. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
34. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
35. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
36. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
37. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
38. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
39. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
40. Concealing any factual information or submission of false/fabricated data and failure to comply


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with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	விவம்
2	<i>Adenanthera pavonina</i>	Marjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Parai	பனை
10	<i>Butea monosperma</i>	Murukkamarai	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Purnai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சர்க்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon swietenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Narvuli	நருவூளி
18	<i>Creteva adansonii</i>	Mavalingum	மாவிலங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உவா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சீரு உவா
21	<i>Diospyro sebenuum</i>	Karungali	கருங்காலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amylissima</i>	Kallitchi	கல் இச்சி
24	<i>Hibiscus tiliaceu</i>	Aatrupoovarasu	ஆற்றாபுலவரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயில் மரம், ஆயில்
27	<i>Lannea coromandelica</i>	Odhiyam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	விலா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	பிசிப்பட்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitrogyne parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	ஏச்சுமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

40	<i>Premna mollissima</i>	Mururai	முனை
41	<i>Premna serratifolia</i>	Narumunai	நறு முனை
42	<i>Premna tomentosa</i>	Malapoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வன்னி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Venuvangu, Tada	வெண்ணங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Putranjiva roxburghii</i>	Karipala	கறிபலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிப்புகன் சோபுகாய்
50	<i>Saraca asoca</i>	Asoca	அசோகா
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தாங் கொட்டை
54	<i>Syzgium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாந்திரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsburnia trifoliata</i>	valsura	வால்கரா
60	<i>Wrightia tinctoria</i>	Veppalai	வேப்பாளை
61	<i>Pithecellobium dulce</i>	Kodukkapuli	கொடுக்காப்பூர்

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 557th Authority meeting held on 08.10.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions in 'Annexure B' of this minutes.

1. Restricting the quantity of 68,086 cu.m of Rough stone are permitted for mining over a period of five years with ultimate depth of mining 42m below ground level, considering the environmental impacts due to the mining, safety precautionary measures of the working personnel and following the principle of the sustainable mining.

Annexure 'B'

1. Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.

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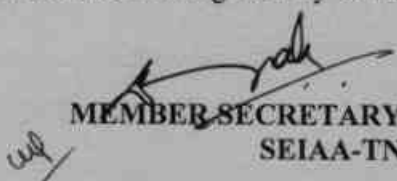
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & bio-diversity.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.
11. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.


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12. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.
13. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.
14. 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.
15. Impact on surrounding agricultural fields around the proposed mining Area.
16. Erosion Control measures.
17. Impact on soil flora & vegetation around the project site.
18. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
19. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
20. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
21. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
22. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
23. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
24. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
26. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.


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27. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
28. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
29. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
31. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
32. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
33. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
34. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
35. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
36. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
37. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its


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related activities covering the entire mine lease period as per precise area communication order issued.

39. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
40. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
41. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any


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infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.


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- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should


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

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be


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undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact


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- zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
 - 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
 - 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
 - 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
 - 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
 - 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
 - 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
 - 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th


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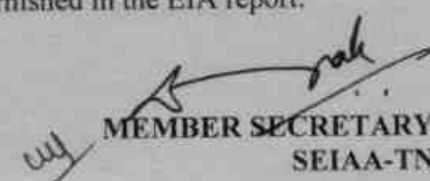
August, 2009, which are available on the website of this Ministry, should be followed.

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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.


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10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.


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30. Reserve funds should be earmarked for proper closure plan.

31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

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



TMT. P. RAJESWARI, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-600 015.
Phone No.044-24359973

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.8979/SEAC/ToR-1138/2022 Dated: 25.03.2022

To

Thiru.K.Raam Mohan
S/o.R.Kanagasabapathy
No.13A, G.K.R.Nagar
Chinniyampalayam Post
Coimbatore District-641062

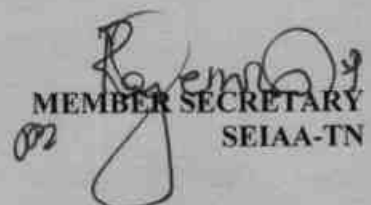
Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough stone and Gravel quarry lease over an extent of 3.10.0Ha at S.F.No. 337/4A & 337/4B of Pachapalayam Village, Suler Taluk, Coimbatore District, Tamil Nadu by Thiru. K.Raam Mohan - under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

Ref: 1. Online proposal No.SIA/TN/MIN/ 71749/2022, dated: 01.02.2022
2. Your application seeking Terms of Reference submitted on: 03.02.2022
3. Minutes of the 252nd SEAC meeting held on 10.03.2022.
4. Minutes of the 496th meeting of SEIAA held on 24.03.2022.

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

The project proponent, Thiru. K.Raam Mohan has submitted application seeking Terms of Reference (ToR) with Public Hearing for the Proposed Rough stone and Gravel quarry lease over an


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extent of 3.10.0 Ha at S.F.No. 337/4A & 337/4B of Pachapalaym Village, Sulur Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed in 252th SEAC meeting held on 10.03.2022. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

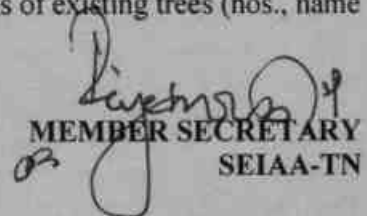
1. The Project Proponent, Thiru. K.Raam Mohan has applied for Terms for Reference for the proposed Rough stone and Gravel quarry lease over an extent of 3.10.0Ha at S.F.Nos. 337/4A and 337/4B of Pachapalayam Village, Sulur Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. The Production for the five years states that total quantity should not exceed 2,90,377 m³ of rough stone & 21,172 m³ of gravel with a ultimate depth of mining is 32m below ground level.

Based on the presentation made by the proponent and the documents furnished, SEAC decided to **recommend the proposal for the grant of Terms of Reference (TOR) with Public Hearing** for the total Production for the period of five years states that total quantity should not exceed 2,90,377 m³ of rough stone & 21,172 m³ of gravel with a ultimate depth of mining is 32m below ground level, Subject to the following TORs is in annexure of this minutes, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The Proponent shall carry out the cumulative & comprehensive environmental impact assessment study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, & health impacts, and accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
2. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b) Quantity of minerals mined out.
 - c) Highest production achieved in any one year


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- d) Detail of approved depth of mining.
 - e) Actual depth of the mining achieved earlier.
 - f) ~~Name of the person already mined in that leases area~~
 - g) If EC and CTO already obtained, the copy of the same shall be submitted.
 - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
3. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
 4. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
 5. The Project Proponent shall provide the details of geological reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the proposed mitigation measures for the same.
 6. 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.
 7. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
 8. 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.
 9. A detailed study shall be carried out in order to ascertain the status of existing trees (nos., name


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- of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
10. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific, along with the exclusive photographs/images/plans showing the proposed conceptual final closure activities.
 11. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
 12. The recommendation for the issue of "Terms of Reference" is subjected to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).
 13. The purpose of Green belt around the project is to capture the fugitive dust emissions, carbon sequestration and to attenuate the noise generated, in addition to reduce the visual impacts. A wide range of indigenous plant species should be planted as given in the **appendix** 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.
 14. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
 15. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
 16. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.
 17. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
 18. If any quarrying operations were carried out in the proposed quarrying site for which now the

EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.

19. The PP shall use drone video to cover the cluster area showing clearly the extent of operation and the surrounding environment and submit the video as part of EIA report.
20. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting the penal provisions as given in the Environment (Protection) Act, 1986.

Appendix

List of Native Trees for Planting

1. Aegle marmelos – Vilvam
2. Adenanthura pavonina - Manjadi
3. Albizia lebbeck – Vaagai
4. Albizia amara - Usil
5. Bauhinia purpurea - Mantharai
6. Bauhinia racemosa - Aathi
7. Bauhinia tomentosa – Iruvathi
8. Buchanania aillaris - Kattuma
9. Borassus flabellifer - Panai
10. Butea monosperma - Murukka maram
11. Bobax ceiba – Ilavu, Sevvilavu
12. Calophyllum inophyllum - Punnai
13. Cassia fistula - Sarakondrai
14. Cassia roxburghii- Sengondrai
15. Chloroxylon sweitenia - Purasa maram
16. Cochlospermum religiosum – Kongu, Manjal Ilavu
17. Cordia dichotoma – Mookuchali maram
18. Creteva adansonii – Mavalingum
19. Dillenia indica – Uva, Uzha
20. Dillenia pentagyna – Siru Uva, Sitruzha
21. Diospyros ebenum - Karungali


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22. *Diospyros chloroxylon* – Vaganai
23. *Ficus amplissima* – Kal Itchi
24. *Hibiscus tiliaceous* – Aatru poovarasu
25. *Hardwickia binata* – Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphyllus* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* -Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* – Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* – Nuna
37. *Morinda citrifolia* – Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* – Pungam
40. *Premna mollissima* – Munnai
41. *Premna serratifolia* – Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* – Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* – Puthranjivi
48. *Salvadora persica* – Ugaa Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Piraya maram
52. *Strychnos nuxvomica* – Yetti
53. *Strychnos potatorum* - Therthang Kottai

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54. Syzygium cumini - Naval
55. Terminalia bellerica - Thandri
56. Terminalia arjuna - Ven marudhu
57. Toona ciliate – Sandhana vembu
58. Thespesia populnea - Puvarasu
59. Walsura trifoliata – valsura
60. Wrightia tinctoria - Vep

Discussion by SEIAA and the Remarks:-

The subject was placed in the 496th Authority meeting held on 24.03.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal condition in addition to the following conditions:

1. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
2. 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.
3. 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.
4. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
5. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
6. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
7. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.


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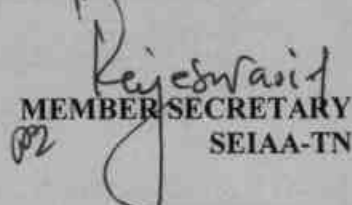
8. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
9. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
10. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
11. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
12. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
13. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
14. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
15. 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.
16. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
17. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
18. The project proponent furnish the VAO certificate must be obtained with reference to 300m human habitations must be produced at the time of EC.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.


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- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted.


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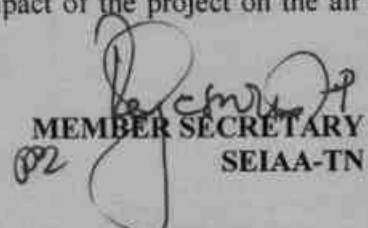
Impact, if any, of change of land use should be given.

- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land
- ~~14) Details of forest in mine lease, its land use, R&R issues, if any, should be given, these and other~~
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State

Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

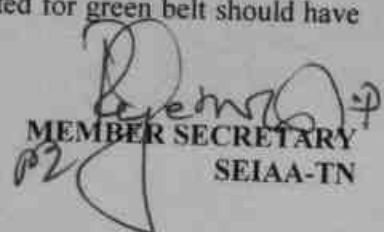
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

- 23) Air quality modeling should be carried out for prediction of impact of the project on the air


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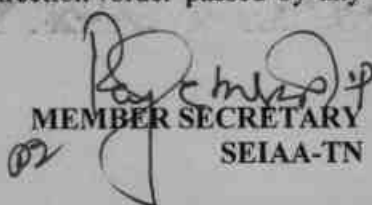
quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the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

- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect ~~groundwater. Necessary data and the investigation plan in this regard and the provided data base the~~ working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have


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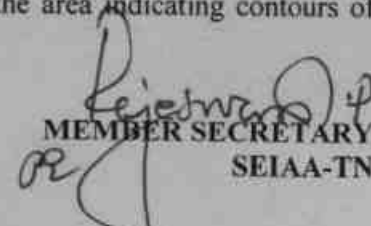
greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any


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Court of Law against the Project should be given.

- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - j) The EIA report should also include (i) surface plan of the area indicating contours of

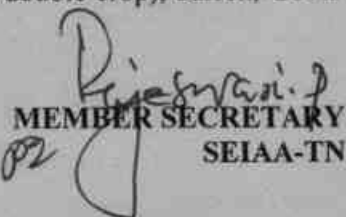

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main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

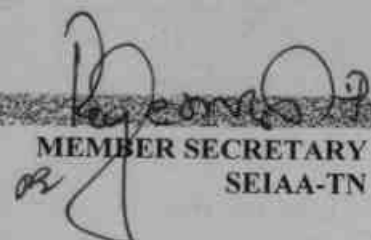
1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or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


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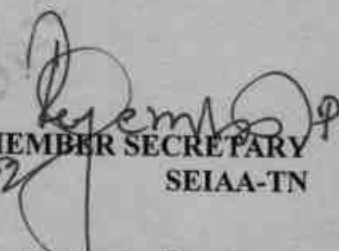
- private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.


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- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.

4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Coimbatore District.
7. Stock File.



TEST REPORT

Report No	EHS360/TR/2023-24/001	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/001
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ1 Core zone Project Area - 10°53'22.49"N 77° 4'48.49"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	44.8	22.6	6.8	23.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	45.9	23.4	7.1	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	43.7	21.9	6.7	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	44.9	22.4	5.9	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	45.8	23.2	5.2	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.8	21.9	6.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	46.9	23.4	7.0	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	42.3	21.7	7.4	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	43.4	22.4	6.9	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	45.7	23.7	6.5	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	44.6	22.3	7.4	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	41.8	20.8	5.6	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	43.4	21.9	6.9	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	44.6	22.4	6.4	21.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	45.2	23.6	7.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	45.4	23.8	5.9	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	42.7	21.7	6.7	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	44.2	22.2	6.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	43.9	22.4	5.9	24.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	41.4	20.9	6.8	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	42.1	23.4	7.0	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	45.7	24.1	6.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.5	21.6	6.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	44.2	22.3	7.2	21.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	46.0	23.5	6.7	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	42.4	21.9	7.1	19.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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 (KESAVAN M)



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 Page 1 of 1

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(Signature)
 Santhosh Kumar .A
 Managing Director

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 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/001	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/001
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ1 Core zone Project Area - 10°53'22.49"N 77° 4'48.49"E		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
02.12.2024	7:00-7:00	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	63.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	62.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	60.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	63.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	66.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	63.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	62.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	61.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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Page 1 of 1

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(Signature)
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/002	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/002
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 2 – Core Zone Project Area - 10°53'27.99"N 77° 4'50.90"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	44.2	22.3	5.2	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	45.1	21.2	6.8	22.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	42.2	20.8	5.9	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	40.4	21.4	6.1	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	41.8	22.4	7.1	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	44.0	22.3	6.6	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	39.8	19.8	5.8	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	41.4	20.4	6.2	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	44.6	23.1	6.4	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	38.9	22.0	5.9	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	39.4	19.4	6.4	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	40.2	20.1	6.1	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	42.5	21.2	7.2	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	43.6	22.1	7.0	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	39.4	19.8	6.8	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	42.4	21.4	6.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	41.8	20.5	5.8	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	40.2	19.7	5.4	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	44.5	22.8	5.9	20.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	39.1	19.5	7.1	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	43.2	21.8	4.9	23.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	40.7	22.1	6.1	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	39.7	19.9	5.4	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	38.6	19.5	6.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	42.5	21.8	5.8	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	43.7	22.4	4.7	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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 Santhosh Kumar .A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/002	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/002
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 2 – Core Zone Project Area - 10°53'27.99"N 77° 4'50.90"E		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
02.12.2024	7:00-7:00	60.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	63.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	59.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	61.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	60.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	62.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	58.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	61.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	60.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	57.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	58.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	60.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	59.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	61.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	58.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	59.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	60.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	61.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	57.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	58.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	60.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	61.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	59.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	59.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	61.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

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(KESAVAN M)



*****End of Report*****
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Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/003	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/003
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ - 3 Near Existing Quarry 10°53'37.25"N 77° 4'54.88"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	39.6	20.1	5.3	25.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	38.7	21.3	4.9	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	36.8	23.2	5.6	25.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	39.1	22.4	4.8	26.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	38.6	20.2	6.0	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	37.5	23.4	6.2	26.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	36.8	22.5	5.3	13.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	40.1	20.6	4.9	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	40.3	19.8	6.7	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	42.5	20.7	5.9	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	41.7	21.4	5.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	39.8	23.5	5.5	25.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	40.8	22.4	6.7	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	41.6	21.6	6.9	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	38.5	20.9	5.8	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	40.8	20.5	5.3	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	41.3	19.2	5.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	42.6	21.7	4.7	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	43.5	22.8	5.0	25.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	40.9	23.4	6.1	26.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	41.9	20.0	6.9	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	42.6	21.2	6.5	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.7	22.2	5.3	26.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	40.1	23.4	5.2	26.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	38.7	19.9	6.6	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	36.8	18.9	5.7	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

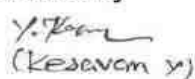
TEST REPORT

Report No	EHS360/TR/2023-24/003	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/003
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ - 3 Near Existing Quarry 10°53'37.25"N 77° 4'54.88"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	7:00-7:00	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	66.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	64.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit**Remarks:** The values observed for the pollutants given above are within the CPCB standards.

Verified by


(Kesavam Y)


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

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Authorized Signatory


Santhosh Kumar A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/004	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/004
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ4 – KG Pudur - 10°53'28.25"N 77° 2'4.71"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	40.7	20.6	5.2	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	41.6	22.0	6.1	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	43.8	22.8	6.0	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	42.7	23.5	5.2	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	43.6	20.9	5.9	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.7	21.1	6.4	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	45.9	23.0	7.6	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	46.0	22.3	6.1	19.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	44.8	20.8	7.1	20.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	43.2	21.7	6.5	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	43.8	23.5	5.9	19.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	42.6	22.6	6.1	19.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	41.7	23.7	7.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	42.8	22.5	6.6	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	43.5	21.0	5.3	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	44.0	20.3	6.9	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	42.2	23.1	5.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	41.7	22.7	6.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	41.6	20.1	7.9	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	40.0	21.5	6.4	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	43.8	20.9	6.0	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	42.7	21.3	5.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.9	21.4	6.2	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	44.5	22.1	5.6	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	43.8	23.1	5.4	19.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	42.6	22.9	6.9	18.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/004	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sullur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/004
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ4 – KG Pudur - 10°53'28.25"N 77° 2'4.71"E		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
02.12.2024	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	61.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	64.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	63.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	60.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	61.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	61.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	60.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	61.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80		<80

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/005	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 – Chinnakuyili- 10°55'44.74"N 77° 5'4.27"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	41.2	21.3	7.1	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	42.3	22.2	6.3	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	43.1	22.5	8.6	24.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	45.2	23.1	6.6	23.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	46.0	22.1	8.5	25.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.2	23.3	6.3	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	40.5	20.4	8.2	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	46.0	23.0	7.5	26.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	42.2	21.5	6.	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	46.1	20.3	8.4	26.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	43.0	23.2	7.1	26.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	41.2	22.3	7.2	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	40.3	20.2	6.5	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	42.8	21.6	6.6	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	45.5	23.0	7.5	25.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	40.8	22.4	8.4	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	43.9	22.6	6.6	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	44.5	24.1	7.5	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	42.8	22.1	7.4	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	43.5	23.7	7.2	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	44.5	22.8	6.1	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	45.6	21.6	7.0	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	40.2	20.9	5.4	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	45.3	23.4	6.6	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	41.6	20.4	6.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	42.7	21.5	5.8	21.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
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TEST REPORT

Report No	EHS360/TR/2023-24/005	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sular , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 – Chinnakuyili- 10°55'44.74"N 77° 5'4.27"E		

Date	Period. hrs	SPM ($\mu\text{g}/\text{m}^3$)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)
02.12.2024	7:00-7:00	66.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	66.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	61.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	61.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	61.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	60.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	61.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	64.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	60.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Y. Kesavam
(Kesavam)



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

Page 1 of 1

Authorized Signatory

Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
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TEST REPORT

Report No	EHS360/TR/2023-24/006	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 –Bogampatti - 10°53'58.10"N 77° 7'14.89"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	44.0	21.5	7.2	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	43.5	20.7	6.8	18.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	42.8	21.1	5.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	43.8	22.5	6.6	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	42.4	23.1	5.4	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	43.5	24.2	6.8	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	42.8	23.4	7.3	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	41.5	24.2	6.4	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	40.6	23.4	5.3	19.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	42.5	24.5	6.9	20.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	43.7	18.2	7.6	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	42.9	18.1	6.7	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	42.	19.6	7.3	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	43.9	21.3	6.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	42.8	20.4	5.5	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	41.5	21.6	6.8	20.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	43.4	19.8	5.9	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	44.8	20.4	6.7	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	42.6	19.5	6.6	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	43.5	20.6	5.4	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	44.2	19.4	5.3	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	42.4	21.3	7.7	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.6	19.4	6.6	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	42.1	21.9	5.4	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	44.3	19.6	5.4	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	43.7	18.9	6.7	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

Authorized Signatory

(Signature)
Santhosh Kumar .A
Managing Director

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3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/006	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 –Bogampatti - 10°53'58.10"N 77° 7'14.89"E		

Date	Period. hrs	SPM (µg/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)	Ni (ng/m ³)
02.12.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	61.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	63.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	65.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	63.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	61.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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(KESAVAN M)



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Page 1 of 1

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(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

TEST REPORT

Report No	EHS360/TR/2023-24/007	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sultur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 7 Vadasithur - 10°50'23.48"N 77° 4'55.68"E		

Date	Period. hrs	PM10(µg/m3)	PM2.5(µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.12.2024	7:00-7:00	44.4	21.6	7.8	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.12.2024	7:15-7:15	42.3	22.9	6.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.12.2024	7:00-7:00	44.5	21.5	5.3	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.12.2024	7:15-7:15	45.5	23.1	6.5	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.12.2024	7:00-7:00	43.6	24.7	5.8	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.12.2024	7:15-7:15	42.5	25.5	6.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.12.2024	7:00-7:00	44.3	26.5	7.6	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.12.2024	7:15-7:15	43.1	23.3	6.4	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.12.2024	7:00-7:00	44.5	24.7	5.5	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.12.2024	7:15-7:15	45.6	25.1	6.3	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
06.01.2025	7:00-7:00	42.3	21.6	5.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
07.01.2025	7:15-7:15	44.5	22.1	6.4	22.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.01.2025	7:00-7:00	43.8	23.8	6.8	23.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.01.2025	7:15-7:15	43.6	24.1	7.5	21.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
20.01.2025	7:00-7:00	44.4	21.3	8.3	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.01.2025	7:15-7:15	45.7	22.7	7.4	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
27.01.2025	7:00-7:00	43.3	23.9	6.5	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.01.2025	7:15-7:15	44.7	24.4	7.6	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.02.2025	7:00-7:00	42.5	22.5	6.4	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.02.2025	7:15-7:15	43.9	21.7	5.2	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.02.2025	7:00-7:00	44.0	23.1	7.3	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.02.2025	7:15-7:15	42.1	22.8	6.5	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.02.2025	7:00-7:00	43.4	24.6	7.2	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.02.2025	7:15-7:15	44.6	23.5	6.4	20.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.02.2025	7:00-7:00	44.7	21.3	7.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.02.2025	7:15-7:15	43.5	22.4	6.7	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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(KESAVAN M)



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(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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TEST REPORT

Report No	EHS360/TR/2023-24/007	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 7 Vadasithur - 10°50'23.48"N 77° 4'55.68"E		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
02.12.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.12.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.12.2024	7:00-7:00	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.12.2024	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.12.2024	7:00-7:00	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.12.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.12.2024	7:00-7:00	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.12.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.12.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.12.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
06.01.2025	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
07.01.2025	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.01.2025	7:00-7:00	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.01.2025	7:15-7:15	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
20.01.2025	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.01.2025	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
27.01.2025	7:00-7:00	62.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.01.2025	7:15-7:15	61.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.02.2025	7:00-7:00	64.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.02.2025	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.02.2025	7:00-7:00	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.02.2025	7:15-7:15	61.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.02.2025	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.02.2025	7:15-7:15	65.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.02.2025	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.02.2025	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<100	<60	<80	<80	<100

Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

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(Signature)
Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 009	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 009
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N1– Core Zone - 10°53'23.29"N 77° 4'50.21"E			N2 – Core zone - 10°53'27.97"N 77° 4'51.13"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
02.12.2024	44.7	49.6	47.81	39.2	40.1	39.7
03.12.2024	44	45.6	44.87	38.4	40.2	39.4
09.12.2024	45.9	48.9	47.65	39.4	43.2	41.7
10.12.2024	44.9	48.9	47.35	38.9	40.2	39.6
16.12.2024	43.5	50.2	48.03	38.2	41.5	40.2
17.12.2024	43.8	51.5	49.17	36.2	40.6	38.9
23.12.2024	42.7	53.5	50.84	38.3	41.8	40.4
24.12.2024	43.1	51.5	49.08	35.6	41.2	39.2
30.12.2024	42.9	50.2	47.93	36.1	40.6	38.9
31.12.2024	43.6	45.5	44.65	36.8	40.3	38.9
06.01.2025	44.7	48.9	47.29	35.7	42.3	40.1
07.01.2025	44	46.6	45.49	34.5	42.1	39.8
17.01.2025	45.9	47.8	46.95	37.6	43.5	41.5
18.01.2025	44.9	48.6	47.13	36.8	39.8	38.6
20.01.2025	43.5	58.7	55.82	36.9	42.3	40.4
21.01.2025	39.9	59.1	56.14	37.6	45.2	42.9
27.01.2025	38.6	40.5	39.65	30.2	43	40.2
28.01.2025	38.6	47.5	45.02	31.4	36.6	34.7
03.02.2025	37.2	40.2	38.95	32.7	37.2	35.5
04.02.2025	36.3	38.9	37.79	31.2	36.4	34.5
10.02.2025	35.5	36.9	36.26	32.4	35.8	34.4
11.02.2025	33.3	33.6	33.45	30.4	37.9	35.6
17.02.2025	32.3	34.5	33.54	32.4	38.8	36.7
18.02.2025	30.6	32.3	31.53	31.2	36.5	34.6
Result	Day Means		48.0	Day Means		39.5
	Night Means		37.0	Night Means		35.2

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
 The Noise level in the above location exists within the permissible limits of CPCB.

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 (KESAVAN M)



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 Page 1 of 1

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(Signature)
 Santhosh Kumar .A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 010	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Suler , District: Coimbatore		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 010
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N3 – Near Existing Quarry 10°53'37.02"N 77° 4'55.11"E			N4 – KG Pudur - 10°53'29.42"N 77° 2'3.96"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
02.12.2024	40.3	48.7	46.28	43.4	48.9	46.97
03.12.2024	40.9	49.4	46.96	44.1	50.1	48.06
09.12.2024	43.4	50.7	48.43	45.5	51.4	49.38
10.12.2024	44.9	51.9	49.68	45.4	52.4	50.18
16.12.2024	45.3	52.3	50.08	44.2	55.4	52.71
17.12.2024	42.4	51.4	48.90	45.9	54.9	52.40
23.12.2024	41.7	52.8	50.11	46.4	49.7	48.36
24.12.2024	43.7	53.7	51.10	43.2	48.7	46.77
30.12.2024	42.3	52.1	49.52	46.1	50.4	48.76
31.12.2024	41.4	50.3	47.82	47.3	49.3	48.41
06.01.2025	43.7	53.4	50.83	45.4	50.7	48.81
07.01.2025	44.8	54.9	52.29	47.3	54.3	52.08
17.01.2025	45.7	55	52.47	46.8	54.2	51.92
18.01.2025	45.3	53.2	50.84	47.8	57.9	55.29
20.01.2025	45.9	54.3	51.88	46.4	53.2	51.01
21.01.2025	44.3	50.7	48.59	46.4	59.7	56.89
27.01.2025	42.3	49.7	47.42	42.3	48.3	46.26
28.01.2025	38.4	47.3	44.82	40.7	49.7	47.20
03.02.2025	35.4	44.3	41.82	41.3	47.1	45.10
04.02.2025	36.7	42.4	40.42	40.7	48.4	46.07
10.02.2025	36	43.7	41.37	41.3	48.3	46.08
11.02.2025	35.8	43.4	41.09	40.2	47.9	45.57
17.02.2025	36.4	44.3	41.94	37.9	48.4	45.76
18.02.2025	35.3	42.1	39.91	38.4	45.6	43.35
Result	Day Means		49.6	Day Means		50.3
	Night Means		42.3	Night Means		45.7
Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.						

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(Signature)
(KESAVAN M)



*****End of Report*****
Page 1 of 1

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(Signature)
Santhosh Kumar .A
Managing Director

Note: 1. The test results are only to the sample submitted for test. 2.Any correction of the test report in full or part shall invalidate the report.
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TEST REPORT

Report No	EHS360/TR/2023-24/ 011		Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore			
Sampling Method	IS 9989	Sample Drawn by	Laboratory	
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 011	
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025	

Location	N5 – Chinnakuyili - 0°55'38.85"N77°5'13.98"E			N6 – Bogampatti 10°54'2.50"N 77° 7'19.54"E		
Parameter	Min	Max	Parameter	Min	Max	Parameter
Time	dB(A)	dB(A)	Time	dB(A)	dB(A)	Time
02.12.2024	43.1	49.9	47.7	39.2	40.1	39.7
03.12.2024	43.9	48.6	46.9	38.4	40.2	39.4
09.12.2024	44.9	45.8	45.4	39.4	43.2	41.7
10.12.2024	45	46.8	46.0	38.9	40.2	39.6
16.12.2024	45.9	47.3	46.7	38.2	41.5	40.2
17.12.2024	47.6	49.6	48.7	36.2	40.6	38.9
23.12.2024	46.8	50.3	48.9	38.3	41.8	40.4
24.12.2024	45.3	51.5	49.4	35.6	41.2	39.2
30.12.2024	44.9	48.3	46.9	36.1	40.6	38.9
31.12.2024	41.6	48.9	46.6	36.8	40.3	38.9
06.01.2025	46.2	47.3	46.8	35.7	42.3	40.1
07.01.2025	48.6	50.2	49.5	34.5	42.1	39.8
17.01.2025	49.6	51.5	50.7	37.6	43.5	41.5
18.01.2025	49.1	51.6	50.5	36.8	39.8	38.6
20.01.2025	48.6	50.5	49.7	36.9	42.3	40.4
21.01.2025	47.5	48.9	48.3	37.6	45.2	42.9
27.01.2025	42.1	45.5	44.1	30.2	43	40.2
28.01.2025	41.6	42.9	42.3	31.4	36.6	34.7
03.02.2025	40.2	42.3	41.4	32.7	37.2	35.5
04.02.2025	38.5	41.2	40.1	31.2	36.4	34.5
10.02.2025	36.5	39.9	38.5	32.4	35.8	34.4
11.02.2025	34.2	38.9	37.2	30.4	37.9	35.6
17.02.2025	36.5	38.6	37.7	32.4	38.8	36.7
18.02.2025	35.5	36.9	36.3	31.2	36.5	34.6
Result	Day Means		47.8	Day Means		40.0
	Night Means		39.0	Night Means		35.2
Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A) The Noise level in the above location exists within the permissible limits of CPCB.						

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 (KESAVAN M)



*****End of Report*****
 Page 1 of 1

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(Signature)
 Santhosh Kumar .A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 012	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 012
Sample Description	Ambient Noise	Sample Collected Date	25-02-2025

Location	N7- Vadasithur 10°50'23.48"N 77° 4'55.68"E		
Parameter	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)
02.12.2024	35.2	39.2	37.6
03.12.2024	36.7	40.2	38.8
09.12.2024	38.4	42.6	41.0
10.12.2024	36.7	39.4	38.3
16.12.2024	38.2	42.9	41.2
17.12.2024	37.1	41.2	39.6
23.12.2024	35.8	41.8	39.8
24.12.2024	36.6	40.6	39.0
30.12.2024	36.1	41.6	39.7
31.12.2024	36.8	40.3	38.9
06.01.2025	35.7	39.4	37.9
07.01.2025	37.4	40.6	39.3
17.01.2025	35.8	40.1	38.5
18.01.2025	36.8	39.8	38.6
20.01.2025	36.9	39.7	38.5
21.01.2025	37.6	40.6	39.4
27.01.2025	37.9	41.6	40.1
28.01.2025	31.4	34.6	33.3
03.02.2025	32.7	36.8	35.2
04.02.2025	35.6	39.4	37.9
10.02.2025	32.4	36.4	34.8
11.02.2025	31.7	35.4	33.9
17.02.2025	34.6	38.5	37.0
18.02.2025	33.4	37.2	35.7
Result	Day Means		39.2
	Night Means		35.4

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Santhosh Kumar .A
Managing Director

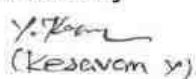
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TEST REPORT

Report No	EHS360/TR/2023-24/ 013	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 1	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Core Zone- 10°53'23.67"N 77° 4'50.95"E		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.68
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	412 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	39.9 %
04	Bulk Density	By Cylindrical Method	1.01 g/cm ³
05	Porosity	By Gravimetric Method	35.8 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	40.2 mg/kg
07	Magnesium as Mg		20.8 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	70.9 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.015 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.24 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	424.8 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.46 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.85 %

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 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 013	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam, Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 1	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Core Zone- 10°53'23.67"N 77° 4'50.95"E		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	28.4 %
	Sand		34.8 %
	Silt		36.8 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	20.1 mg/kg
16	Zinc as Zn		1.15 mg/kg
17	Boron as B		1.97 mg/kg
18	Potassium as K		32.6 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.15 mg/kg
23	Iron as Fe		2.32 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	38.8 meq/100g of soil

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(KESAVAN M)



*****End of Report*****
Page 1 of 1

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(Signature)
Santhosh Kumar .A
Managing Director

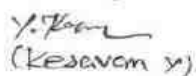
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TEST REPORT

Report No	EHS360/TR/2023-24/ 014	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 014
Sample Description	Soil 2	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Near Existing Quarry 10°53'39.50"N 77° 4'55.23"E		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.12
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	312.5 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	43.2 %
04	Bulk Density	By Cylindrical Method	0.86 g/cm ³
05	Porosity	By Gravimetric Method	46.7 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	67.4 mg/kg
07	Magnesium as Mg		36.9 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	70.7 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0019 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.29 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	437.8 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.36 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	0.79 %

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Page 1 of 1

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 Santhosh Kumar A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 014	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 014
Sample Description	Soil 2	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Near Existing Quarry 10°53'39.50"N 77° 4'55.23"E		

S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	26.2 %
	Sand		35.9 %
	Silt		37.9 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	24.4 mg/kg
16	Zinc as Zn		2.01 mg/kg
17	Boron as B		1.23 mg/kg
18	Potassium as K		32.8 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.98 mg/kg
23	Iron as Fe		6.97 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	45.6 meq/100g of soil

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 (Kesavam K)

 *****End of Report*****
 Page 1 of 1

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 Santhosh Kumar A
 Managing Director

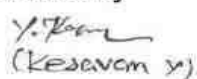
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TEST REPORT

Report No	EHS360/TR/2023-24/ 015	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 015
Sample Description	Soil 3	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	KG Pudur 10°53'28.15"N 77° 2'5.16"E		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.68
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	380 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.1 %
04	Bulk Density	By Cylindrical Method	1.12 g/cm ³
05	Porosity	By Gravimetric Method	39.7 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	58.9 mg/kg
07	Magnesium as Mg		36.6 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	82.4 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0021 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.96 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	418.9 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.98 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.15 %

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 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 015	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 015
Sample Description	Soil 3	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	KG Pudur 10°53'28.15"N 77° 2'5.16"E		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	25.0 %
	Sand		36.1 %
	Silt		38.9 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	26.3 mg/kg
16	Zinc as Zn		1.07 mg/kg
17	Boron as B		1.32 mg/kg
18	Potassium as K		35.9 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.33 mg/kg
23	Iron as Fe		6.29 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	49.7 meq/100g of soil

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Y. Karm
(Kesavom ya)



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Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 016	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 4	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Chinnakuyili 10°55'45.36"N 77° 5'4.04"E		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.94
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	324.6 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	39.8 %
04	Bulk Density	By Cylindrical Method	0.89 g/cm ³
05	Porosity	By Gravimetric Method	36.8 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	87.9 mg/kg
07	Magnesium as Mg		41.4 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	57.5 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0013 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.29 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	392.7 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.09 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.21 %

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TEST REPORT

Report No	EHS360/TR/2023-24/ 016	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 4	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Chinnakuyili 10°55'45.36"N 77° 5'4.04"E		

S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	25.4 %
	Sand		34.8 %
	Silt		39.8 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	29.6 mg/kg
16	Zinc as Zn		1.45 mg/kg
17	Boron as B		1.71 mg/kg
18	Potassium as K		46.4 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.81 mg/kg
23	Iron as Fe		3.09 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	45.8 meq/100g of soil

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Santhosh Kumar .A
Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 017	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 5	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Bogampatti 10°54'2.30"N 77° 7'19.69"E		

S.No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.68
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	378.2 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	43.9 %
04	Bulk Density	By Cylindrical Method	0.92 g/cm ³
05	Porosity	By Gravimetric Method	47.6 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	59.6 mg/kg
07	Magnesium as Mg		23.9 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	68.4 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0020 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	6.20 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	452.5 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.88 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.09 %

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Page 1 of 1

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Santhosh Kumar .A
Managing Director

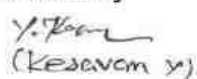
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TEST REPORT

Report No	EHS360/TR/2023-24/ 017	Report Date	05-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sular , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 5	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Bogampatti 10°54'2.30"N 77° 7'19.69"E		

S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	24.7 %
	Sand		35.6 %
	Silt		39.7 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	22.5 mg/kg
16	Zinc as Zn		1.78 mg/kg
17	Boron as B		1.65 mg/kg
18	Potassium as K		39.2 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.33 mg/kg
23	Iron as Fe		1.78 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	41.9 meq/100g of soil

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 Santhosh Kumar A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/ 018	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 018
Sample Description	Soil 6	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Vadasithur 10°50'15.09"N 77° 4'50.11"E		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.81
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	442 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.4 %
04	Bulk Density	By Cylindrical Method	1.21 g/cm ³
05	Porosity	By Gravimetric Method	42.6 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	67.8 mg/kg
07	Magnesium as Mg		31.9 mg/kg
08	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	73.6 mg/kg
09	Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0015 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.56 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	464 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.12 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.23 %

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Santhosh Kumar .A
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TEST REPORT

Report No	EHS360/TR/2023-24/ 018	Report Date	10-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 018
Sample Description	Soil 6	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 KG	Sample Received On	26-02-2025
Sample Condition	Good	Test Commenced On	26-02-2025
Sampling Location	Vadasithur 10°50'15.09"N 77° 4'50.11"E		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	26.9 %
	Sand		33.7 %
	Silt		39.4 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C – 2000	29.8 mg/kg
16	Zinc as Zn		1.45 mg/kg
17	Boron as B		1.62 mg/kg
18	Potassium as K		46.8 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.98 mg/kg
23	Iron as Fe		5.56 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	46.5 meq/100g of soil

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 Santhosh Kumar A
 Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/019	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Kothavadi Lake 10°48'38.19"N 77° 4'3.24"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	12 Hazen
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	8.51
4	Conductivity @ 25°C	IS 3025 Part 14:2013	2190 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	6.5 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	1293 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009	432 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	109.0 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	38.9 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986	424.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	471.5 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986	60.1 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.46 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.31 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988	8.6 mg/l

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Managing Director

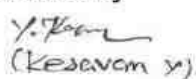
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TEST REPORT

Report No	EHS360/TR/2023-24/019	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam, Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Kothavadi Lake 10°48'38.19"N 77° 4'3.24"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	11.5 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	40 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	13.2 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	2.6 mg/l
36	Sulphide as H ₂ S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	20.1 mg/l
	Discipline: Biological	Group: Water	
40	Total Coliform	APHA 23 rd Edn. 2017:9221B	550 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	110 MPN/100ml

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Managing Director

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TEST REPORT

Report No	EHS360/TR/2023-24/020	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/020
Sample Description	Surface Water (SW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area 10°53'43.45"N 77° 4'49.24"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	< 5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.63
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1745.0 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	1030.0 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	356.0 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	83.3 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	35.9 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	325.0 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	372.0 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	58.9 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.21 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.31 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	3.3 mg/l

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(KESAVAN M)



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Managing Director

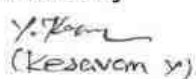
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TEST REPORT

Report No	EHS360/TR/2023-24/021	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/021
Sample Description	Surface Water (SW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area 10°53'43.45"N 77° 4'49.24"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological Group: Water	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
37	Total Coliform	APHA 23 rd Edn. 2017:9221B	139 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml
	Discipline: Biological Group: Water		
40	Total Coliform	APHA 23 rd Edn. 2017:9221B	850 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	120 MPN/100ml

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Managing Director

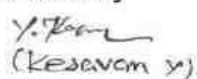
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TEST REPORT

Report No	EHS360/TR/2023-24/022	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (WW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Chinnakuyili 10°55'34.52"N 77° 5'2.99"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	Group: Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	< 5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.89
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1580 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	934 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	304.0 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	68.9 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	32.1 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	286.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	326.1 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	53.8 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.19 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.27 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	3.1 mg/l

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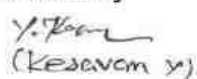
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TEST REPORT

Report No	EHS360/TR/2023-24/022	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (WW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Chinnakuyili 10°55'34.52"N 77° 5'2.99"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	Group: Water	
37	Total Coliform	APHA 23 rd Edn. 2017:9221B	142 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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TEST REPORT

Report No	EHS360/TR/2023-24/023	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/023
Sample Description	Ground Water (WW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near KG Pudur 10°53'51.67"N 77° 2'14.94"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	Group: Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	< 5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.35
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1370.0 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	810.0 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	288.0 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	65.7 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	30.1 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	264.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	302.6 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	61.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.33 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.37 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	4.6 mg/l

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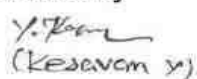
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TEST REPORT

Report No	EHS360/TR/2023-24/023	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/023
Sample Description	Ground Water (WW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near KG Pudur 10°53'51.67"N 77° 2'14.94"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water	
37	Total Coliform	APHA 23 rd Edn. 2017:9221B	120 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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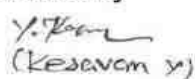
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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-1)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area 10°53'29.61"N 77° 4'37.06"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	Group: Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	< 5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.56
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1358.0 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	803.0 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	264.0 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	62.5 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	26.2 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	232.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	286.5 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	55.6 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.40 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.37 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	3.2 mg/l

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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Near Project Area 10°53'29.61"N 77° 4'37.06"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water	
37	Total Coliform	APHA 23 rd Edn. 2017:9221B	112 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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(KESAVAN M)



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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	06-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sulur , District: Coimbatore		
Customer Name			
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample Received	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Bogampatti 10°54'13.04"N 77° 7'19.31"E		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical	Group: Water	
1	Colour	IS 3025 Part 4:1983 (Reaff:2017)	< 5
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.28
4	Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1312.0 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	< 1 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	777.0 mg/l
7	Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	248.0 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	57.7 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	25.3 mg/l
10	Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	229.5 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	275.5 mg/l
12	Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	51.5 mg/l
13	Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.36 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.30 mg/l
16	Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	4.8 mg/l

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Managing Director

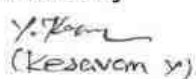
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TEST REPORT

Report No	EHS360/TR/2023-24/024	Report Date	05-03-2025
Site Location	M/s. Thiru. S. Sakthivel Extent: 1.64.0ha ,S.F. No: 334/1D, and 334/2A Village: Pachapalayam,Taluk: Sultur , District: Coimbatore		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/024
Sample Description	Ground Water (BW-2)	Sample Collected Date	25-02-2025
Qty. of Sample	2 Litres	Sample Received On	26-02-2025
Sample Condition	Fit for Analysis	Test Commenced On	26-02-2025
Sampling Location	Munjanur - 11°26'39.59"N 78° 6'13.68"E		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	Discipline: Biological	Group: Water	
37	Total Coliform	APHA 23 rd Edn. 2017:9221B	134 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml

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		NABET	MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

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

