

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT` AND ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING
Environmental Clearance under EIA Notification – 2006

Schedule Sl. No. 1 (a) (i): Mining Project

“B1” CATEGORY – MINOR MINERAL – CLUSTER – NON-FOREST LAND

CLUSTER EXTENT = 10.01.50hectares

At

Kuppam Village, Pugalur Taluk,
Karur District, Tamil Nadu

ToR Identification No. TO25B0108TN5981163N on 04/09/2025, File No.12458

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.	Mineral Production
Tmt.S.Lakshmi W/o.Rajeshkumar, Door No.267/12, Sindu Nagar, Kongu Mess Opposite, Andankovil East, Manmangalam Taluk, Karur District - 639 002.	2.05.50Ha & 675/1 and 675/2	Rough Stone-238260m ³ Gravel-70890m ³

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



No: 1/213-B, Ground Floor, Natesan Complex

Oddapatti, Collectorate Post office,

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NABET ACC. NO: NABET/EIA/23-26/RA 0319

Valid till: 31.12.2026

ENVIRONMENTAL LAB

EXCELLENCE LABORATORY

No.23/93, 5th Street Ram Nagar, S.S.Colony,
Madurai, Tamil Nadu

NABL Certificate Number: TC-13674,

Valid Until: 12.05.2026

Baseline study period-October through December 2023



GEO TECHNICAL MINING SOLUTIONS

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No.12458

TOR Identification No. TO25B0108TN5981163N, dated. 04/09/2025

Mrs. S. Lakshmi- Rough Stone and Gravel Quarry

Specific Terms of Reference for (Mining of Minerals)

1. SEIAA- Specific Conditions:

S. No	Terms of Reference	Remarks
1.1	The authority noted that the subject was appraised in the 602 nd Meeting of SEAC-II held on 07.08.2025. After detailed discussions, the Authority accepts the recommendation of SEAC-II and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 238260m ³ of Rough Stone & 70890m ³ of Gravel up to the depth of 50m (BGL) as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-II & normal conditions & the conditions mentioned in Annexure of this minutes.	I S. Lakshmi, thanking the authorities for granting the ToR with public hearing for the quantity of 238260m ³ of rough stone and 70890m ³ of Gravel up to the depth of 50m (BGL) as per the approved mining plan. Being in cluster, the combined EIA study is done and described as chapters in report and preparation of separate EMP subject to conditions as recommended by SEAC-II also prepared.

2. SEAC Conditions- Site Specific

2.1	Terms of Reference		Remarks
	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 &	CMC has formed, which included all mines in cluster with statutory personnel for the effective environmental monitoring, maintenance of haul roads etc., and the

		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:	same will be submitted as affidavit during the EIA appraisal.
	(i)	Copy of the agreement forming CMC.	Will be submitted during final EIA presentation.
	(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 Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report.	The boundary pillars are erected as per the guidelines and the pillar map is displayed in EIA report, page 10.
	3	Since waterbodies are situated nearby, the PP shall carry out the hydrological study including the details of waterflow pattern to determine the impacts of the mining operation in the waterbodies.	A detailed hydrological investigation has been carried out and discussed in chapter-III of EIA report, page no- 41-47. The study concludes that there is no impact in the waterbodies due to mining activity.
	4	The details of enumeration of structures including schools, colleges, primary health centres should be submitted along with the EIA report.	The social and public structures around the lease area is enumerated and tabulated in EIA report, chapter-III, page no-83 & 89.

	5	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.	The structures situated within the mentioned radius is given in Table-3.35, Chapter- III, page no-85.
	6	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.	Will be submitted during final EIA presentation.
	7	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	The report of Bio- diversity will be submitted during final presentation.
	8	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.	The EMP has prepared and the affidavit for the same will be submitted during SEIA presentation.
	9	The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading &	The study has been carried out and results for the same are included in section-7.4, chapter- VII, page no-120-127.

		hauling on the surrounding village and structures.	
	10	The PP shall prepare a conceptual action 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.	A conceptual action plan design has been prepared and included in chapter-II, page no-21,22.
	11	The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/videographic evidence along with the EIA report.	Will be submitted during final EIA presentation.

3. SEAC Standard Conditions

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	Not Applicable, it is a fresh quarry lease.
		(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.	The VAO certificate has been enclosed as annexure IV, page -262.
	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	The survey has been carried out structures and observations are tabulated in chapter- III, page no-85.
	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.	A detailed hydrological investigation has been carried out and discussed in section 3.2, chapter-III, page 37-47.
	5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	The Bio diversity study report will be enclosed in final 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.	The DFO letter regarding the nearby safe zones will be enclosed in final 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 possible mitigation measures during the time of appraisal for obtaining the EC.	Not applicable, it is a fresh quarry lease.
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.	A conceptual Slope Stability Plan will be submitted when this quarry reaches the working depth of 30m below ground level.

	9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	The affidavit will be enclosed in final report.
	10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	A conceptual design of controlled blasting as per safety guidelines is given in chapter-II of EIA report, page no-16-18, section-2.5.1.
	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.	There was no quarry operated by the proponent in the past anywhere else and the same is committed by EIA co-ordinator.
	12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	Not applicable, it is a fresh quarry 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?	Not applicable, it is a fresh quarry 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.	
	15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Toposheet, 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).	The satellite imagery, topographic sheet displaying corner co-ordinates and images of geomorphology, lithology, geology of the lease area interpreting the land use of the lease area is given in chapter-III, page no-28-32.
	16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	The drone video evidence will be submitted during the final meeting.
	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.	The green belt photos has been enclosed as annexure IX.
	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 geologically available reserves, mineable reserves and proposed production of Rough Stone were calculated based on cross-section method by plotting sections to cover the

	the mining operations on the surrounding environment, and the remedial measures for the same.	maximum lease area of the proposed project. The plate used for reserve estimation has been presented in Figure 2.5 - 2.8. Results of geological resources and reserves have been shown in Table 2.6 under Chapter II in the EIA report page 12- 15.
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.	Overall 30 persons comprising both skilled and unskilled are to be appointed directly for this project. Details of manpower required for this project have been given in Table 2.16 under Chapter II in the EIA report page 23.
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.	The hydrogeological study including the water table detailing, borewells and open wells and other surface waters around the lease area has been carried out for both seasons. The hydro-geological report for 1km radius is discussed in the Section 3.2 under Chapter III in the EIA report page-37-47. The results and interpretation conclude that mining activity will not intersect the ground water.

21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy & traffic. The results have been discussed in Chapter III in the EIA report page 33-90.
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.	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 120-127.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised.

		It will help in infiltration of rainwater and recharge the aquifer naturally during monsoon. These implementations will reduce the dependency of water from the nearby borewells and open wells. Discussed in chapter-III, section-3.2.2, page-41-43.
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use 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 has been discussed in Section 3.1.2, Chapter III of EIA report page-26 &27 and map is displayed in figure-3.3, page-30. The details of surrounding sensitive ecological features have been provided in section-3.8 of EIA report, Table 3.41 of Chapter III in page 89. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in section-2.5.4, Table-2.10 under Chapter II of EIA report page-18 & 19.
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	Not applicable. This is a rough stone quarry with 100% recovery and no wastes or

	land use, R&R issues, if any, should be provided.	rejects remain in lease area and no overburden or dump may occur. The unsold mineral may be stocked inside the lease area.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	There are no such declared Critically Polluted areas nearby lease area, so no clearance certifications required.
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells. Discussed in chapter-III, section-3.2.2, page-43.
28	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section

		3.7 under Chapter III in the EIA report page-86-88.
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.	A detailed tree survey was carried out within lease area & 300 m radius and the results have been discussed in Section 3.5.1 under Chapter III in the EIA report page-65-72.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan is proposed in Chapter-II of EIA report in section 2.5.5, Table-2.11, page 19.
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.	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the importance of protecting the biological environment. Also planning to conduct such demonstrative sessions in future whenever 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	Discussion in context of carbon emission and sequestration with a detailed greenbelt development plan is provided in Section 4.6 under Chapter IV of EIA report, page 102-104.

	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	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan for the project has been proposed and provided in Section 7.3 under Chapter VII in the EIA report page 121-122.
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.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII in the EIA report page 118-120.
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	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV in the EIA report 108-109.

	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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 130-131.
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.	No negative impact on socio-economic environment due to this project is anticipated and this project shall benefit the socio-economic aspect by offering employment for 30 people directly and many indirectly, which will upgrade the social and economic status of the region. Discussed in Section 3.6 under Chapter III in the EIA report page-77-86.
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this 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.	Implementation of this project lead to overall environmental-social-economic development of the region. Development and maintenance of approach roads, afforestation around the region, uplift in economic activities due to regular transportation of vehicles to and fro, direct employment opportunity for 30 (skilled and unskilled) workers, CSR

		and CER activities, generate revenue to the government in form of royalty. The benefits of the project are discussed in the Chapter VIII in the EIA report page 131-133.
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.	Not applicable, it is a fresh quarry lease.
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	A detailed environment management plan has been prepared following the suggestion made by SEAC, as shown in Chapter X in the EIA report page 135-142. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted during final Presentation.
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.	No concealing of any factual information nor submitted any false/fabricated data involved during the preparation of this EIA report.

Standard Terms of Reference for (Mining of minerals):

1.1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994	Not applicable, it is a fresh quarry lease.
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	The proposed site for quarrying is a private land. A copy of the document showing that proponent is the rightful lessee has been enclosed along with the approved mining plan in Annexure III.
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	All documents are in the name of 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)	The satellite imagery, topographic sheet displaying corner co-ordinates and images of geomorphology, lithology, geology of the lease area interpreting the land use of the lease area is given in page no-10,28,29,30 of chapter III.

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	The image of Survey of India toposheet in 1:50,000 scale indicating the above-mentioned features is enclosed in page no-35 of chapter-III.
1.6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority	The mining activity in proposed area is under the land use policy of state or concerned authority. Approval from AD/DD, department of Geology and Mining is obtained and enclosed as annexure-III. Page-188 & 233.
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	The proponent has individual ownership over the project, not a part in any group or company with board of directors. The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 135-136.

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	This is an open cast mining of rough stone excavation. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° 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.
1.9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period	The data contained in EIA is for the life of the mine/lease period. This project involves excavation of rough stone, which is of 100% recovery and no waste or rejects may generate.
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	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 has been discussed in Section 3.1.2 under Chapter III in the EIA report page 26-27. The details of surrounding sensitive ecological features have been provided in Table 3.43 under Chapter III in the EIA report page 91. Land use plan of the project area showing pre- operational, operational and post- operational phases are

		discussed in Table 2.10 under Chapter II in the EIA report page 18.
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	Not applicable, this project involves excavation of rough stone, which is of 100% recovery and no waste or rejects may generate. The entire quarried out rough stone will be transported to the needy customers.
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	Not applicable. No forest land is involved in this project.
1.13	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished	Not applicable. No forest land involved, the lease area is a patta land.
1.14	Implementation status of recognition of forest rights under the Scheduled Tribes	Not applicable, no forest land involved.

	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	No RF/PF nearby the project area. The details of RF/PF around the project area is listed in chapter-III, page no-91 of EIA report.
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	This project has no impact on wildlife community and there is no wildlife sanctuary situated within 10km radius. The nearby wildlife/Bird sanctuaries related details furnished in chapter-III, page no-91 of EIA report.
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	Not applicable. No any national Park, Sanctuaries, Biosphere Reserves, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), within 10 km of the mine. The nearby ecological sensitive areas are listed in chapter-III Page no-91 of EIA report.
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	The detailed study on flora and fauna including core and buffer zone has been carried out and the report for the same is

	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	given in Section-3.5 under Chapter III in the EIA report page 64-75.
1.19	Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered	Not applicable. The project area is not in proximity of any declared ‘Critically Polluted’ areas and does not come under the Aravalli Range.
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease 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	Not applicable. This project area does not fall under Costal Regulation Zone.

	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	Not applicable. The project area is a patta land, no people of any section are displaced and affected by this project, thus no requirement of R&R. The socio-economic aspects of the people are discussed in chapter-III, page no-77-86.
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	Baseline data were collected for the period of October - December 2023 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III in the EIA report page 25-91.

	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	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 95-97.
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	The water requirement for the project, its availability and source have been provided in Table 2.13 under Chapter II in the EIA report page 19-20. The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt

		maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells. It will help in infiltration of rainwater and recharge the aquifer naturally during monsoon.
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided	Not applicable. The drinking water will be bought from nearby vendors and rain water stored in pits and garland drainage tanks will be utilised for dust suppression and maintenance of green belt.
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	The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells.

1.27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided	Impact and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV in the EIA report page 94-95.
1.28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished	The ground water table is found at the depth of 65m below ground level. The ultimate depth of quarry is 50m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2.2 under Chapter III in the EIA report page-41-47.
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	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated.
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	The highest elevation of the project area is 198m AMSL. Ultimate depth of the mine is 50m BGL. Depth to the water level in the area is 65m BGL.

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	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 104-107.
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	Traffic density survey was carried out to analyse 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 are provided in Section 3.8 under Chapter III in the EIA report page 89-90.

1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.5.7 under Chapter II in the EIA report page 19.
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	Progressive mine closure plan has been prepared for this project and is given in Section 2.5.6 under Chapter II in the EIA report page 19.
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	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV in the EIA report page 108-109.
1.36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 130-131.
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	No negative impact on socio-economic environment due to this project is anticipated. This project shall improve the social and economic status of the region. By offering employment for 30 people directly and many indirectly, CER and

		CSR activities. Discussed in Section 8.1-8.5 under Chapter VIII in the EIA report page-129-130.
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	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 134-140.
1.39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project	The minutes of public hearing and commitment of proponent for the same with time bound action plan and budgetary provisions will be provided and incorporated in final EIA/EMP report.
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given	No litigation is pending in any court against this project.
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out	Project Cost is Rs. 82,17,500/- CER Cost is Rs.5,00,000/- In order to implement the environmental protection measures, an amount of Rs.7,69,52,795 as capital cost and recurring cost as Rs. 18,49,948 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 10,02,21,239 as shown in Table 10.2.

		under Chapter X in the EIA report page-140.
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report	The disaster management plan for this project has been prepared and provided in Section 7.3 under Chapter VII in the EIA report page 119-120.
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	Benefits of the project details have been given under Chapter VIII in the EIA report page 129-131.
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.	All the documents have been 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.	List of tables and source of the data collected have been mentioned.
	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.	Original Baseline monitoring will be provided final report.
	d) Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language only.
	e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted	The questionnaire will be provided in final report.

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.	Instructions for proponents and consultants issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report.
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.	No changes are made in the basic scope and the project parameters.
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.	Not applicable, since it is a new quarry lease.
i) The EIA report should also include, surface plan of the area indicating contours of main topographic features, drainage and mining area, geological maps and sections and sections of the	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

	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.	A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
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.,	The members of the cluster management committee will be instructed to carry out EMP in coordination and evidences for the implementations will be submitted.
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.	The list of members of the formed committee will be submitted to AD/Mines before the execution of mining lease.
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.	All the information has been discussed in Section 2.5.2-.5.6 under Chapter II in the EIA report page 18,19.
5	The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster	The CMC will plan and execute this risk & emergency management plan in a holistic manner including inundation

	in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	of cluster and evacuation plan during intense rain.
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.	It will be advised to the cluster management committee 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 will 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.	A proper action plan regarding the restoration will be followed by the committee and will be furnished.
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.	The health of mine workers and public in vicinity will be monitored regularly and medical camps will be conducted periodically.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6.5 & 4.6.6 under Chapter IV in the EIA report page-105.

10	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III in the EIA report page 64-77. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.6 under Chapter III in the EIA report page 64-72. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 102-105.
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.	The ecological details have been provided in Section 4.6 under Chapter III in the EIA report page 102-105 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 102-105.
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore the ecosystem, as discussed in Chapter IV in the EIA report page 91-109.
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV in the EIA report page 91.

Forests		
15	The project proponent shall detail study on impact of mining on Reserve forests and free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site.
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 102-105.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV in the EIA report page 102-105
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	The protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius has been provided in Table 3.41 under Chapter III in the EIA report page-89.
Water Environment		
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydrogeological study is discussed in the Section 3.2 under Chapter III in the EIA report page 37-47.

20	Erosion Control measures.	Garland drainage structures will be constructed and green belt will be developed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV in the EIA report page 92,93.
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.	The impacts on such aspects has been discussed under Chapter IV in the EIA report page 92-93.
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	There are no water bodes in 1km radius of mine lease area. So, no aquatic flora and fauna in 1km radius.
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV in the EIA report page 91-109.
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.	There are no water bodes in 1km radius of mine lease area. So, no aquatic flora and fauna in 1km radius
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 92.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	There are no water bodes in 1km radius of mine lease area. So, no aquatic flora and fauna in 1km radius.
27	The EIA shall include the impact of mining activity on the following:	

	a) Hydrothermal / Geothermal effect due to destruction in the Environment.	The proposed mining area and the surrounding falls under hard rock formation i.e., Charnockite Formation and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Zone II of seismic zones classification. The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.
	b) Bio-geochemical processes and its foot prints including environmental stress.	No, Bio-geochemical processes and its foot prints including environmental stress are anticipated, since the excavated mineral is a hard rock.
	c) Sediment geochemistry in the surface streams.	There will be no change in the sediment geochemistry of surface streams, since the project site is about 10km away from the river flow. Sediment geochemistry is discussed in the Table 3.4 under the Chapter III in the EIA report page 33-36.
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control noise, air, water, and dust have been given under Chapter IV in the EIA report page 91-102
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	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV in the EIA report page-102, 103.

	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.	The impact on climate change and relevant aspects has been discussed in Chapter IV in the EIA report page-91-102.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Since there will be no source of any Green House Gases in the project site except a little extent of carbon dioxide due to the transportation. All the vehicles used for transportation of the quarry materials will be maintained regularly to check the emissions and controlled blasting will restrict the emissions and does not affect the local livelihood.
Mine Closure Plan		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.11 under Chapter II in the EIA report page 19.
EMP		
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication	A detailed Environment Management plan has been given under Chapter X in the EIA report page no-134.

	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.	A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X in the EIA report page 133-140.
Risk Assessment		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII in the EIA report page 119-121.
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.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 119-120.
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.	The VAO certificate of 300 m radius have been attached in the attached in the Annexure IV, page-262.
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 minutes of public consultation, concerns raised, activities proposed will be submitted during final meeting.

	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.	The plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 127,128.

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.	Not applicable, it is a fresh quarry lease.
2.	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	The proposed site for quarrying is a private land. A copy of the document showing that proponent is the rightful lessee has been enclosed along with the approved mining plan in Annexure III, page-238-241.
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	All documents are in the name of lessee.

	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/ 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).	The satellite imagery, topographic sheet displaying corner co-ordinates and images of geomorphology, lithology, geology of the lease area interpreting the land use of the lease area is given in page no-10,28,29,30,31,32.
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.	The image of Survey of India toposheet in 1:50,000 scale indicating the above-mentioned features is enclosed in page no-35, chapter-III.
6.	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The mining activity in proposed area is under the land use policy of state or concerned authority. Approval from AD/DD, department of Geology and Mining is obtained and enclosed as annexure-III, page-188.

7.	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/ procedures to bring into focus any infringement/ deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has individual ownership over the project, not a part in any group or company with board of directors. The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 133-134.
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	This is an open cast mining of rough stone excavation. The rough stone formation is a hard, compact and homogeneous body. 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.
9.	The study area will comprise of 10 km zone around the mine lease from lease	The data contained in EIA is for the life of the mine/lease period. This project involves

	periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	excavation of rough stone, which is of 100% recovery and no waste or rejects may generate.
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.	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 has been discussed in Section 3.1 under Chapter III in the EIA report page 25-27. The details of surrounding sensitive ecological features have been provided in Table 3.41 under Chapter III in the EIA report page 89. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 18.
11.	Details of the land for any over burden dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	Not applicable, this project involves excavation of rough stone, which is of 100% recovery and no waste or rejects may generate. The entire quarried out rough stone will be transported to the needy customers.
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	Not applicable. No forest land is involved in this project.

	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.	Not applicable. No forest land involved, the lease area is a patta land.
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not applicable, no forest land involved.
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No RF/ PF nearby the project area. The details of RF/ PF around the project area is listed in chapter-III, Page no-89 of EIA report.
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.	This project has no impact on wildlife community and there is no wildlife sanctuary situated within 10km radius. The nearby wildlife/Bird sanctuaries related details furnished in chapter-III, Page no- 89 of EIA report.

17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	Not applicable. No any national Park, Sanctuaries, Biosphere Reserves, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), within 10 km of the mine. The nearby ecological sensitive areas are listed in chapter-III, Page no-89 of EIA report.
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	The detailed study on flora and fauna including core and buffer zone has been carried out and the report for the same is given in Section 3.6 under Chapter III in the EIA report page 64-77.

	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 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not applicable. The project area is not in proximity of any declared 'Critically Polluted' areas and does not come under the Aravalli Range.
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not applicable. This project area does not fall under Coastal Regulation Zone.

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 aspect should be discussed in the Report	Not applicable. The project area is a patta land, no people of any section are displaced and affected by this project, thus no requirement of R&R. The socio-economic aspects of the people are discussed in chapter-III, page no-77-86.
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	Baseline data were collected for the period of October- December 2023 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.9 under Chapter III in the EIA report page 25- 88.

	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 modelling 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 modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The results are provided in Section 3.3.2 under the Chapter III in the EIA report page 55-60.

24.	The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	The water requirement for the project, its availability and source have been provided in Table 2.13 under Chapter II in the EIA report page 19,20. The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells. It will help in infiltration of rainwater and recharge the aquifer naturally during monsoon.
25.	Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.	Not applicable. The drinking water will be bought from nearby vendors and rain water stored in pits and garland drainage tanks will be utilised for dust suppression and maintenance of green belt.
26.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose.

		The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells.
27.	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact and mitigation measures of water environment including surface water and ground water have been discussed in Section 3.2 under Chapter III in the EIA report page 37-47.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The ground water table is found at the depth of 65m below ground level. The ultimate depth of quarry is 50m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2.2 under Chapter III in the EIA report page 41-47.
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated.

	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.	The highest elevation of the project area is 198m AMSL. Ultimate depth of the mine is 50m BGL. Depth to the water level in the area is 65m BGL.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 102-105.

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.	Traffic density survey was carried out to analyse 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 are provided in Section 3.7 under Chapter III in the EIA report page 86-88.
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.5.7 under Chapter II in the EIA report page 19.
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.	Progressive mine closure plan has been prepared for this project and is given in Section 2.5.4 & 2.5.5 under Chapter II in the EIA report page 18,19.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV in the EIA report page 106,107.

	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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 130,131.
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.	No negative impact on socio-economic environment due to this project is anticipated. This project shall improve the social and economic status of the region. By offering employment for 30 people directly and many indirectly, CER and CSR activities. Discussed in Section 8.1, 8.6, 8.7 under Chapter VIII in the EIA report page 129-131.
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.	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 133-140.
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	The minutes of public hearing and commitment of proponent for the same with time bound action plan and budgetary provisions will be provided and incorporated in final EIA/EMP report.

	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	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 82,17,500/- CER Cost is Rs.5,00,000/- . In order to implement the environmental protection measures, an amount of Rs.76952795 as capital cost and recurring cost as Rs. 1849948 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 100221239 . Provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 134-140.
42.	A disaster management plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been prepared and provided in Section 7.3 under Chapter VII in the EIA report page 119-120.
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.	Benefits of the project has included as Chapter VIII in the EIA report page 129-131.
44	Besides the above, the below mentioned general points are also to be followed:	
a)	Executive Summary of the EIA/EMP Report.	The Executive summary of EIA/EMP report is prepared incorporating the given points and included as chapter-XI,

b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been 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.	List of tables and source of the data collected have been mentioned.
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.	Original Baseline monitoring reports will be submitted in final report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language only.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be enclosed in final report.
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.	Instructions for proponents and consultants issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report.
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	No changes are made in the basic scope and the project parameters.

	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.	Not applicable, since it is a new quarry lease.
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.	All the plans including surface plan & geological maps have been included in Approved Mining Book enclosed Annexure III.

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CHAPTER I

INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments the projects are categorized into A, B1 & B2 to determine the level of scrutiny and process. The mining projects whose extent is ≥ 5 ha or the cluster of quarries (if homogeneous mineral) within 500m radius extent is greater than 5ha falls under category B1. These projects require preparation and submission of an EIA report after public consultation to SEIAA to obtain environmental clearance as per the Office Memorandum F.No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018.

1.1 PURPOSE OF THE REPORT

The purpose of the report is to evaluate the project's potential environmental, social and economic effects of the before it is implemented adhering to the guidelines outlined in the MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015 and MoEF & CC Office Memorandum dated 29.08.2017.

1.2 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages are screening, scoping, public consultation & appraisal.

Screening

The project had applied in PARIVESH 2.0 proposal no. SIA/TN/MIN/461913/2024, Dated: 14.02.2024 to obtain terms of reference. Therefore, the proponent submitted application for Terms of Reference (ToR) on: 16.02.2024.

Scoping

The mechanism for issuing online system generated Standard ToR as well as reference to SEAC has been enabled on the PARIVESH Portal on the acceptance of the complete application online. The concerned Member Secretary of SEAC shall refer the project to the concerned SEAC for prescribing additional ToR as per the circular F.No. IA 3-22/15/2022-IA-III [Computer No 178038] Dated: 6th May 2022.

Public Consultation

In this stage, an application along with the draft EIA and EMP report will be made to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) and request to conduct Public Hearing as per EIA notification 2006. The outcome of the public hearing is given in Chapter VII.

Appraisal

In this stage, the final EIA report will submit in PARIVESH 2.0 to SEIAA, TN. Based on the recommendations of SEAC the SEIAA, TN will grant EC or castoff.

1.3 TERMS OF REFERENCE (ToR)

The total extent of quarries within the 500m radius is greater than 5 ha. The details of the quarries within the cluster are given in Table 1.1 & Figure 1.1.

Table 1.1 Details of Quarries within the cluster area of 500m radius

Proposed Quarries					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	Tmt.S.Lakshmi	675/1 & 675/2	Kuppam	2.05.50	Proposed Area
Existing Quarry					
E1	M/s. Annai Blue Metals	682(P)	Kuppam	1.92.0	25.01.2025 to 24.01.2030
E2	Thiru.T.Manoj Prabhakar	683/2(P), 686/1(P)	Kuppam	4.11.50	30.01.2025 to 29.01.2035
E3	Thiru.M.Gunasekaran	710/3,712/2	Kuppam	1.92.5	08.10.2024 to 07.10.2029
Total Cluster Extent				10.01.50	

Source: AD Letter - Rc.No. 141/Mines/2024 dated:07.07.2025.

Note: Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016. The file was appraised in 602nd SEAC meeting on 03.04.2024 and issued terms of reference (ToR) identification no **TO25B0108TN5981163N** on **04/09/2025** by SEIAA, TN.

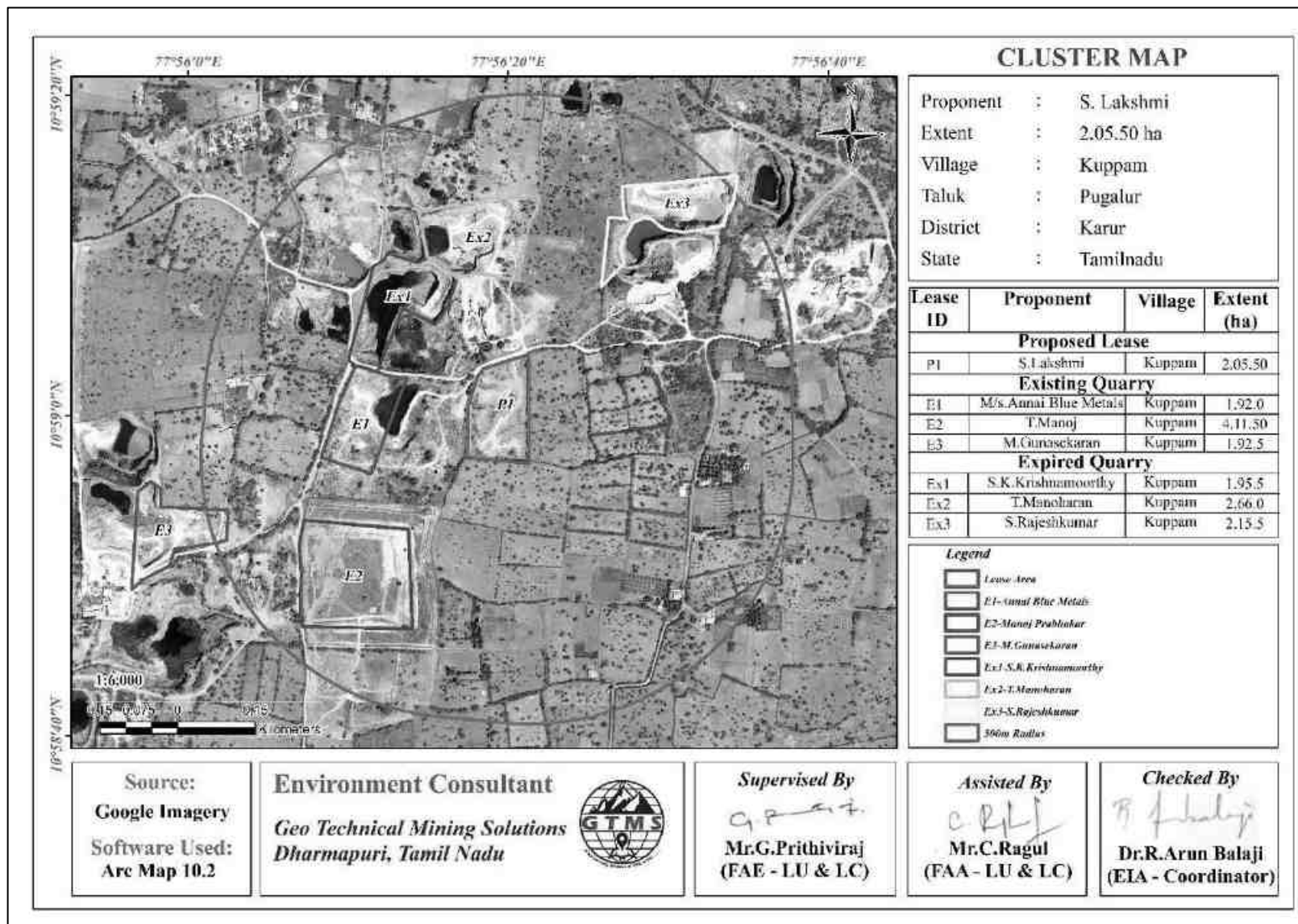


Figure 1.1 Location of the proposed and existing rough stone and gravel quarries in the cluster of 500m radius

1.4 POST ENVIRONMENT CLEARANCE MONITORING

- The project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of the website where it is displayed.
- The project proponent will submit a half-yearly compliance report of the stipulated environmental conditions to Regional Office, MoEF & CC & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

The prior environmental clearance granted for a project or activity may be transferred as per the provisions of para 11 of the Environmental Impact Assessment Notification, 2006 and its subsequent amendments and the office memorandum File No. IA3-22/19/2023-IA.III [E226246] Dated: 3rd November 2023.

1.6 IDENTIFICATION OF THE PROJECT PROPONENT

The profile of the project proponent who has involved in this quarrying project has been given in Table 1.2.

Table 1.2 Details of Project Proponent

Name of the Project Proponent	S.Lakshmi
Address	W/o.Rajeshkumar, Door No.267/12, Sindu Nagar, Kongu Mess Opposite, Andankovil East, Manmangalam Taluk, Karur District - 639 002.
Status	Proprietor

1.7 BRIEF DESCRIPTION OF THE PROJECT

The method adopted for rough stone excavation is open cast semi mechanized method involving formation of benches with 5m height and 5m width and the overall bench slope is less than 65°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

The overall extent of the project site is 2.05.50ha and it is located in Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu.

The proposed project deals with excavation of rough stone and gravel which is primarily used in construction projects. The increasing demand for rough stone fueled by a booming construction industry presents a valuable opportunity. This project will not only meet the rising demand for rough stone but also create jobs for the surrounding villages.

1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. 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, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of **October-December 2023** for various environmental components such as land, soil, air, water, noise, ecology, etc. 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. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in Chapter III.

1.9 LEGISLATION APPLICABLE TO MINING OF MINERAL SECTOR

A few important legislations are given below:

- ❖ The Mines Act, 1952.
- ❖ The Mines and Mineral (Development and Regulation) Act, 1957.
- ❖ Mines Rules, 1955.
- ❖ Mineral Concession Rules, 1960.
- ❖ Mineral Conservation and Development Rules, 1988.
- ❖ State Minor Mineral Concession Rules, 1960.
- ❖ Granite Conservation and Development Rule, 1999.
- ❖ The Water (Prevention and Control of pollution) Act, 1974.
- ❖ The Air (Prevention and Control of pollution) Act, 1981.
- ❖ The Environment (Protection) Act, 1986.
- ❖ The Forest (Conservation) Act, 1988.
- ❖ The Wildlife (Protection) Act, 1972.

Note: As per OM F.No.IA3-22/10/22-IA.III(E177258), baseline monitoring data was collected during the period October-December 2023 and used to prepare this EIA report.

CHAPTER II

PROJECT DESCRIPTION

2.0 DECSRIPTION OF THE PROJECT

The proponent S.Lakshmi Projects is involved in the mining and its auxiliary activities. The proponent had applied for quarry lease on 08.04.2024 to extract rough stone and gravel. The precise area communication letter was issued by Deputy Director of Geology and Mining, Karur vide (Roc.No.141/Mines/2024, Dated 29.05.2025). The mining plan thus prepared was approved by Deputy Director Department of Geology and Mining, Karur (Rc.No.141/Mines/2024 Dated. 30.06.2025). The project area and the proposed excavation details were given in Table 2.1.

Table 2.1 Proposed project area and excavation details

Name of the Quarry	Mr. S.Lakshmi, Rough stone and gravel quarry			
Type of Land	Patta Land			
Extent	2.05.50 Ha			
Toposheet No	58 F/13			
Location of Project Site	10°58'56.9967"N to 10°59'3.7896"N 77°56'17.2793"E to 77°56'21.3158"E			
Highest Elevation	198m AMSL			
Proposed depth of Mining	50m BGL			
Geological Resources	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	922590	2537123	102510	205020
Mineable Reserves	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	238260	655215	70890	141780
Proposed reserves for ten years	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	238260	655215	70890	141780
Method of Mining	Open-Cast Mechanized mining			
Topography	Flat Topography			
Machinery proposed	Jack Hammer		5	
	Compressor		2	
	Tipper		5	
	Hydraulic Excavator		2	
	Rock Breaker		1	
Blasting Method	The quarrying operation is proposed to carried out by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone.			
Proposed Manpower Deployment	30Nos			
Project Cost	Rs. 82,17,500/-			
CER Cost	Rs. 5,00,000/-			
Proposed Water Requirement	3.5 KLD			



Figure 2.1 Overall View of Proposed Project Site

2.1 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu as shown in Figure 2.2.

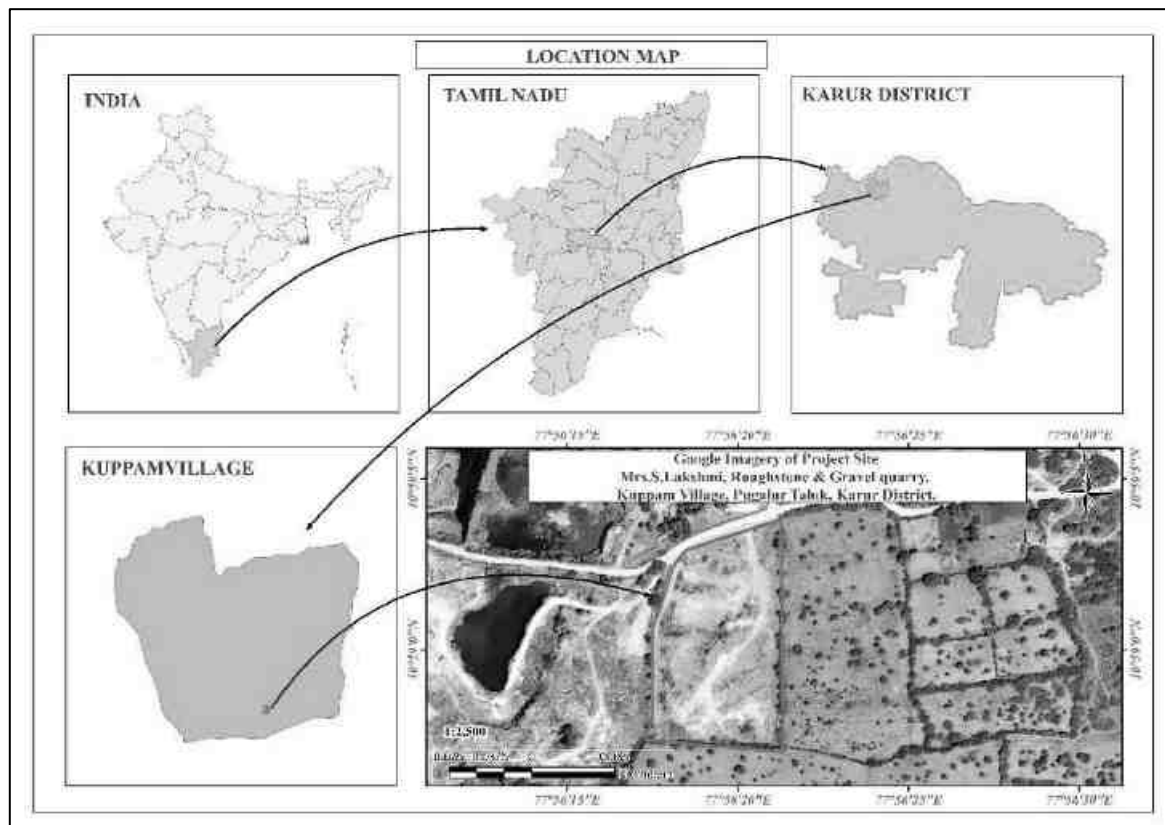


Figure 2.2 Location Map Showing the Project Site

On K.Paramathi-Karur NH-81, near K.Paramathi village junction, turn into Noyyal-Paramathi road and travel upto 1.15km and then take a right turn and travel upto 2.5km and take a left turn and travel for 0.5km, you will reach the lease area.

Table 2.2 Site Connectivity to the Project Area

Nearest Roadways	NH-81 K. Paramathi-Karur	2.5km S
Nearest Town	Karur	14.8km E
Nearest Railway Station	Noyyal	8.3km N
Nearest Airport	Coimbatore	98km W
Nearest Seaport	Karaikal	209km E
Nearest Village	Kuppam	0.6km N
	Punnam	5.5km E
	Karudayampalayam	2.0km S
	Munnur	3.0km W

2.2 LEASEHOLD AREA

The details of the field survey number, subdivision and their extent and the overall extent of the proposed project site is given in Table 2.3.

Table 2.3 Lease hold area details

Survey No	Sub Division	Total Extent in Ha	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F.No.	Applied area out of total area in Ha
675	1	1.12.00	4609	Mrs.S.Lakshmi	675/1	1.12.00
375	2	0.93.50			675/2	0.93.50
Total Extent		2.05.50	Applied lease area extent			2.05.50

The proposed project is site specific. There is no mineral beneficiation or processing proposed inside the project area. There is no forest land involved in the proposed area and is devoid of major vegetation and trees. The overall extent of the project area is 2.05.50Ha as per the precise area communication letter vide Roc.No.141/Mines/2024 Dated 29.05.2025 issued by Dept of Geology and Mining, Karur District lies near the Kuppam village, Pugalur Taluk, Karur District, Tamil Nadu. The breakup of the existing land use for mining and ancillary feature is given in Table 2.4.

Table 2.4 Present Land use pattern of the project area

Description	Present Area (ha)
Area under quarry	Nil
Infrastructure	Nil
Roads	Nil
Green Belt & Dump	Nil
Drainage & Settling Tank	Nil
Unutilized area	2.05.50
Total	2.05.50

2.2.1 Corner Coordinates

The proposed lease area is flat topography. The maximum elevation (145m) was observed west side of the lease area and minimum elevation (145m) was observed northern side of the site. The boundary corner and the intermediate stone geographic coordinates is given in Table 2.5. The quarries within the cluster of 500m radius as per the letter RoC.No.552/2022 (G&M) dated: 24.11.2023 is enclosed as Annexure II is shown in Figure 2.3.

Table 2.5 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	10° 59' 3.7896" N	77° 56' 21.2567" E
2	10° 58' 56.9967" N	77° 56' 21.3158" E
3	10° 58' 57.3737" N	77° 56' 17.2793" E
4	10° 58' 57.9840" N	77° 56' 17.4869" E
5	10° 59' 0.6048" N	77° 56' 17.5013" E
6	10° 59' 2.4474" N	77° 56' 18.1091" E
7	10° 59' 2.9239" N	77° 56' 18.4966" E

2.3 GEOLOGY

The compositional characteristics of co-existing orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites–Enderbites such as the granulites and gneisses. The mineral composition shows an unvarying presence of pleochroic rhombic pyroxene. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks. Order of superposition of the proposed lease

Age	Group	Rock Formation
Recent to Sub recent	---	Gravel
Archean	Charnockite Group	Charnockite

The gravel available at a depth of 0.5m followed by gravel exists up to a depth of 5.0m and the rough stone occurs at a depth of 5m below ground level.

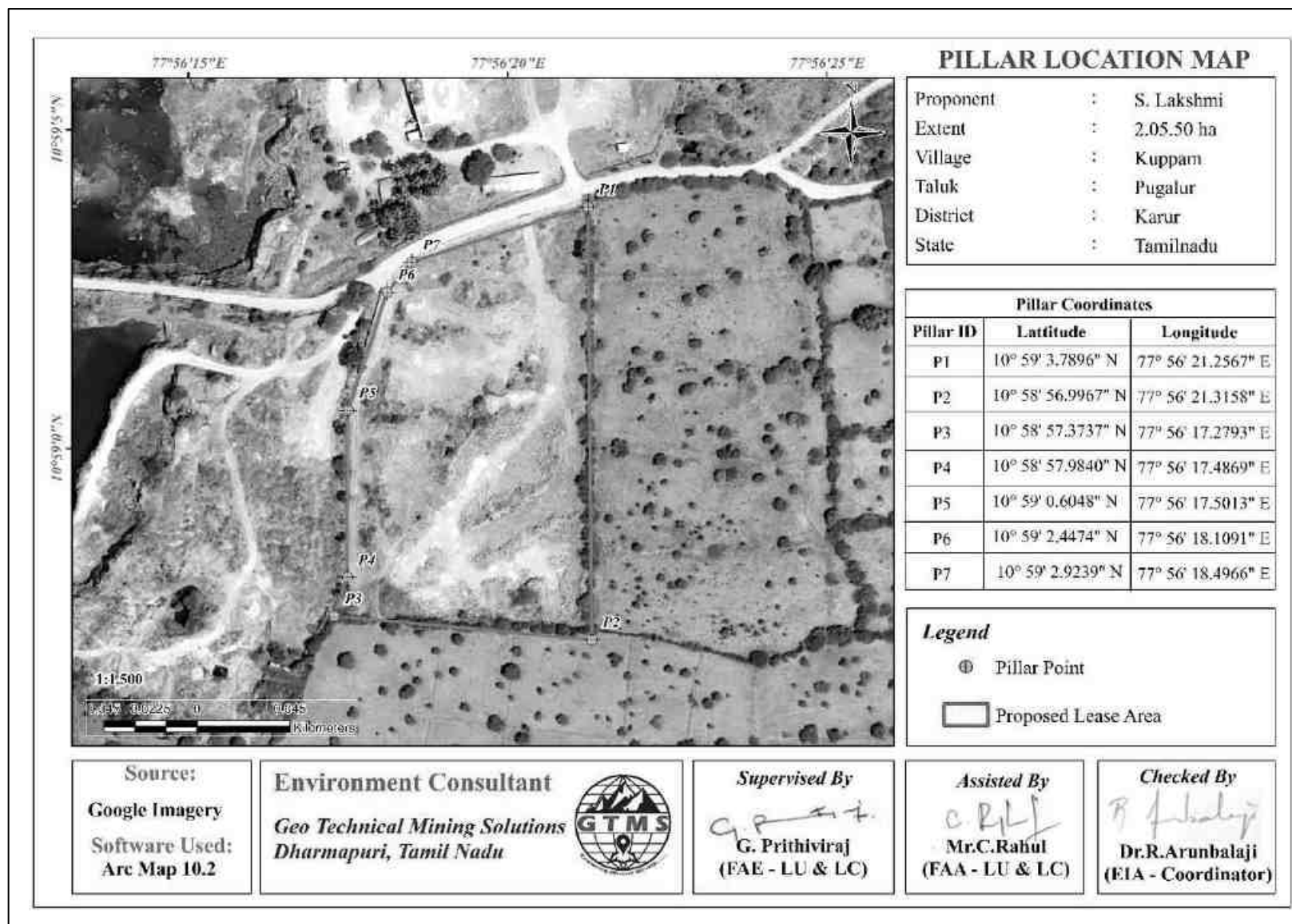


Figure 2.3 Google Earth Image Showing Lease Area with Pillars



Figure 2.4 Mine Lease Plan

2.4 QUANTITY OF 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 the proposed project. 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 and 10m safety distance as per precise area communication letter and deducting the locked-up reserves during bench formation (also called as bench loss). The mineable reserves are calculated up to the depth of 50m below the ground level considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been attached in approved mining plan results of geological resources and reserves have been shown in Table 2.6.

Table 2.6 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone		Gravel in	
	m ³	Ts	m ³	Ts
Geological Resource in m ³ & Ts	922590	2537123	102510	205020
Mineable Reserves in m ³ & Ts	238260	655215	70890	141780
First Five years Production m ³ & Ts	120330	330908	70890	141780
Second five years m ³ & Ts	117930	324307	--	--

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.6, Year-Wise Production plan has been shown in Figure 2.5-2.8.

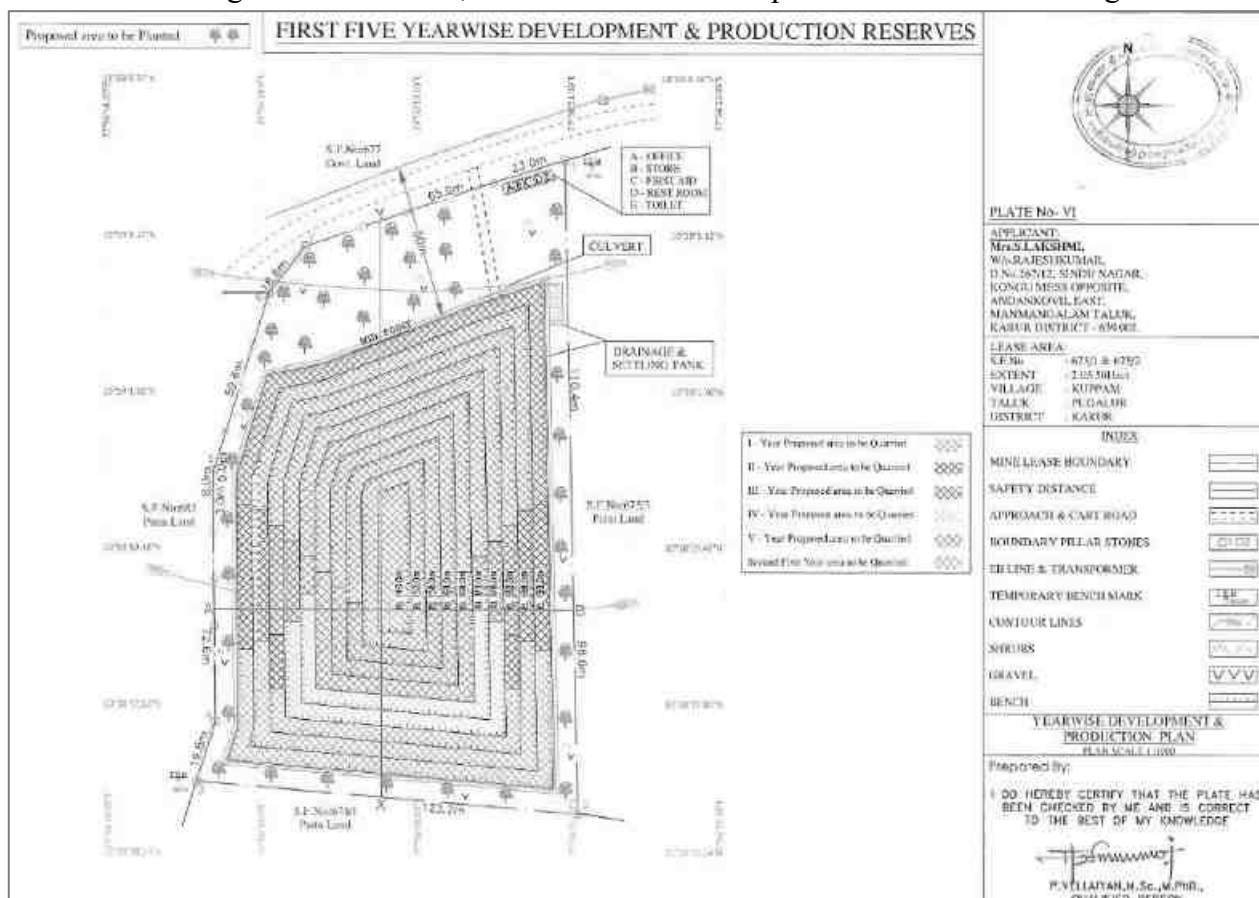


Figure 2.5 Year-Wise Production Plan & Section (first Five Years)

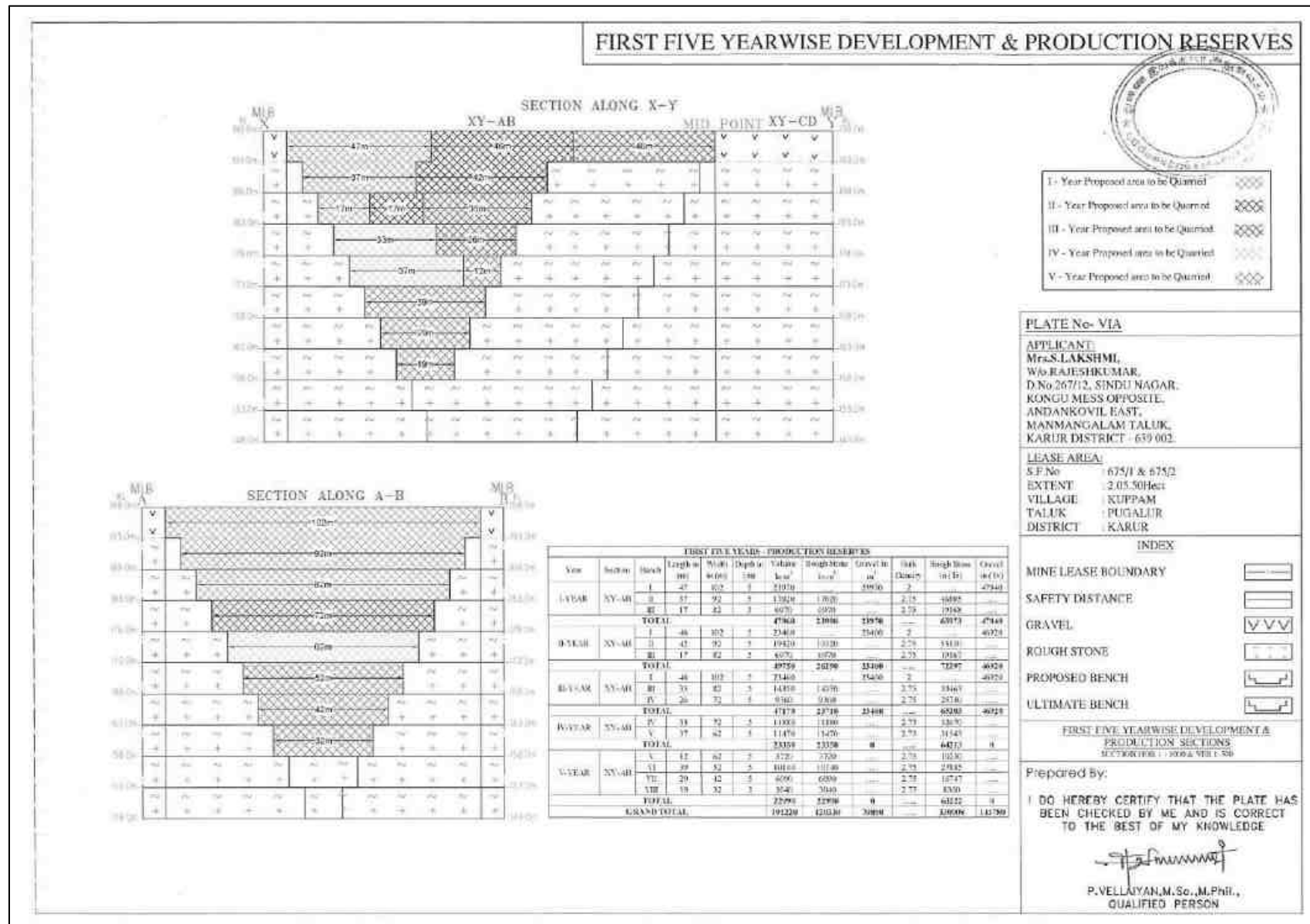
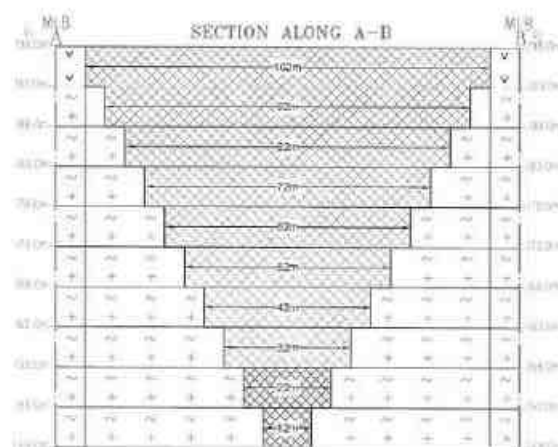
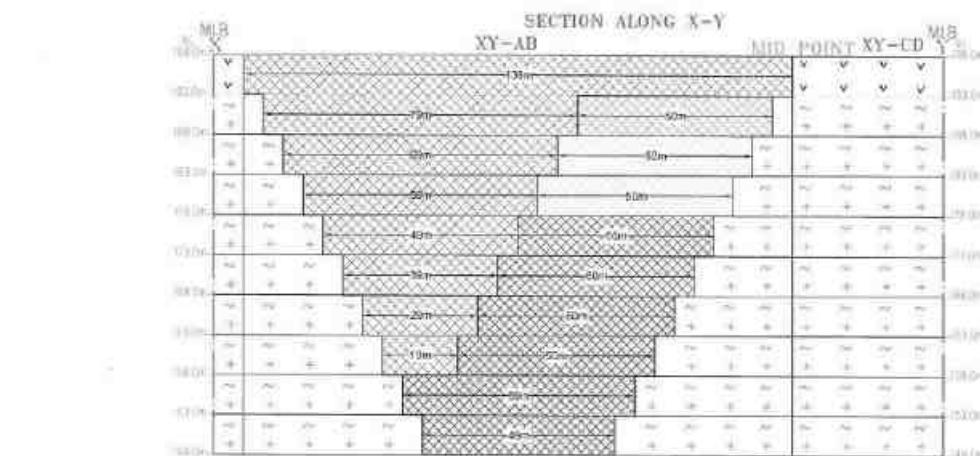


Figure 2.6 Year-Wise Production Section (first Five Years)



SECOND FIVE YEAR - PRODUCTION RESERVES										
Year	Section	Block	Length in feet	Width feet	Depth in feet	Volume in cu feet	Length Block in feet	Depth in feet	Volume in cu feet	Grand Total
22-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
23-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
24-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
25-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
26-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
27-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
28-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
29-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
30-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
31-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
32-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
33-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
34-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
35-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
36-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
37-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
38-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
39-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0
		TOTAL				2,592.0	2,500.0	0	2,592.0	6,720.0
40-YEAR	SEAS	III	20	12	3	2,592.0	2,500.0	0	2,592.0	6,720.0

First Five Year area to be Quarried
 VI - Year Proposed area to be Quarried
 VII - Year Proposed area to be Quarried
 VIII - Year Proposed area to be Quarried
 IX - Year Proposed area to be Quarried
 X - Year Proposed area to be Quarried

PLATE No. VIC

APPLICANT:
Mr. S. LAKSHMI,
 W/o. RAJESHKUMAR,
 D.No. 267/12, SINDHU NAGAR,
 KONGU MESS OPPOSITE,
 ANDANKOVI, EAST,
 MANMANGALAM TALUK,
 KARUR DISTRICT - 639 002.

LEASE AREA

S.F.No - 675/1 & 675/2

EXTENT : 2.05.50 Hect

VILLAGE	KUPPAM

TALUK : PUGALUR

DISTRICT KARUR

INDEX

MINE LEASE BOUNDARY

SAFETY DISTANCE

GRAVEL

PROPOSED BENCH

ULTIMATE BENCH

SECOND FIVE YEARWISE DEVELOPMENT &
PRODUCTION SECTIONS
SECTION HUB 1 : 2006 & YEAR 1.00

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

→ 7/2 Summation

P. VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON

Figure 2.8 Year-Wise Production Section (Second Five Years)

2.5 MINING METHOD

The Quarrying operation is proposed to be carried out by open cast semi-mechanized mining method with the bench height and width of 5m each. The open cast semi-mechanized method involving drilling and blasting is proposed to extract rough stone and gravel. The extracted rough stone will be loaded manually to the trucks for dispatch to the customers. In this project, NONEL blasting will be adopted to extract rough stone.

2.5.1 Conceptual Blasting Design

In this project, NONEL blasting will be employed to win rough stone. This method will involve closed spaced perimeter holes to reduce the overbreak/backbreak on a blast. The objective of the blasting design is to prevent fly rocks from damaging the nearby structures.

Rules of Thumb for Blast Design

Based on practical experience and technical information, a set of rules for blasting have been provided as below ([Chapter 8 \(nps.gov\)](#)). These rules will be applied to blast rocks in the proposed project.

Rule 1: The detonation velocity (VOD) of the explosive should be close to the same value of the sonic velocity (VSO) of the rock to be blasted.

The sonic velocity of a rock is considered to be a reliable indicator of its structural integrity and resistance to fragmentation. As the VOD of the explosive approaches close to the VSO of the rock, the blasting would result in relatively smaller size of fragmentation with uniformity. There is no value in using an explosive that has a VOD greatly in excess of the VSO of the rock, since there is little or no improvement in fragmentation above the VSO. When selecting an explosive to match up the VSO of a rock mass, variance of <10% in the velocities is acceptable.

Rule 2: Generally, select the densest explosive possible.

When the density of explosives is higher, the potential energy of the explosives can be greater and the more of it can be placed within a borehole of a given size.

Rule 3: Select explosives according to the characteristics of the rock formation to be blasted.

When planes of separation in the rock are smaller than the degree of fragmentation required, the rock can often be blasted by using lower density and lower detonation velocity explosives.

Rule 4: When using slurry or water gel explosives, always determine the critical temperature below which the explosive will fail to reliably detonate.

Almost all slurry explosives have a critical temperature below which they may not detonate, or may not sustain detonation in elongated columns. The explosives should not be used when the temperature of the explosive at time of loading is below that critical temperature.

Rule 5: The distance between holes (spacing) should not be greater than one-half the depth of the borehole.

When the distance between holes in a row is greater than one-half the depth of the hole, the angles of breakage intersect above the bottom of the holes. This causes both a great deal of vertical throw and a very uneven bottom.

Rule 6: Stemming should be equal to the burden.

Stemming is useful to confine and maximize efficient use of the explosive's energy. It also reduces noise as much as possible. If the stemming is greater than the burden, the rock at the top of the borehole will have less cracking from reflection and refraction of compressive and tensile waves. Therefore, stemming should be equal to burden. Drill fines can be used for loading the borehole.

Rule 7: Subdrill (if necessary) should be between 0.3 and 0.5 of spacing/burden.

Subdrill should be equal to 0.3 of burden. It will work when there is row-for-row delay. In blasts where the delay system is both row-for-row and hole-for-hole, the subdrill should be determined by the largest dimension, which can be the spacing or the burden. An average subdrill of 0.4 of spacing is best to use for planning purposes. Based on the above-mentioned rules, blasting design has been conceptualized and has been provided in Table 2.7.

Table 2.7 Conceptual Blasting Design

Blast hole Diameter (D) in mm	32
Burden (B) in m	1.5
Spacing (S) in m	1.3
Sub drill in m	0.45
Charge length (C) in m	0.64
Stemming	1.5
Hole Length (L) in m	2.6
Bench Height (BH) in m	2.1
Mass of explosive/hole in g	400
Stemming material size in mm	3.2
Burden stiffness ratio	1.43
Blast volume/hole in m ³	4.16
Production of rough stone/day in m ³	88
Number of blast holes/day	21
Blast hole pattern	Staggered
Mass of explosive /day in kg	8.49
Powder factor in kg/m ³	0.10
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	19

Statutory Provision & Precaution during Blasting: -

- Blasting permission from DGMS will be taken by the proponent within 6 months from the date of execution of mine.
- Control blasting will be carried out by using delay detonators during multi rows blasting
- No secondary blasting will be carried out.
- Stemming column will be half of the depth of hole with coarse sand.
- Only Statutory designated Blaster will supervise the blasting operation.
- All persons in the radius of minimum 300m from the blasting site will be removed by siren.
- Blasting operation will be carried out during day time only particularly at noon time.

2.5.2 Magnitude of Operation

Based on the results of estimated production for the 10 years, details about the size of operation have been provided in Table 2.8.

Table 2.8 Operational Details for Proposed Project

	Rough Stone in (m³ & Ts) 10 years	Gravel in (m³ & Ts) /3 year
Proposed production for 10 years	238260 & 655215	70890 & 141780
Number of Working Days /Annum	270	270
Production of /Day (m ³ & Ts)	88 & 242	88 & 176
No. of Lorry Loads	15	15

2.5.3 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.9.

Table 2.9 Machinery Details

S. No.	Type	No. of Unit	Size /Capacity	Motive Power
1	Jack Hammers	5	Hand held	Diesel
2	Compressor	2	Air	Diesel
3	Hydraulic Excavator	2	3.0 m ³	Diesel
4	Tipper	5	15T	Diesel

2.5.4 Post Mining land use

The progressive quarry closure plan of the proposed project shows past, present, and future land use statistics. According to the land use results, as shown in Table 2.10 At present about 2.05.50ha of land is unutilized. Whereas, at the end of the mine life, about 1.39.55ha of land is used for area under quarry, about 0.51.95ha of land is used for green belt, 0.05.0ha will be used for roads, 0.02.0ha is used for infrastructure.

Table 2.10 Land use data at present, during scheme of mining, and at the end of mine life

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	Nil	1.39.55
Infrastructure	Nil	0.02.0
Roads	Nil	0.05.0

Green Belt	Nil	0.51.95
Drainage & Settling Tank	Nil	0.07.00
Unutilized area	2.05.50	Nil
Total	2.05.50	2.05.50

2.5.5 Progressive Quarry Closure Budget

As the proposed project has the enormous potential for continuous operations even after the expiry of lease period, mine closure plan is not proposed for now. Based on the progressive mine closure plan for the scheme period, the mine closure cost is given in Table 2.11.

Table 2.11 Mine Closure Budget

Activity	Capital Cost
411 plants inside the lease area	91,200
616 plants outside the lease area	2,05,200
Wire Fencing	4,56,000
Renovation of Garland Drain	22,800
Total	7,75,200

Source: Environment Management plan

2.5.6 Conceptual Mining Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc. Details of ultimate pit dimensions have been derived from given in Table 2.12. Conceptual Plan has been shown in Figure 2.9.

Table 2.12 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	139	102	50

Source: Approved Mining Plan & ToR

2.5.7 Infrastructures

Infrastructures like mines office, temporary rest shelters for workers, latrine and urinal facilities have been proposed as per the mine rule and will be established after the grant of quarry lease. There is no proposal for the mineral processing or ore beneficiation plants in this project.

2.5.7.1 Other Infrastructure Requirement

Domestic effluent from the mine office will be discharged to septic tank and soak pit. As there is no toxic effluent expected to generate in the form of solid, liquid or gaseous form, there is no requirement of waste treatment plant.

2.5.8 Water Requirement

Detail of water requirement in 3.5 KLD is given in Table 2.13.

Table 2.13 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Will obtained from water vendors
Green Belt development	1.2 KLD	
Drinking & Domestic	1.3 KLD	
Total	3.5KLD	

Source: Prefeasibility Report

2.5.9 Energy Requirement

High speed Diesel (HSD) will be used for quarrying machineries. As per the data shown in Table 2.14. Around 1278103 litres of HSD will be used for rough stone and gravel extraction during this 5 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.14 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (238260 m ³)	Gravel (70890 m ³)	Total Diesel (litre)
Average Rate of Fuel Consumption (1/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	11913	1182	---
Total Diesel Consumption for 10 years (litre)	190608	11815	202423
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drill holes/day	21	---	---
Total Diesel Consumption for 10 years (litre)	22680	---	22680
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m ³	6	6	---
Number of Trips / days	15	15	---
Number of Trips / 10 years	40500	12150	---
Total Diesel Consumption for 10 years (litre)	810000	243000	1053000
Total Diesel Consumption by Excavator, Compressor and Tipper			1278103

* Number of truck loads for gravel has been calculated for five years.

2.5.10 Capital Requirement

The project proponent will invest **Rs. 82,17,500/-** to the project. The breakup summary of the investment has been given in Table 2.15.

Table 2.15 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	19,27,500/-
2	Machinery cost (Rental)	30,00,000/-
3	EMP Cost	32,90,000/-
Total Project Cost		82,17,500/-

Source: Approved Mining Plan

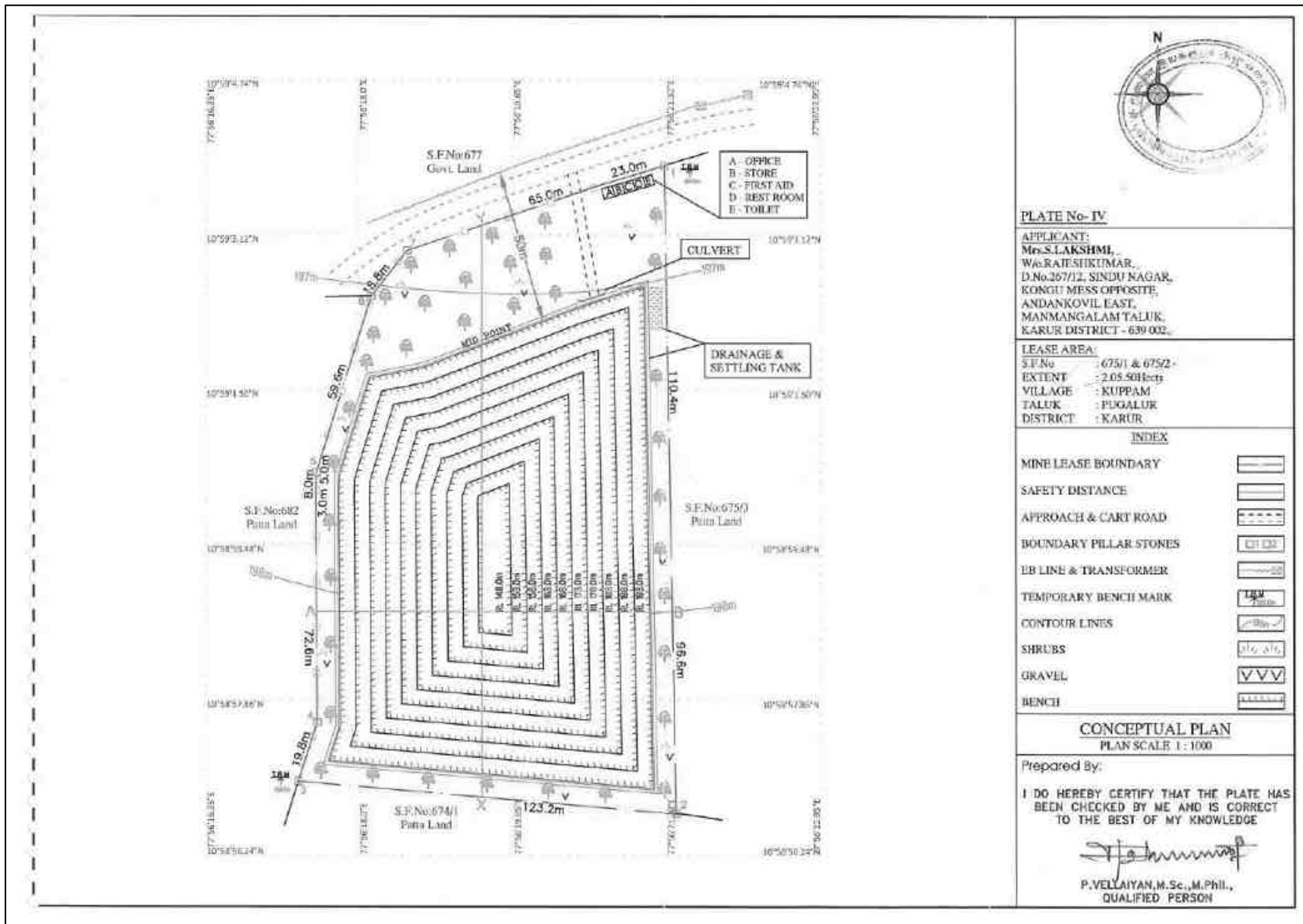


Figure 2.9 Conceptual Plan

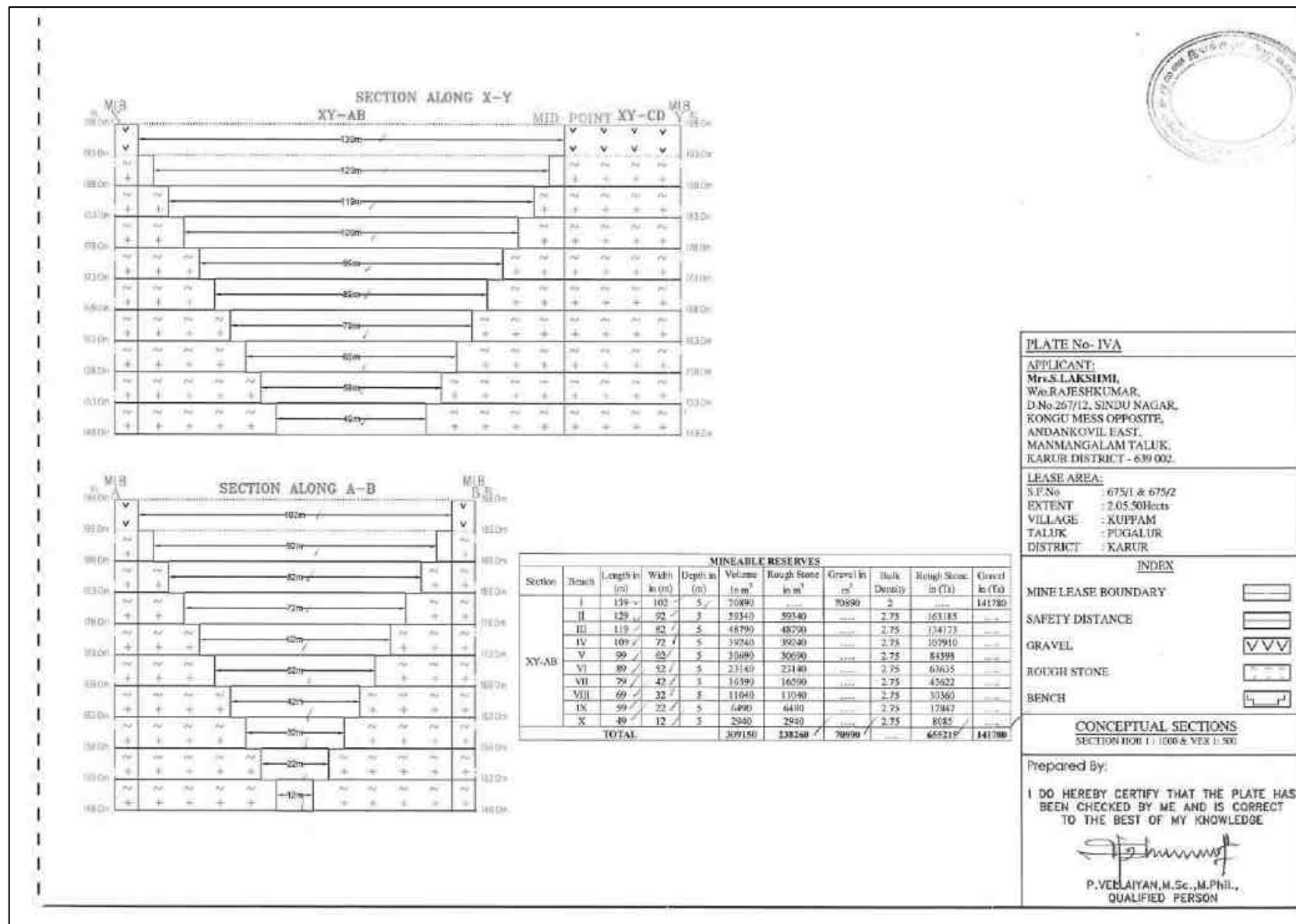


Figure 2.10 Conceptual Sections

2.6 MANPOWER REQUIREMENT

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community. Number of employees required for this project have been provided in Table 2.16.

Table 2.16 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1.	Highly Skilled	Mines manager	1
		Mine Geologist	1
		Mines Engineer	1
		Blaster	1
2.	Unskilled	Musdoor/ Labours	26
Total			30

Source: Prefeasibility Report

2.7 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the environmental clearance will be compiled before the start of mining operation. Expected time schedule for the quarrying operation is given Table 2.17.

Table 2.17 Expected Time Schedule

S. No.	Particulars	Time Schedule (in Months)					Remarks, if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to Establish						Project Establishment Period
3	Consent to operate						Production starting period.
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

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

CHAPTER III

DESCRIPTION OF THE 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 **October through December 2023 with CPCB** guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Excellence Laboratory** for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

Study Area

The study area has been divided into two zones: core zone and buffer zone. Core zone is considered as lease area and buffer zone as 5 km radius from the periphery of the cluster, except for ecological study, which considers 10 km as buffer zone. Both core and buffer zones are taken as the study area. The data was collected from the study area to understand the existing environment conditions of the above-mentioned environmental components. Sampling methodologies for the various environmental parameters, including frequency of sampling, method of sample analysis, etc., are briefly given in 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 5 km radius of the study area	Once during the study period	Study Area	Satellite Imagery & Primary Survey
*Soil	Physico- Chemical characteristics	Once during the study period	7 (1 in core & 6 in 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 (6 ground water)	IS 10500& CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ NO _x	24 hours, twice a week	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	8 (1 core & 7 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.

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

3.1 LAND ENVIRONMENT

3.1.1 Geology and Geomorphology

Geology

Geologically, the entire district can be broadly classified into hard rock and sedimentary formations.

a) Hard rock formations More than 90% of the district is underlain by hard rock of Archaean age. The gneissic type of formation is the major formation among the various types of hard rocks. Charnockite occurs in this district as pockets in Karur and Aravakurichi taluks.

Quartzites which are resistant to weathering are also seen as patches in charnockite and gneiss varieties.

b) Sedimentary formations Recent alluvial deposits such as sand, silt, clay, gravel, etc., which are transported sediments by river are found on either side of Cauvery river in Karur, Krishnarayapuram and Kulithalai blocks. These formations are overlying the hard rock.

Geomorphology

The entire area of the district is a pediplain. The Rangamalai hills and Kadavur hills occurring in the southern side of the district constitutes the remnants of the much-denuded Eastern Ghats and rise to heights of over 1031m above mean sea level. There are numerous small residual hills represented by Ayyarmalai, Thanthonimalai and Velayuthampalayam hills. The general elevation of the area is ranging between 100 m and 200m above mean sea level. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hill, 2) Pediments, 3) Shallow Pediments, 4) Buried Pediments and 5) Alluvial plain.

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 7 LULCs were mapped using ArcGIS software version-10.2. The areal extent of each LULC is provided in Table 3.2. Of the total cluster area, mining area covers only 486.87 ha accounting for 5.96 %, of which lease area of 2.05.50 ha contributes only about 0.020%. Hence very least percentage of mining activities shall not have any significant impact on the land environment.

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	2024	
		Area (ha)	Area (%)
1	Waterbodies	19.45	0.24
2	Trees	2.02	0.02
3	Crops	4643.42	56.86
4	Mining/Industrial area	486.87	5.96
5	Built Area	1201.19	14.71
6	Bare Ground	56.06	0.69
7	Fallow land	1757.78	21.52
Total		8166.79	100

Source: Sentinel II Satellite Imagery

Comparative study of Land Use Land Cover (LULC) Changes within 5 km Radius (2020 vs 2025) was done and significant changes in land use and land cover were observed (Table 3.2a). Crop land has decreased from 5560.53 ha (68.09%) to 4643.42ha (56.86%), indicating the decrease in agricultural activities, this change is due to the land are not suitable for agriculture and source of irrigation is uncertain. But that cultivation land is included in the bare ground and fallow land whose extent have been increased. Mining activity has been increased to a little extent from 448.87 ha (5.50%) to 486.7 ha (5.96%), suggesting increased demand of building materials for various infrastructure developments. The increase in common vegetation has noticed of 2.02 ha (0.02%) in last five years due to the afforestation activities carried out by the past quarry proponents. Built-up areas also rose from 1118.50 ha (13.70%) to 1201.19 ha (14.71%), pointing out the urban development due to increase in economic activity. In fact, the agricultural land has been reduced but that too included in fallow land which can be reversible during availability of irrigation factors.

Table 3.2a Comparison of LULC Statistics of the 5km Radius

S. No.	Classification	2020		2025	
		Area (ha)	Area (%)	Area (ha)	Area (%)
1	Water Bodies	5.45	0.07	19.45	0.24
2	Vegetation	Untraceable	-	2.02	0.02
3	Crop Land	5560.53	68.09	4643.42	56.86
4	Mining	448.87	5.50	486.87	5.96
5	Built up lands	1118.50	13.70	1201.19	14.71
6	Bare ground	33.63	0.41	56.06	0.69
7	Fallow land	999.81	12.24	1757.78	21.52
Total		8166.79	100	8166.79	100

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area Exhibits flat topography the height elevation in 198m AMSL observed in North Side of the lease area the Slope is towards northern Side and falls in Toposheet No 58-F/13.

3.1.4 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. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

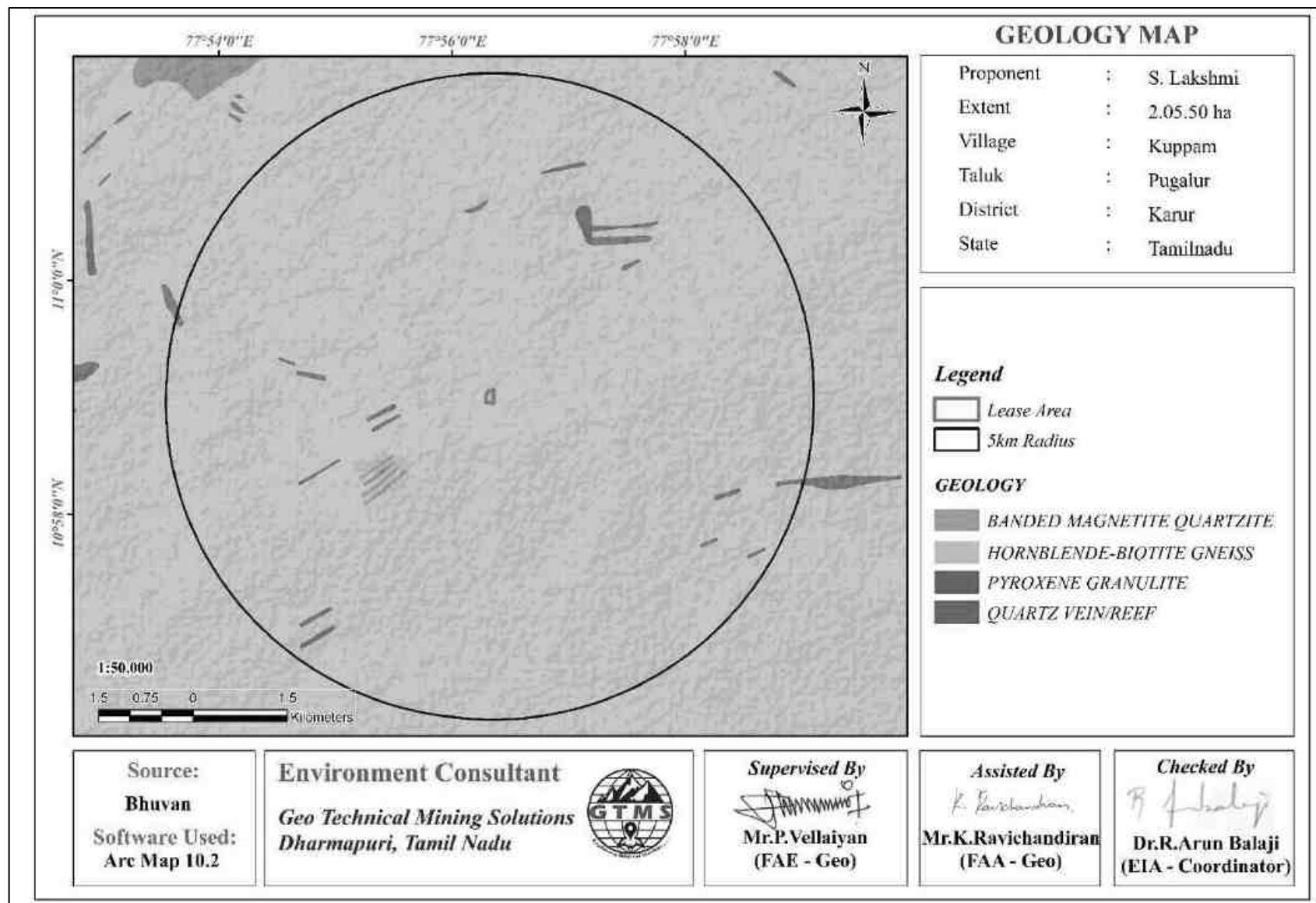


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

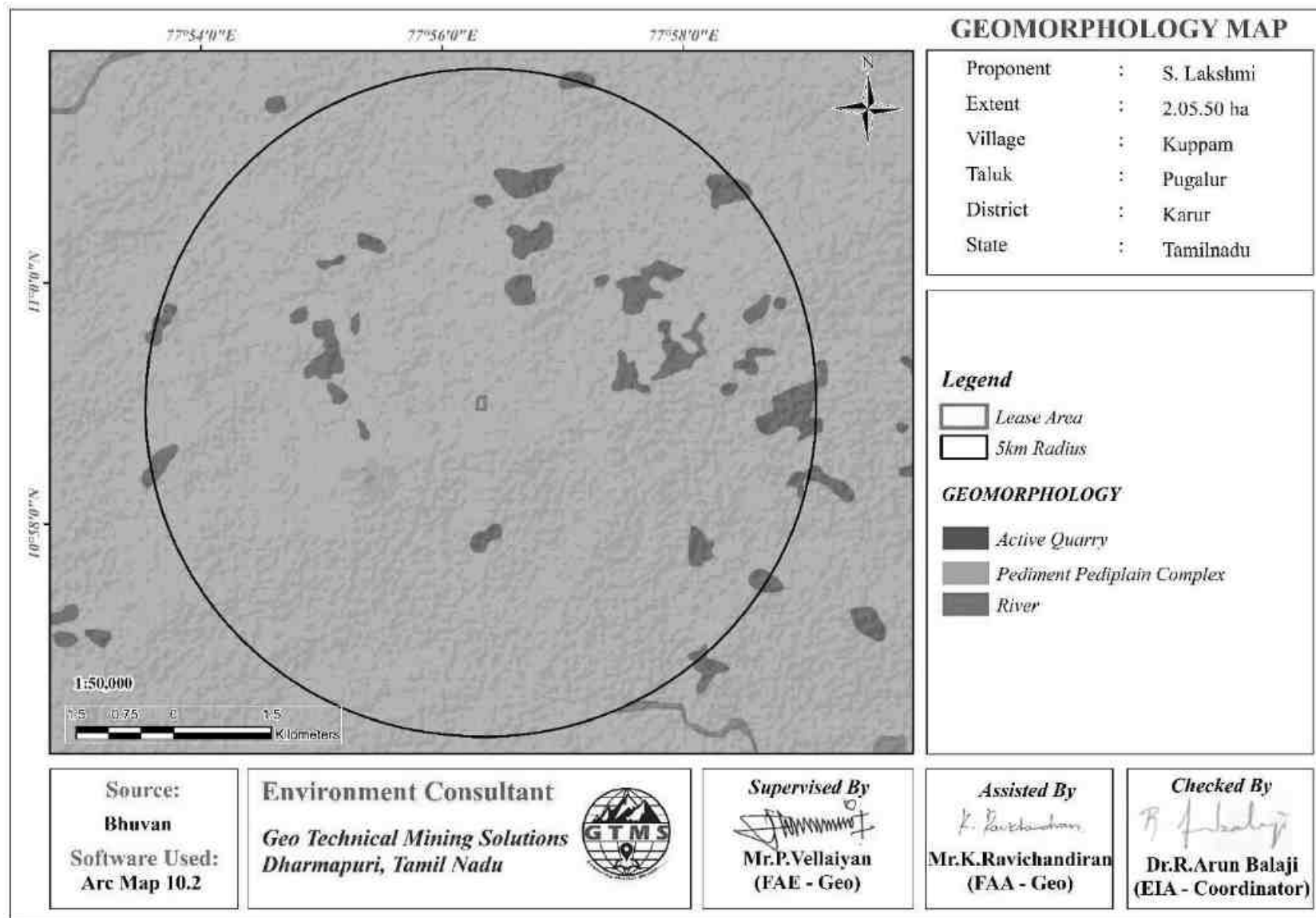


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

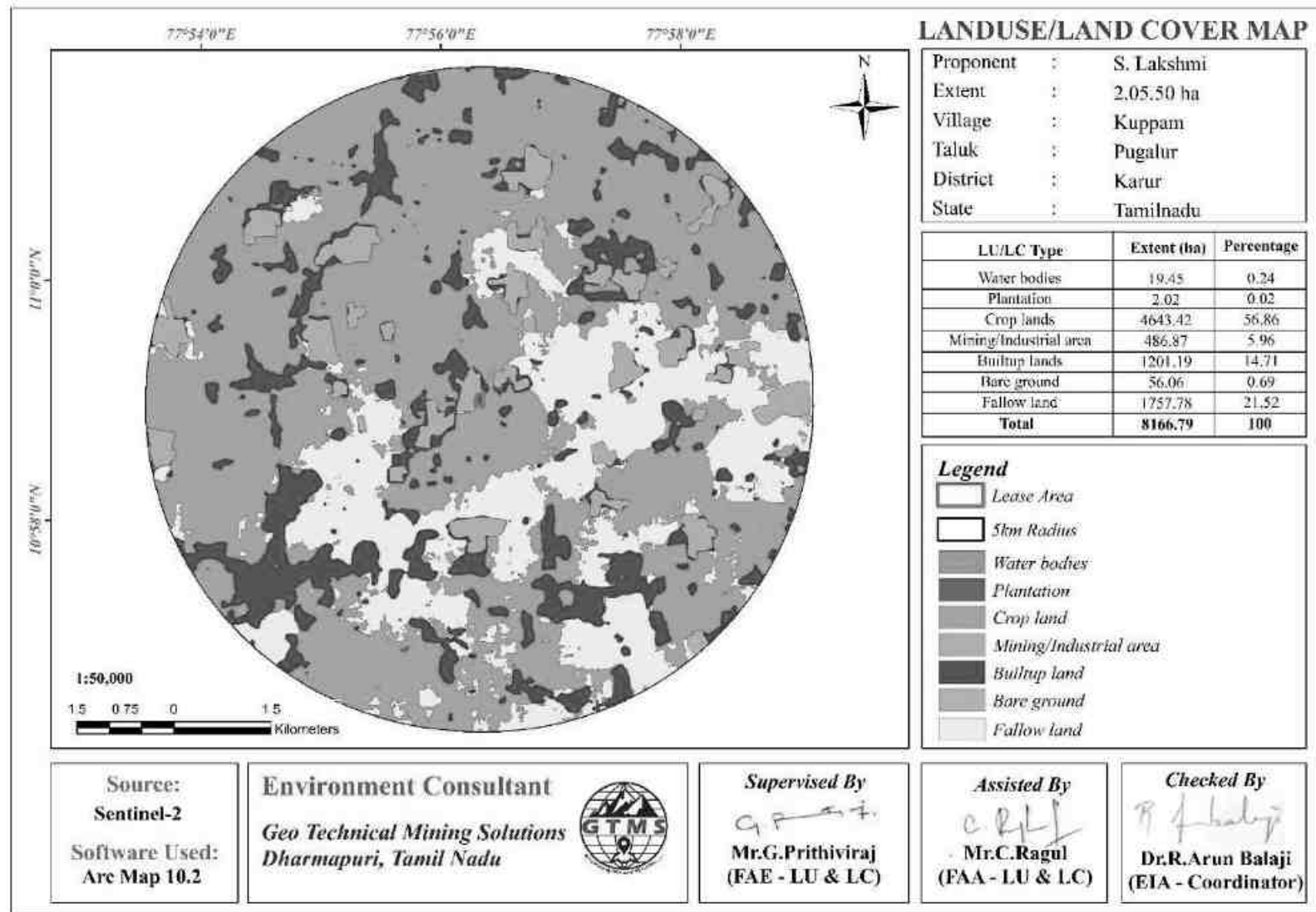


Figure 3.3 LULC Map of 5 km Radius from Proposed Project Site

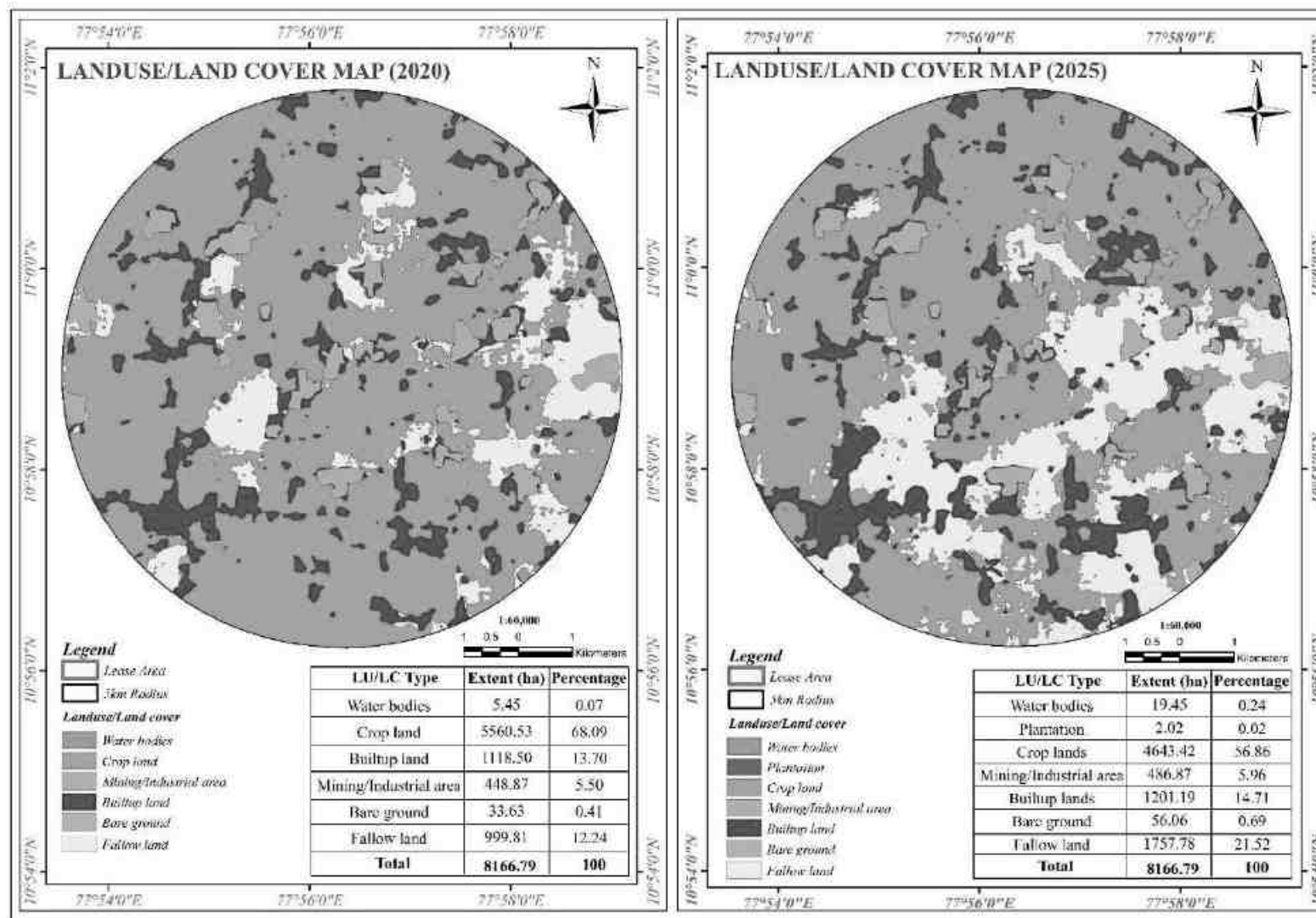


Figure 3.3a LULC Map of 5 km Radius from Proposed Project Site (2020 - 2025)

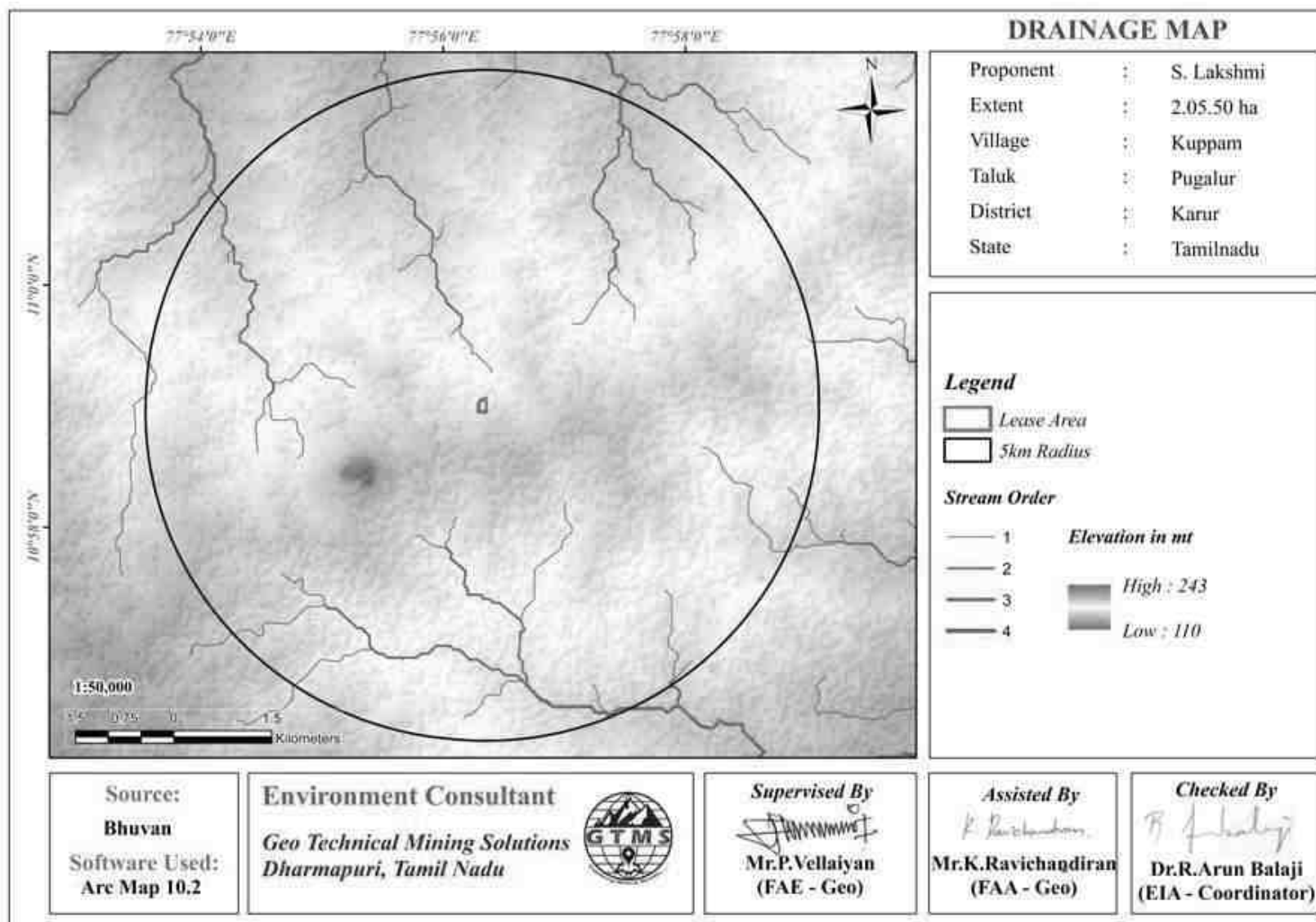


Figure 3.4 Drainage Map of 5 km Radius from Proposed Project Site

3.1.5 Seismic Sensitivity

The proposed lease area is situated in a Seismic Zone II, as defined by National Centre for Seismology ([Official Website of National Centre of Seismology](#)). The Zone II is defined as the region where only minor damage is expected from seismic events. In this respect, the proposed lease area is located in a low earthquake hazard area.

3.1.6 Soil

Composite soil samples were collected from 7 locations of the study area to determine the baseline soil characteristics of the soil. The locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.5. The samples thus collected were analysed for physical and chemical characteristics. The physical and chemical characteristic results of soil samples are provided in Table 3.3.

Table 3.3 Soil Sampling Locations

Location code	Monitoring Locations	Distance in m	Directions	Coordinates	
				Latitude	Longitude
S1	Near Core	0.37	SW	10°58'48.28"N	77°56'9.36"E
S2	Munnur	3.45	W	10°59'13.87"N	77°54'25.10"E
S3	Kuppam	3.57	NW	11° 0'45.84"N	77°55'23.83"E
S4	Uppupalayam	4.07	NE	11° 0'40.39"N	77°57'52.96"E
S5	Vairapuram	2.86	E	10°58'56.01"N	77°57'55.53"E
S6	Nedungur	4.08	S	10°56'44.79"N	77°56'34.36"E
S7	K Paramathy	4.09	SW	10°57'17.75"N	77°54'47.69"E

Source: On-site monitoring/sampling *Excellence Laboratory*, in association with GTMS.

Physical Characteristics & Chemical Characteristics

pH

- **Range:** 6.7 to 7.7
- The pH values indicate that the soil is **neutral to slightly alkaline**, which is favorable for most agricultural and vegetation growth. No adverse environmental impact is indicated.

Electrical Conductivity (EC)

- **Range:** 155 to 232 $\mu\text{S/cm}$
- These EC values fall within the **non-saline** range ($< 400 \mu\text{S/cm}$), indicating **low salt content** and good permeability for water and nutrients.

Total Organic Carbon

- **Range:** 0.62% to 2.3%
- Moderate levels of organic carbon suggest **moderate soil fertility** and acceptable organic matter turnover.

Bulk Density: 1.4 – 3.2 g/cm³

- Indicates **well-aerated** soils with good root penetration capacity.

Nitrogen

- **Range:** 1.02 to 1.08 %
- Nitrogen availability is within a **moderate to adequate** range. It supports healthy plant growth and nutrient cycling.

Potassium

- **Range:** 0.14 to 0.36%
- Potassium levels are also in the **moderate range**, which is sufficient for supporting crop productivity and plant vigor.

Chloride

- **Range:** 169 to 320mg/kg
- Within acceptable limits; does not indicate salinity issues.

Table 3.3a Assigning Scores to Soil Quality Indicators

Soil Quality Score							
S. No.	OM	BD	pH	CEC	EC	Total Score	Recommendation
S1	30	12	12	6	10	70	The Soil Requires Major and Immediate Treatment
S2	30	2	12	2	10	56	
S3	30	2	18	6	10	66	
S4	30	2	18	6	10	66	
S5	30	2	12	6	10	60	
S6	30	6	18	6	10	70	
S7	30	2	18	2	10	62	

OM (Organic Matter) BD (Bulk Density) pH (Potential of Hydrogen) EC (Electrical Conductivity) Source: PSS-2262_Soil_Quality_Monitoring.pdf (okstate.edu)

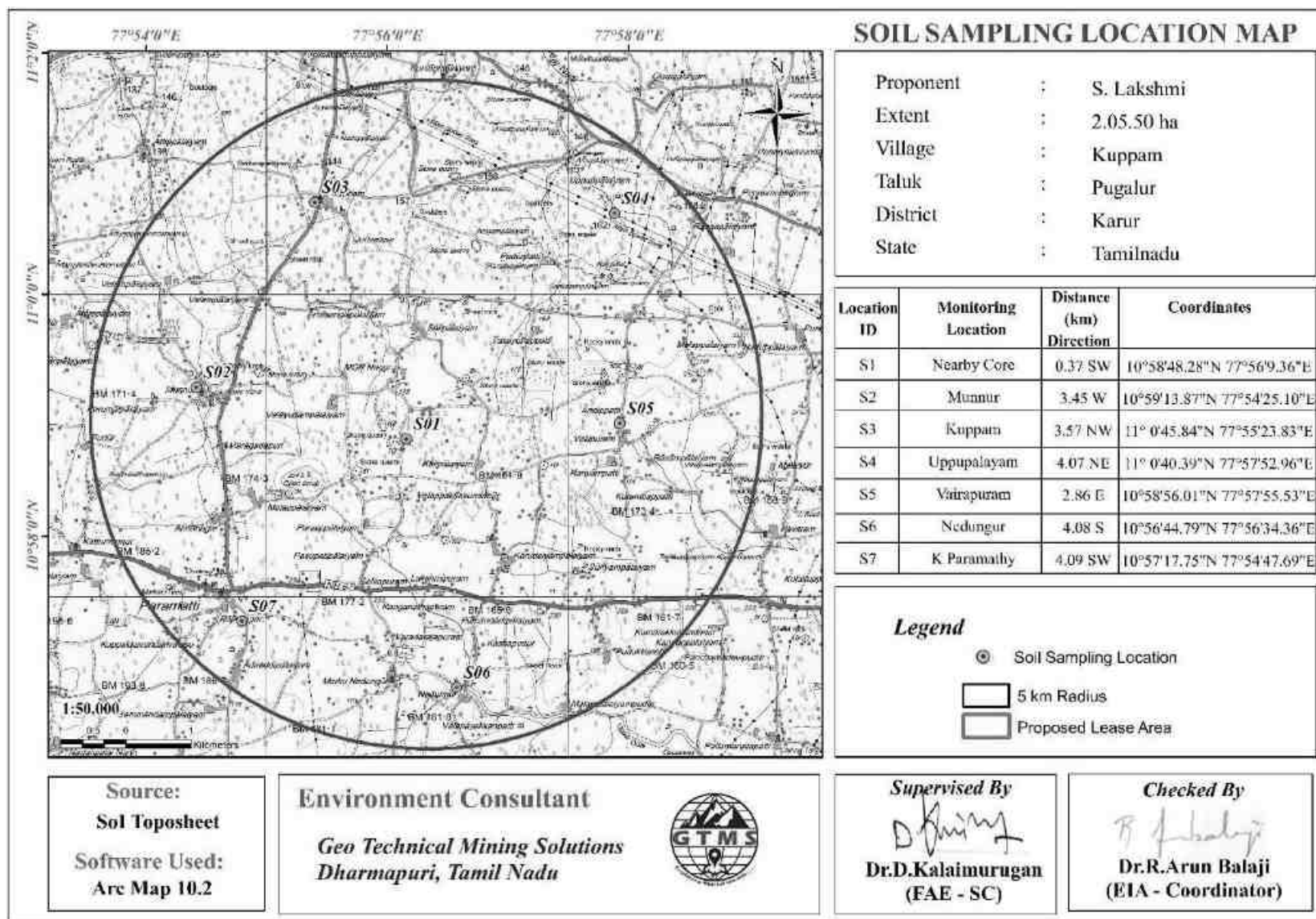


Figure 3.5 Map Showing Soil Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S.No	Parameters	Units	S1	S2	S3	S4	S5	S6	S7
1	Bulk Density	g/cm ³	1.4	2.3	1.6	2.2	2.9	1.8	3.2
2	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	CEC	Meq/kg	18.2	20.7	25.6	18.52	24.5	15.3	22.4
4	Chromium (Cr)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Copper (Cu)	mg/kg	1.8	1.5	2.5	2.3	2.2	2.8	2.4
6	Iron (Fe)	mg/kg	15250	18254	16319	24646	36397	15978	17253
7	Lead (Pb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	Manganese (Mn)	mg/kg	2.63	2.45	2.2	1.8	1.7	1.62	2.1
9	Nitrogen (N)	%	1.05	1.03	1.02	1.05	1.02	1.08	1.04
10	Organic Matter @155°C	%	0.62	2.01	1.2	1.15	1.2	1.8	2.3
11	pH value @ 25°C	--	7.4	6.8	6.7	6.9	7.3	7.7	7.2
12	Phosphate (P)	%	2.3	2.2	1.4	2.12	1.6	2.4	1.5
13	Potassium (K)	%	0.36	0.14	0.18	0.22	0.22	0.23	0.27
14	Specific EC @ 25°C	µS/Cm	172	196	155	156.98	232	172	185
15	Total Carbon	%	2.2	2.5	2.3	3.4	2.9	2.9	3.9
16	Sulphates (SO ₄)	%	0.16	0.2	0.17	0.21	0.25	0.18	0.24
17	Zinc (Zn)	mg/kg	16	21.23	17	22.3	26	23.52	31
18	Boron (B)	mg/kg	0.67	0.58	0.81	0.42	0.75	0.32	0.78
19	Calcium (Ca)	mg/kg	272	288	245	326	303	293	305
20	Chlorides (Cl)	mg/kg	169	298	320	245.18	260.89	236	285
22	Magnesium (Mg)	mg/kg	172	145	115	126	125	187	132.01
23	Texture	---	Silt loam	Silt Loam	Silt Clay Loam	Clay Loam	Silt Clay Loam	Clay Loam	Silt Clay Loam
24	Sand	%	19	18.9	17.5	21.2	18.2	26.5	19.5
25	silty	%	55.4	26.5	37.5	36.5	27.4	29.6	27.5
26	clay	%	25.6	54.6	45	42.3	54.4	43.9	53

Source: On-site monitoring/Sampling Results by Excellence Laboratory in association with GTMS.

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 baseline quality of surface and ground water.

Table 3.5 Water Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
BW01	MGR Nagar	0.74	SW	10°58'50.44"N, 77°55'53.77"E
BW02	Arasampalaiyam	3.12	NE	11°0'42.51"N, 77°56'45.26"E
BW03	Vallipuram	2.88	E	10°58'51.89"N, 77°57'56.01"E
BW04	Munnur	4.31	NW	10°59'59.60"N, 77°54'8.30"E
BW05	Nedungur	4.11	S	10°56'44.24"N, 77°56'2.51"E
OW01	K.Paramathi	4.42	SW	10°57'14.79"N, 77°54'35.21"E

Source: On-site monitoring/sampling Greenlink Analytical and Research Laboratory Private Ltd, in association with GTMS.

3.2.1. Ground Water Quality Resources and Result

1. Barium, Boron, Copper, Lead, Mercury, Arsenic, Chromium, Zinc – All "Below Detection Limit (BDL)"

- These are toxic heavy metals. Their presence in groundwater is usually due to industrial effluents or natural geogenic sources (minerals in rocks).
- Since all are below detection limits, there is no sign of industrial or geogenic contamination from these toxic metals.
- This is positive from an environmental and health risk perspective.
- Interpretation: No heavy metal pollution.

2. Calcium (79 – 97 mg/l)

- Calcium contributes to hardness of water. High calcium makes water hard but is not harmful.
- Acceptable limit is 75 mg/l, permissible up to 200 mg/l.
- Slightly above acceptable but within limits.
- Interpretation: Slightly hard water, no major concern.

3. Magnesium (34 – 81 mg/l)

- Also contributes to water hardness.
- BIS acceptable limit: 30 mg/l (permissible up to 100 mg/l).
- Some samples exceed acceptable but are still under permissible limits.
- Interpretation: Water is moderately hard, but usable.

4. Chloride (251 – 297 mg/l)

- High chloride affects taste and can cause corrosion in pipelines.
- Acceptable limit: 250 mg/l; permissible up to 1000 mg/l.
- Your values are slightly above the acceptable limit but safe.
- Interpretation: Mild salinity – may affect taste but not health.

5. Fluoride (0.31 – 0.92 mg/l)

- Fluoride is beneficial in small quantities but harmful in excess (>1.5 mg/l causes fluorosis).

- All values are below the 1.0 mg/l limit.
 - Interpretation: No risk of dental or skeletal fluorosis.
- 6. Nitrate (16– 25 mg/l)**
- Nitrates come from agricultural runoff or sewage.
 - Safe limit is 45 mg/l (to avoid blue baby syndrome in infants).
 - Your values are below the limit.
 - Interpretation: No significant nitrate pollution.
- 7. Iron (<0.05 mg/l)**
- Iron causes staining, bad taste, and bacterial growth when >0.3 mg/l.
 - Your samples are well below the limit.
 - Interpretation: No iron-related issues.
- 8. pH (6.9 – 7.6)**
- pH is 6.5–8.5 for drinking water.
 - All values within this range.
 - Interpretation: Neutral pH, no corrosion or scaling tendency.
- 9. Total Dissolved Solids (TDS) (459 – 890 mg/l)**
- TDS represents total minerals and salts in water.
 - Acceptable limit is 500 mg/l; permissible up to 2000 mg/l.
 - BW01, BW03, and BW05 exceed the acceptable but are within permissible.
 - Interpretation: Slightly mineral-rich water; taste may be affected but safe to use.
- 10. Electrical Conductivity (EC) (756 – 1452 µS/cm)**
- Indicates overall ionic concentration in water.
 - Higher EC = higher salinity.
 - EC > 1000 µS/cm (in BW01 and BW05) suggests moderately saline water.
 - Interpretation: Suitable for irrigation, but may need softening for drinking.
- 11. Total Alkalinity (181 – 345 mg/l)**
- Indicates the buffering capacity (resistance to pH change).
 - Acceptable: 200 mg/l; Permissible: 600 mg/l.
 - High alkalinity may indicate presence of bicarbonates/carbonates.
 - Interpretation: Alkaline nature is common in groundwater. No health issue but may affect taste.
- 12. Total Hardness (TH) (93 – 255 mg/l)**
- Acceptable: 200 mg/l; Permissible: 600 mg/l.
 - TH > 200 (BW03, OW01) means moderately hard water.
 - Interpretation: May require softening for household use.
- 13. Turbidity (<0.1 NTU) and Colour (<1 CU)**
- Very clear water, no suspended solids.
 - Interpretation: Visually and physically very good water quality.
- 14. Silica (1.8 – 4.5 mg/l)**
- No BIS standard, but useful for understanding scaling potential in boilers and pipes.
 - Normal in groundwater.
 - Interpretation: No concern.

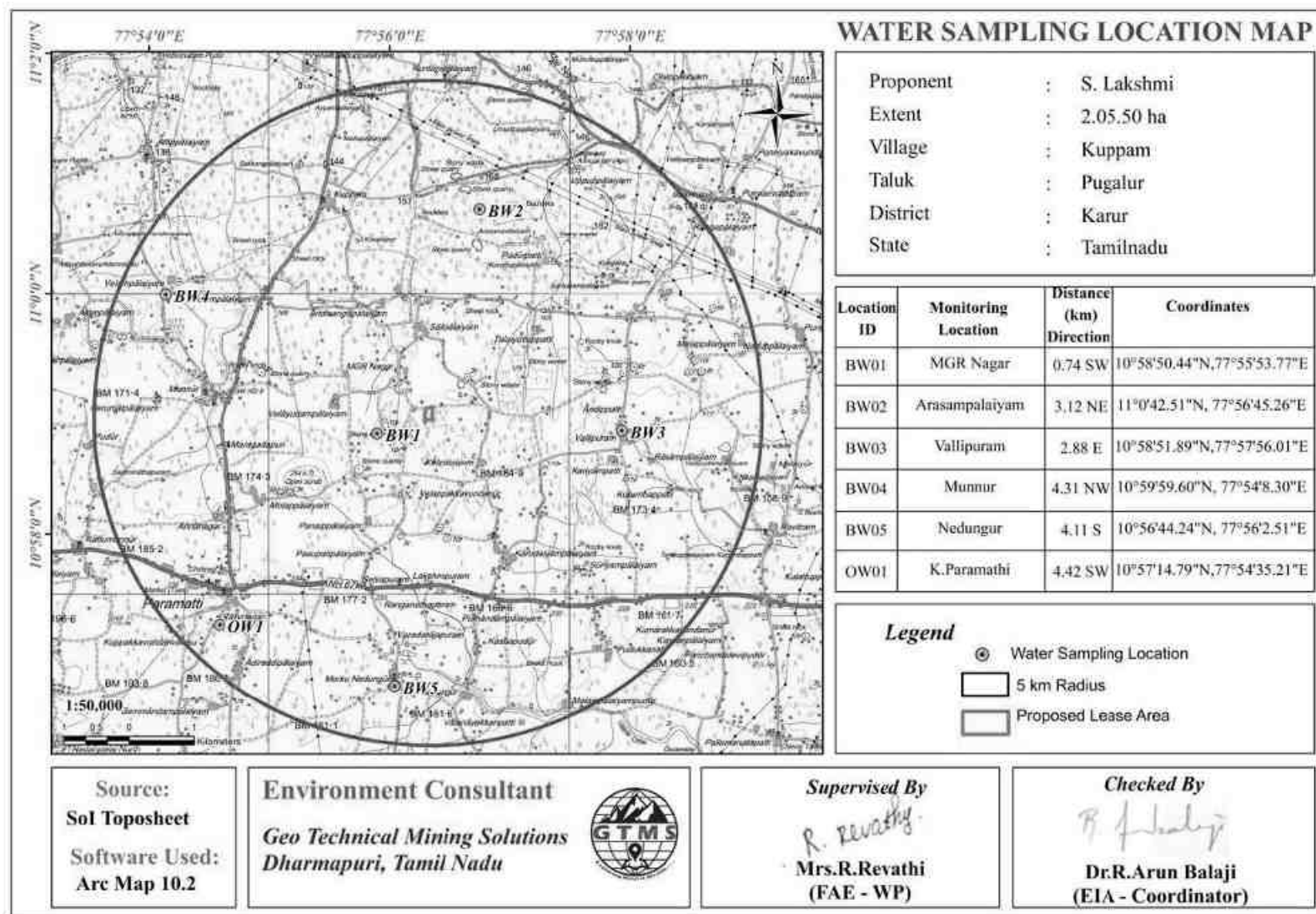


Figure 3.6 Map Showing Water Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.6 Ground Water Quality Result

S. No.	Parameters	Units	BW01	BW02	BW03	BW04	BW05	OW01
1.	Barium (as Ba)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2.	Boron (B)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3.	Calcium (Ca)	mg /l	80.03	90.42	92.05	97	79	85
4.	Chloride (Cl)	mg /l	297	290.55	275	251	283	252
5.	Colour	CU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6.	Copper (Cu)	mg /l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
7.	Fluoride (F)	mg /l	0.31	0.61	0.38	0.69	0.92	0.75
8.	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9.	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10.	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
11.	Magnesium (Mg)	mg/l	34	41	52	62	81	68
12.	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
13.	Nitrate (NO ₃)	mg/l	16	17	19	25	16.75	24
14.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
15.	pH value @ 25°C	-	7.2	7.3	7.6	6.9	7.53	7.1
16.	Phenolic Compounds (C ₆ H ₅ OH)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17.	EC @ 25°C (Specific Conductance)	µS/cm	1301	1252	1255	756	1452	825
18.	Sulphates (SO ₄)	mg/l	134	79	120.55	129.1	104.95	81.15
19.	Total Alkalinity (CaCO ₃)	mg/l	325	216	285	181	213.27	345
20.	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
21.	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22.	TDS	mg/l	890	700	807.1	459	842.4	461
23.	TH (CaCO ₃)	mg/l	169.65	101	255.15	93	116.95	204
24.	Total Silica (as SiO ₂)	mg/l	3.2	1.8	2.15	2.12	4.5	4.1
25.	Turbidity	NTU	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26.	Zinc (Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
27.	Coliforms Bacteria	MPN	Present	Present	Present	Present	Present	Present
28.	E. Coli	MPN	Present	Present	Present	Present	Present	Present

Source: On-site monitoring/sampling **Excellence Laboratory**, in association with GTMS.

Rainfall

Rainfall data for the study area were collected for the period of 1981-2021([POWER | Data Access Viewer \(nasa.gov\)](#)). Long term monthly average rainfall was estimated from the data of 1981-2021 and compared with the monthly rainfall for the year 2022, shown in Figure 3.7. The Figure 3.7 shows that rainfall is generally high in the months of September through November in every year. Particularly, rainfall in April through August and October of 2022 is higher than the previous years.

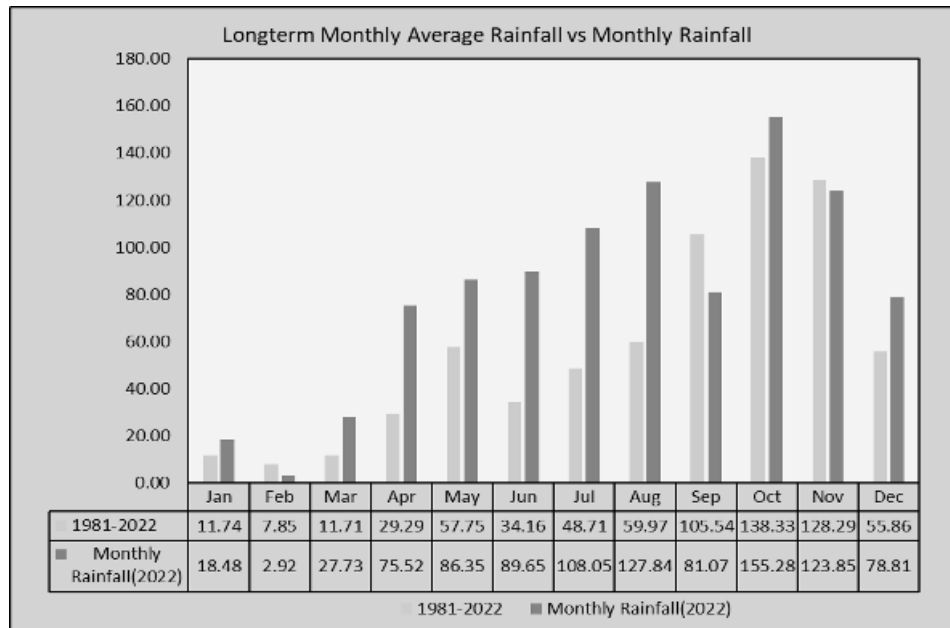


Figure 3.7 Long-Term Monthly Average Rainfall Vs Monthly Rainfall

3.2.2 Groundwater Levels and Flow Direction

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 8 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May 2023 (Pre-Monsoon Season) and from October through December 2023, (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.7 and 3.8. According to the data, average depths to the static water table in open wells range from 18.96 to 21.00 m BGL in pre monsoon and 14.33 to 16.00 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.9 and 3.10. The average depths to static potentiometric surface in bore wells for the period of October through December (Post-Monsoon Season) vary from 62.3 to 65.8 m and from 72.7 to 75.5 m for the period of March

through May, (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines.

Table 3.7 Pre-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Mar-2023	Apr-2023	May-2023	Average		
DW01	21.5	22.7	23	20.00	0°58'46.65"N	77°56'13.64"E
DW02	22	23.5	24.6	21.00	0°58'27.20"N	77°56'2.85"E
DW03	21	22.5	23.5	19.00	10°58'5.98"N	77°55'33.63"E
DW04	20.5	21	22.5	18.00	0°57'57.21"N	77°56'35.65"E
DW05	22.5	23.7	24.5	21.00	10°59'18.69"N	77°55'19.28"E
DW06	20.5	21.7	22.5	17.00	10°59'38.00"N	77°56'11.84"E
DW07	22	23.5	24.7	19.00	10°59'11.49"N	77°56'52.98"E
DW08	19.5	20.5	22.8	18.00	10°58'32.25"N	77°56'53.33"E
DW09	19.20	20.9	21.8	17.68	10°58'55.92"N	77°55'13.44"E

Source: Onsite monitoring data

Table 3.8 Post-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Oct-2023	Nov- 2023	Dec-2023	Average		
DW01	12.5	11.9	10.4	16.00	10°58'46.65"N	77°56'13.64"E
DW02	13.4	12.5	11	14.00	10°58'27.20"N	77°56'2.85"E
DW03	12.7	11.5	10.5	17.00	10°58'5.98"N	77°55'33.63"E
DW04	14.5	13.5	12	14.00	10°57'57.21"N	77°56'35.65"E
DW05	13.7	12.4	11.5	13.00	10°59'18.69"N	77°55'19.28"E
DW06	15.5	13.9	13	15.00	10°59'38.00"N	77°56'11.84"E
DW07	16.5	14.2	13.5	14.00	10°59'11.49"N	77°56'52.98"E
DW08	16.6	14.5	13.4	13.00	10°58'32.25"N	77°56'53.33"E
DW09	16.20	13.9	12.8	13.00	10°58'55.92"N	77°55'13.44"E

Source: Onsite monitoring data

Table 3.9 Pre-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
BW01	70	72.2	75.5	58.00	10°58'18.99"N	77°55'57.19"E
BW02	69	73.2	74.6	59.00	10°59'4.90"N	77°55'33.92"E
BW03	71.2	72.3	75.5	60.00	10°58'57.16"N	77°56'33.96"E
BW04	72.3	73.2	74.7	59.00	10°59'42.57"N	77°56'16.91"E
BW05	71.4	73.5	76.6	58.00	10°59'22.57"N	77°55'38.22"E
BW06	71.3	72.4	75.5	57.00	10°59'6.97"N	77°56'36.46"E
BW07	71.3	72.3	76.5	59.00	10°57'57.26"N	77°56'52.03"E
BW08	71.2	72.5	75.5	60.00	10°58'0.47"N	77°55'33.87"E

Source: Onsite monitoring data

Table 3.10 Post-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
BW01	64.5	63.5	62	48	0°58'18.99"N	77°55'57.19"E

BW02	63.5	62.5	61	49	10°59'4.90"N	77°55'33.92"E
BW03	65.5	64	63	51	0°58'57.16"N	77°56'33.96"E
BW04	67	66	64.5	53	0°59'42.57"N	77°56'16.91"E
BW05	66.5	64.5	64	52	10°59'22.57"N	77°55'38.22"E
BW06	66	64.5	63	51	10°59'6.97"N	77°56'36.46"E
BW07	63.5	62.5	61	53	10°57'57.26"N	77°56'52.03"E
BW08	66	63.5	62	50	10°58'0.47"N	77°55'33.87"E

Source: Onsite monitoring data

The water samples were collected from both borewells and dug wells during the pre-monsoon and post-monsoon in order to understand the water table dynamics within 2km radius of the lease area. After interpreting the observed values of water table depths in the sampling locations gradual variations in the depths were inferred from pre-monsoon to the post monsoon (Table 3.7 to 3.10). But this variation might be the usual due to differential downpour in the region. The uncertainty of the monsoon plays a vital role in the fluctuation of water depths in and around the lease area. As mentioned in rainfall data (1981-2021) and 2022, the region experiencing higher rainfall during the months of September to November than the other months of the year. The difference in depth of water table of open wells and borewells in the sampling locations exposes a gradual increase during the pre-monsoon and evidencing the decrease in depth during the post monsoon. This shows the rainfall influencing the water table of the region by the recharging the water bearing bodies naturally and regularly. And can be concluded that, mining activities has no impact on the quality and quantity of ground water in and around the lease area.

Water Balance management in site

A sustainable eco-friendly water management strategy will be adopted in this project. Since the water requirement during the mining period is estimated about 4.75KLD for drinking, domestic and sanitary needs, creation and maintenance of green belt and for sprinkling purposes. The drinking water must be pure and safe, so it will be outsourced from nearby vendors/RO water plant will be installed in the site. The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells. According to the soil resistivity data of the region, few locations are porous and permeable in nature. It will help in infiltration of rainwater and recharge the aquifer naturally during monsoon. This sustainable strategy will be helpful in maintaining the water balance within 2km radius of project site.

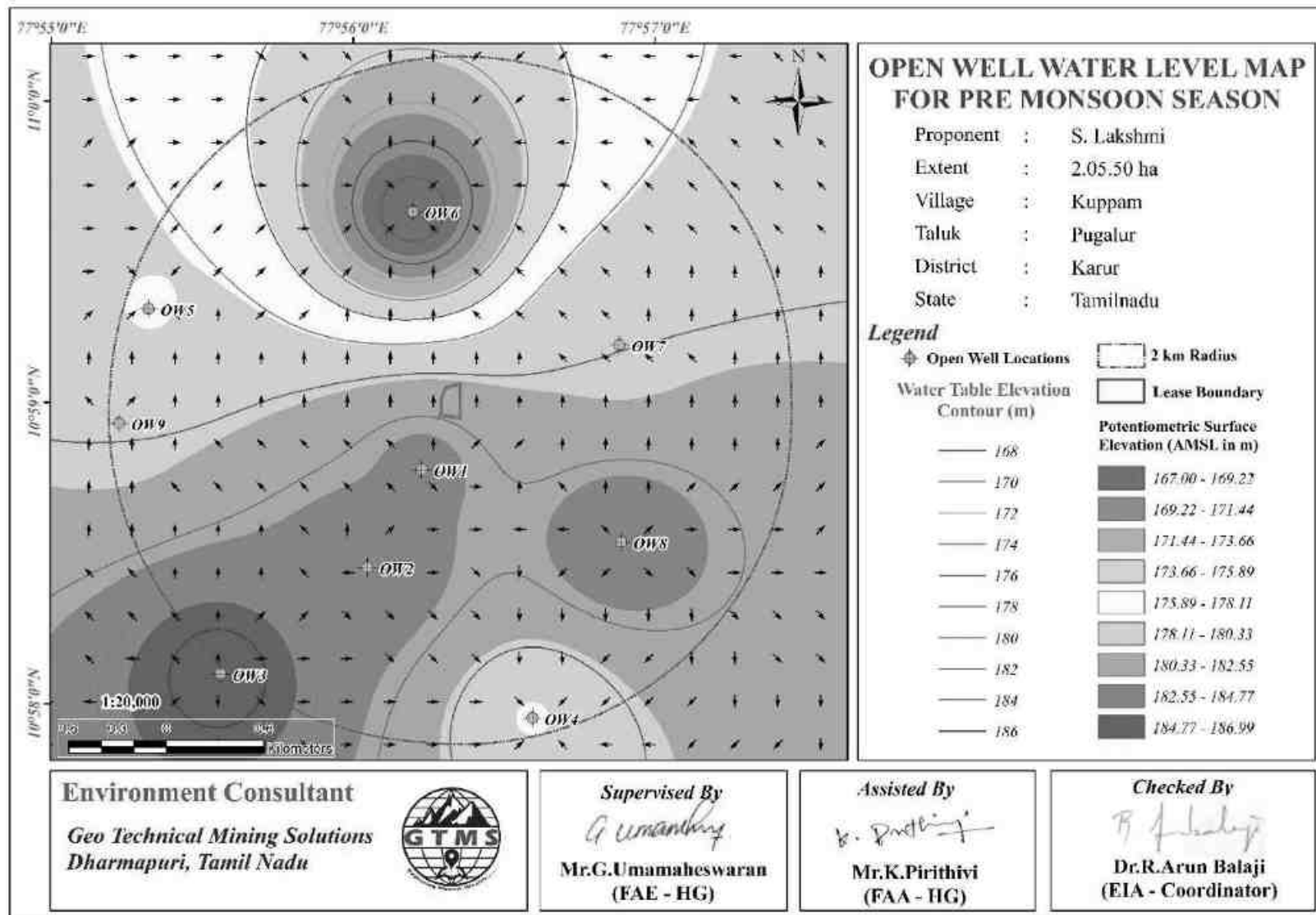


Figure 3.8 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

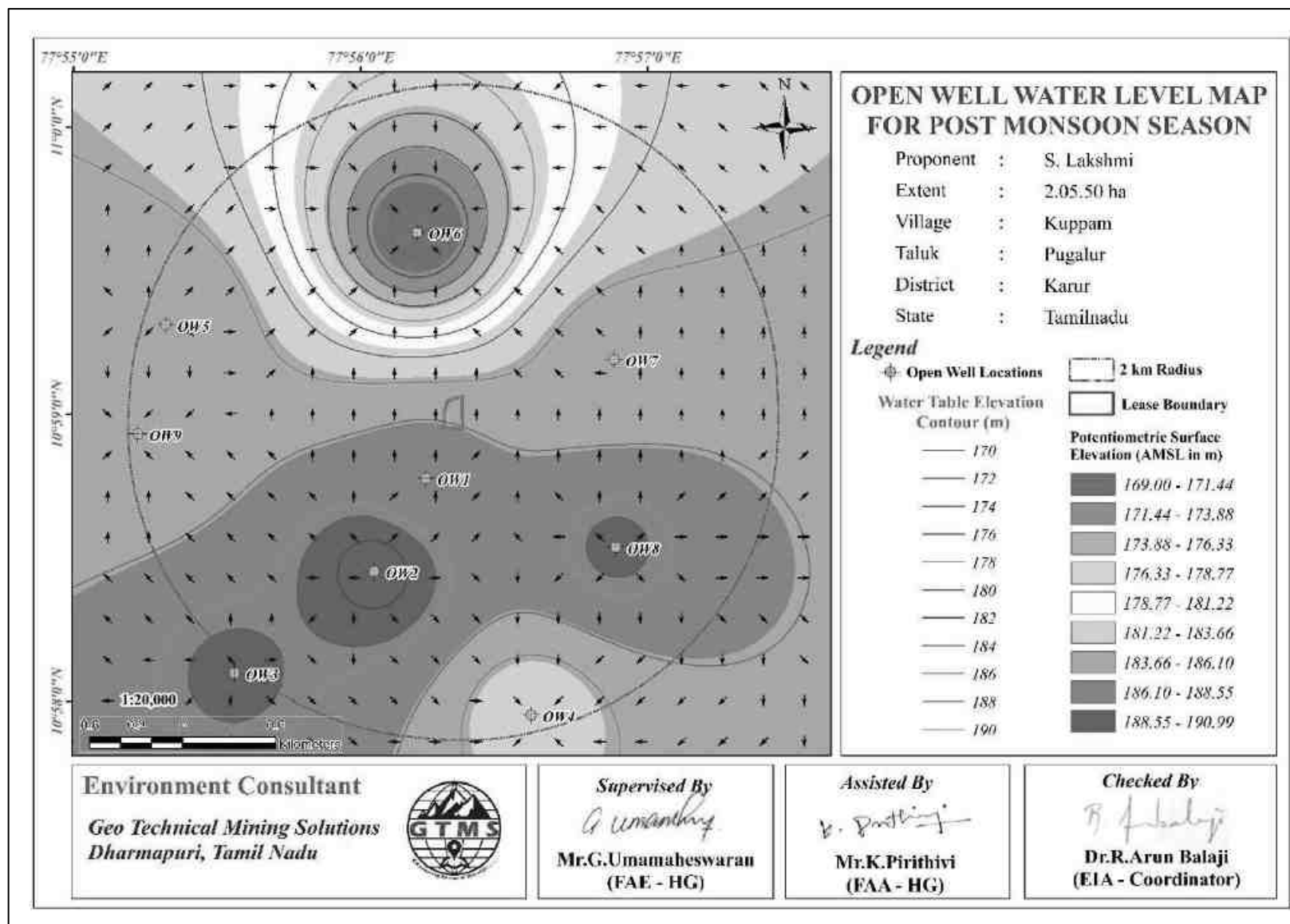


Figure 3.9 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

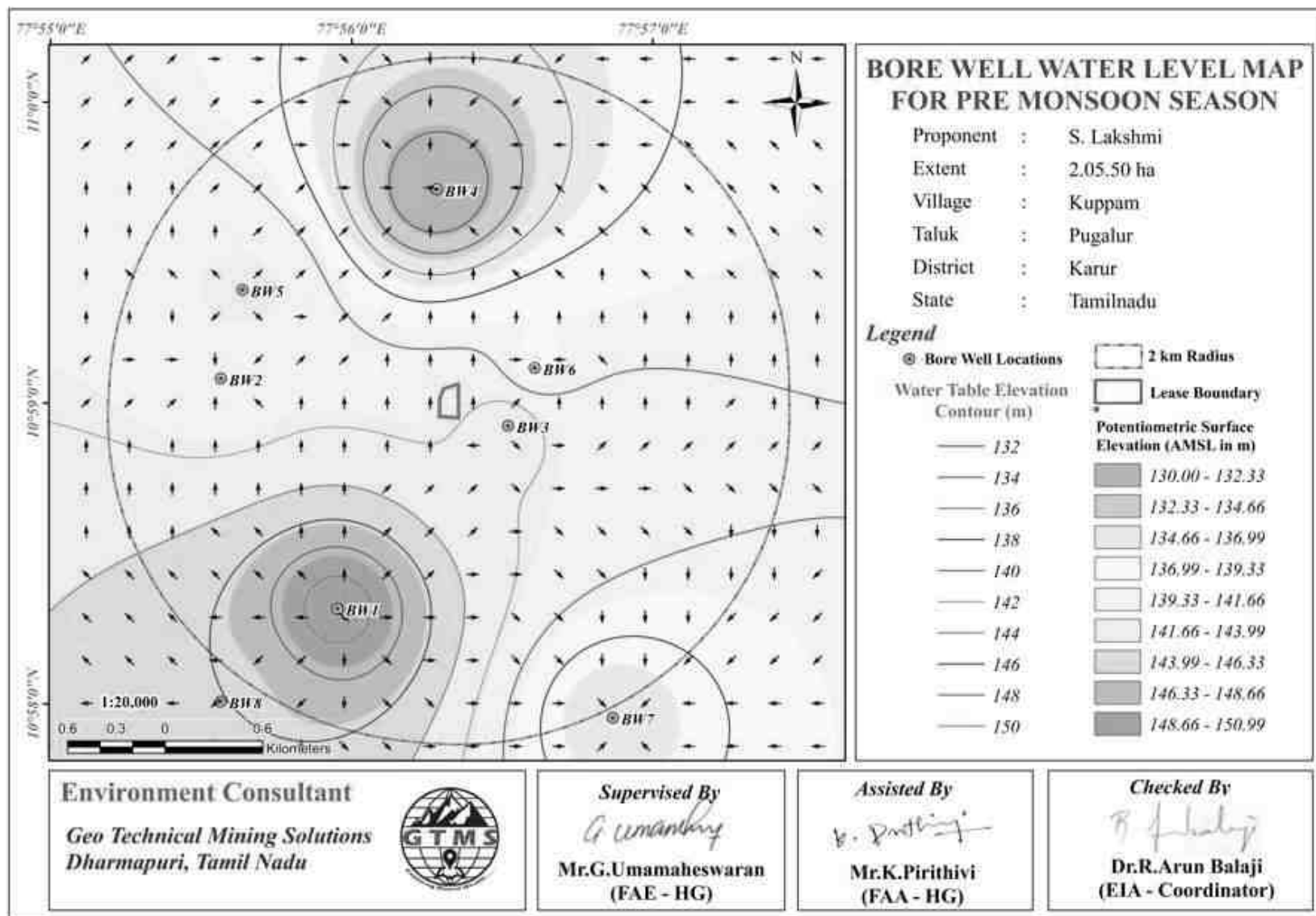


Figure 3.10 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

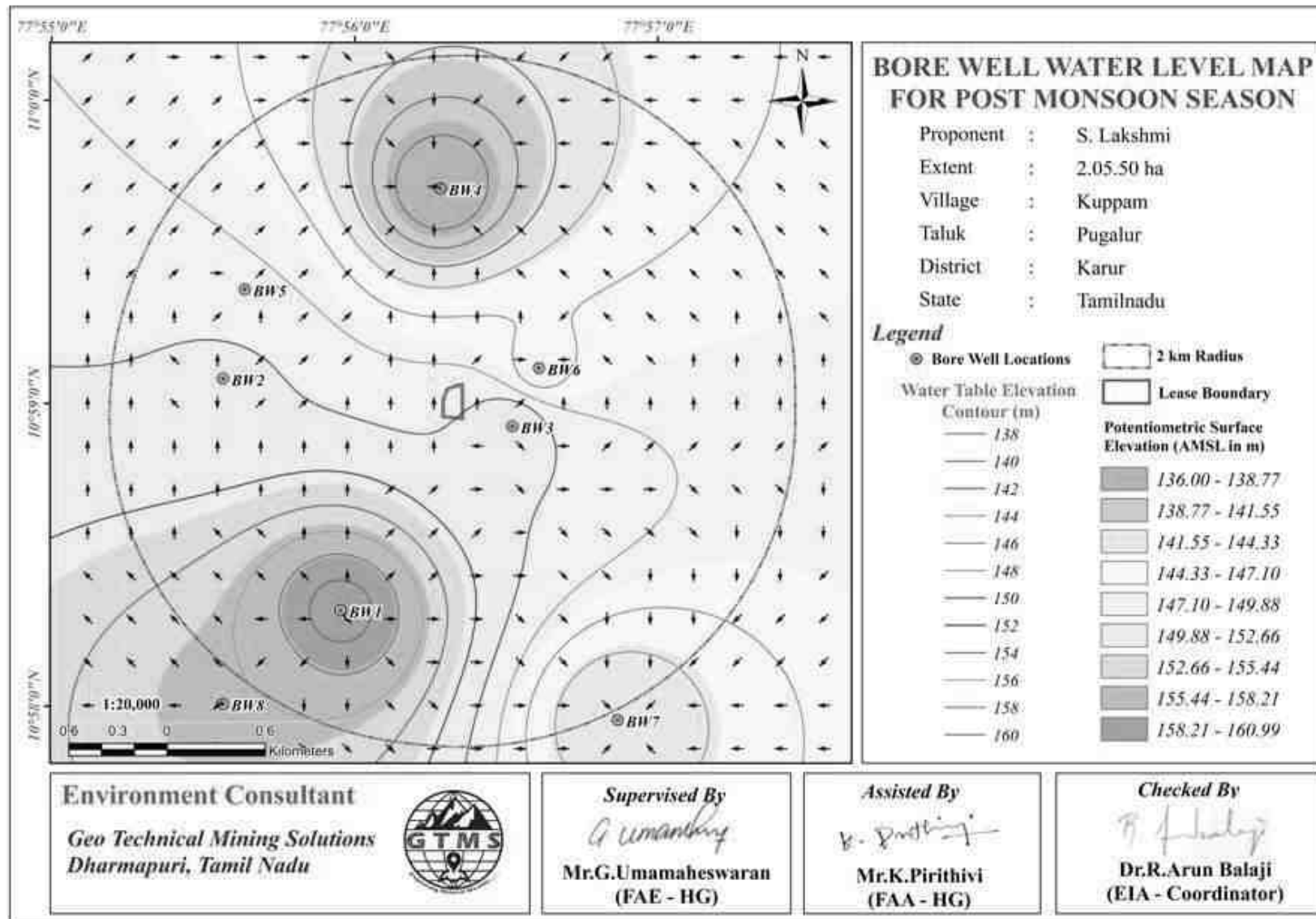


Figure 3.11 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

3.2.3 Electrical Resistivity Investigation

Electrical resistivity investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation uses four electrodes set up where current is sent through outer electrodes into the ground and the inner electrodes measure the potential difference.

Result

The Geophysical VES data obtained from the project site have been shown in Table 3.11. The field data obtained from a detailed geophysical investigation were plotted using excel spreadsheet for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.12.

Table 3.11 Vertical Electrical Sounding Data

Location Coordinates - 10°37'28.20"N 78°55'30.02"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	2	1	4.71	6.26	29.55
2	4	1	23.57	1.84	43.55
3	6	1	55.00	1.017	55.94
4	8	1	99.00	1.014	76.39
5	10	2	75.43	0.44	33.19
6	12	2	110.01	0.38	42.63
7	14	2	150.86	0.35	53.57
8	16	2	198.01	0.29	57.62
9	18	2	251.44	0.26	67.40
10	20	2	311.16	0.27	86.55
11	25	5	188.58	0.48	91.14
12	30	5	275.01	0.46	127.23
13	35	5	377.16	0.47	178.85
14	40	5	495.02	0.49	222.39
15	45	5	628.60	0.39	249.22
16	50	5	777.89	0.32	250.04
17	60	10	550.03	0.31	354.51

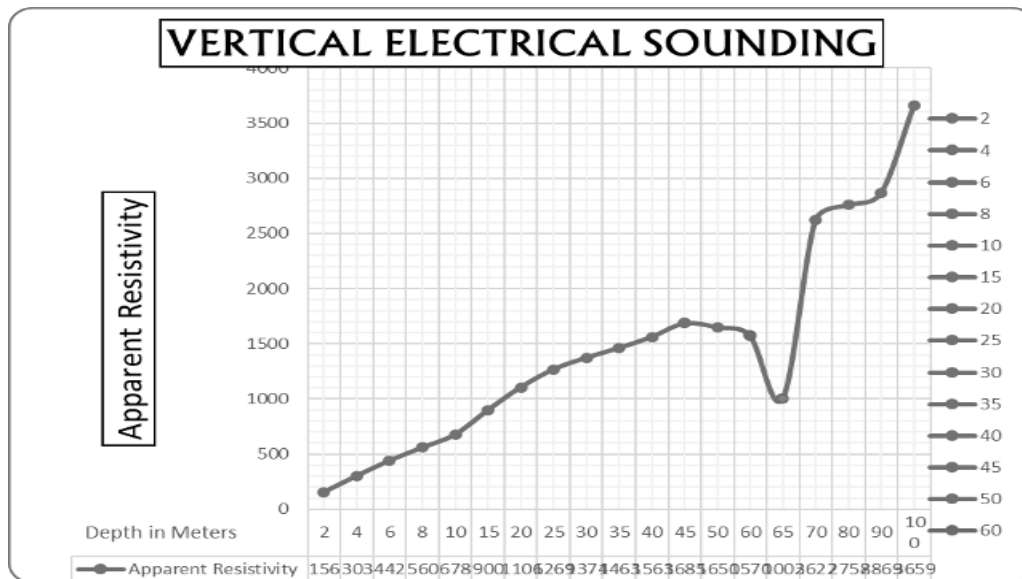


Figure 3.12 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 65 m Below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 65 m below ground level. The ultimate depth of the proposed project is 50 m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

Soil Resistance Test (SRT)

Soil electrical resistivity testing involves a systematic approach. The procedure includes site preparation, electrode placement, current injection, voltage measurement, and subsequent data analysis. The collected data helps in creating a resistivity profile of the soil, offering valuable insights for various applications. It assesses the soil's electrical properties, providing valuable data for diverse applications, including construction, grounding systems, and environmental impact assessments.

WENNER METHOD

Wenner Method is a widely used technique for soil resistivity testing. This method involves placing four equally spaced electrodes in the ground, forming a square or rectangle. The distance between these electrodes and the depth of insertion are crucial parameters in the accurate measurement of soil resistivity. It involves inserting electrodes into the soil and measuring the voltage drop to calculate the soil's resistivity. High resistivity soils are generally less corrosive than low resistivity soils.

$$\text{Resistivity, } \rho = 2\pi AR$$

In this formula:

- ρ represents the soil resistivity, measured in ohm-meters ($\Omega \cdot m$).
- a is the spacing between adjacent electrodes, measured in meters (m).
- R denotes the measured resistance between the inner electrodes, in ohms (Ω).
- The factor 2π accounts for the geometric arrangement of the electrodes in the Wenner configuration.

Field Procedure to conduct Werner's test:

- Four electrodes are inserted into the earth at an equal distance, to a depth of one-third of their distance.
- The outer electrodes are called current electrodes (C1 and C2) and the inner probes are called potential electrodes (P1 and P2).
- You can use an earth resistance tester to measure the soil resistance. Connect the measurement probes to the electrodes and to the measurement and read the resistance values.
- Continue measuring the soil resistivity by moving the electrodes far apart from C1 at an equal distance and inserting the probes deeper.
- Note down the resistances at difference distances and depths and calculated the resistivity using the following formula.

In conclusion, soil resistivity testing is a vital component in various industries, ensuring the efficient design and implementation of projects while meeting regulatory requirements. Understanding the methods, procedures, and associated costs empowers professionals and stakeholders to make informed decisions, fostering sustainable development.

3.3 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollutants and their existing levels in ambient air. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities.

3.3.1 Meteorology

3.3.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3m above the ground level as there are no

obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.12.

Table 3.12 Onsite Meteorological Data

S. No.	Parameters		OCT,2023	NOV,2023	DEC,2023
1	Temperature (⁰ C)	Min	21.01	20.08	17.73
		Max	37.13	32.82	32.26
		Avg	27.98	26.06	24.67
2	Relative Humidity (%)	Min	26.06	46.12	40.19
		Max	99.62	100.00	100.00
		Avg	70.38	82.75	80.15
3	Wind Speed (m/s)	Min	0.04	0.50	0.80
		Max	9.41	6.92	7.37
		Avg	2.31	2.63	3.18
4	Wind Direction (degree)	Min	0.00	0.00	0.12
		Max	359.75	359.23	359.22
		Avg	158.80	81.51	111.69
5	Surface Pressure(kPa)	Min	98.03	98.24	97.98
		Max	98.98	99.07	99.42
		Avg	98.59	98.66	98.64

Source: On-site monitoring/sampling by **Excellence Laboratory** in association with GTMS

3.3.1.2 Wind Pattern

Wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction. Two types of wind rose were generated: historical seasonal wind rose for the period of October through December of the years from 2019 to 2022 and the seasonal wind rose for the study period of October through December 2023. The wind rose diagrams thus produced are shown in Figures 3.13-3.13a. Figure 3.14 reveals that:

- ❖ The measured average wind velocity during the study period is 2.71m/s.
- ❖ Predominant wind was dominant in the directions ranging from Northeast to Southeast.

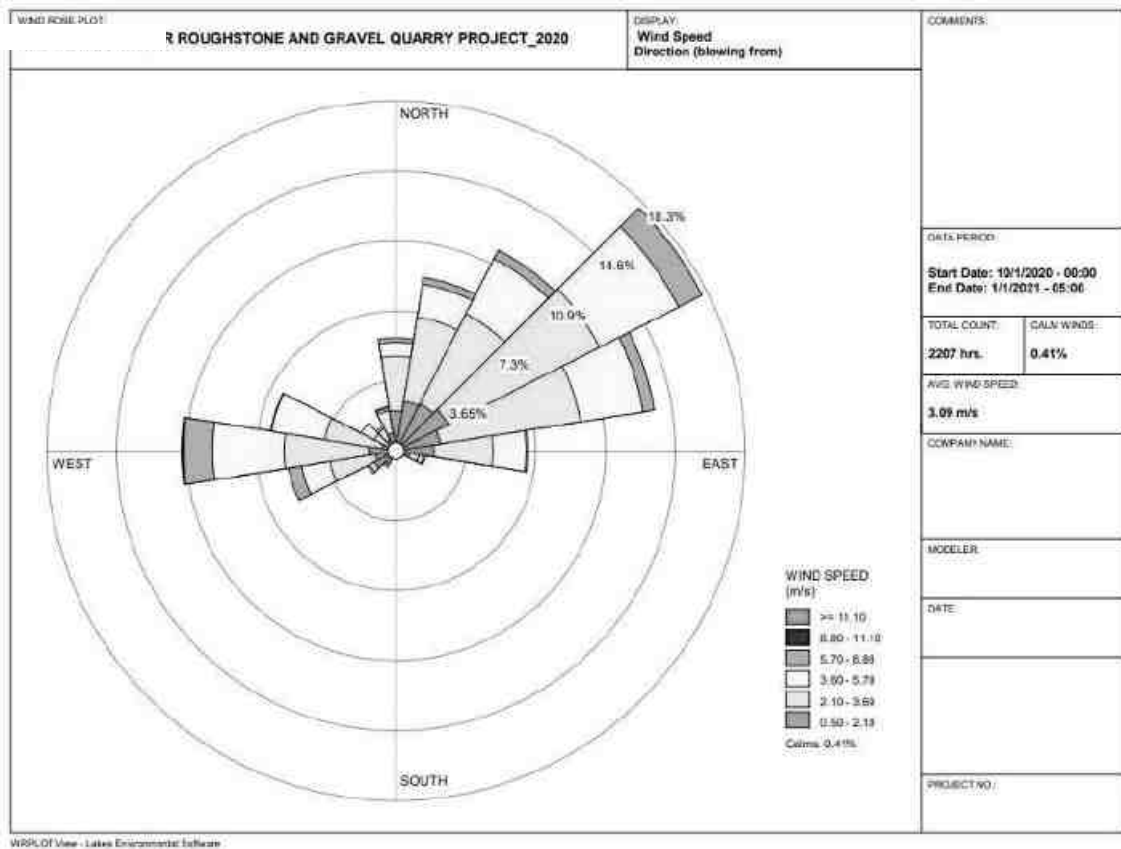
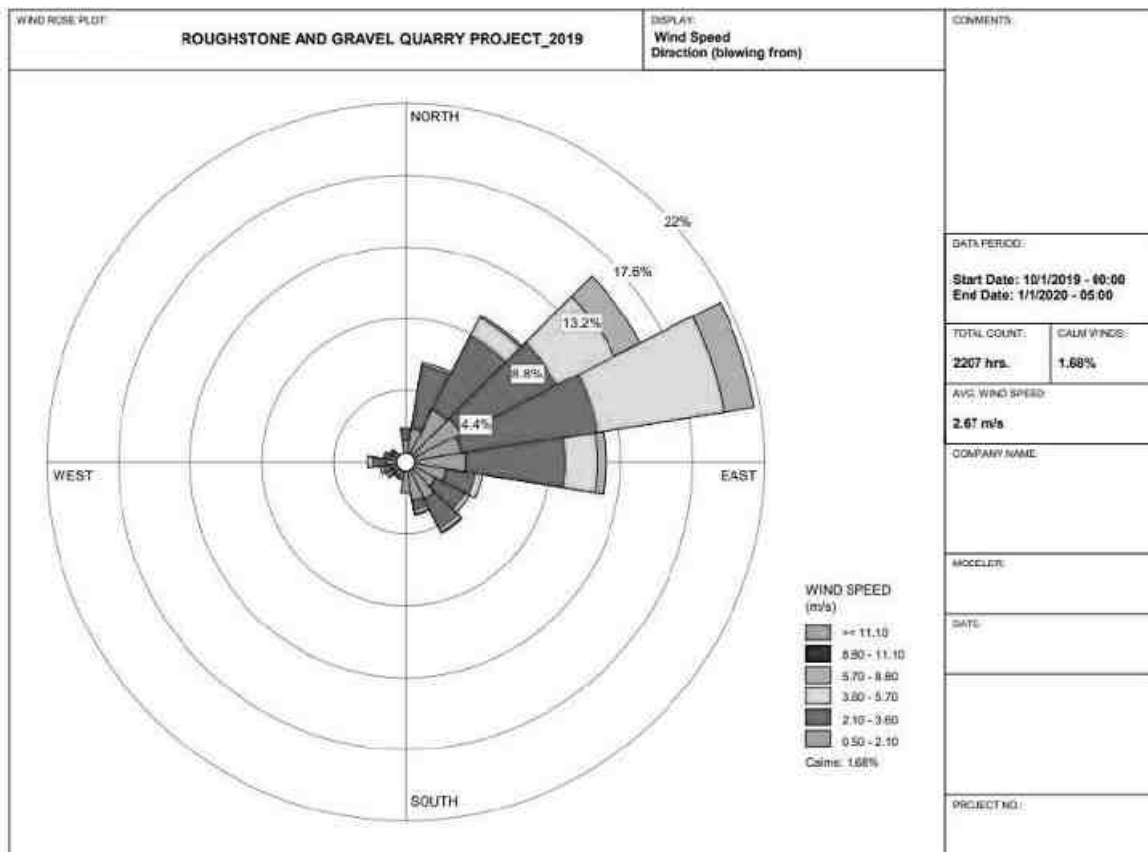


Figure 3.13 Windrose Diagram for 2019 and 2020 (October to December)

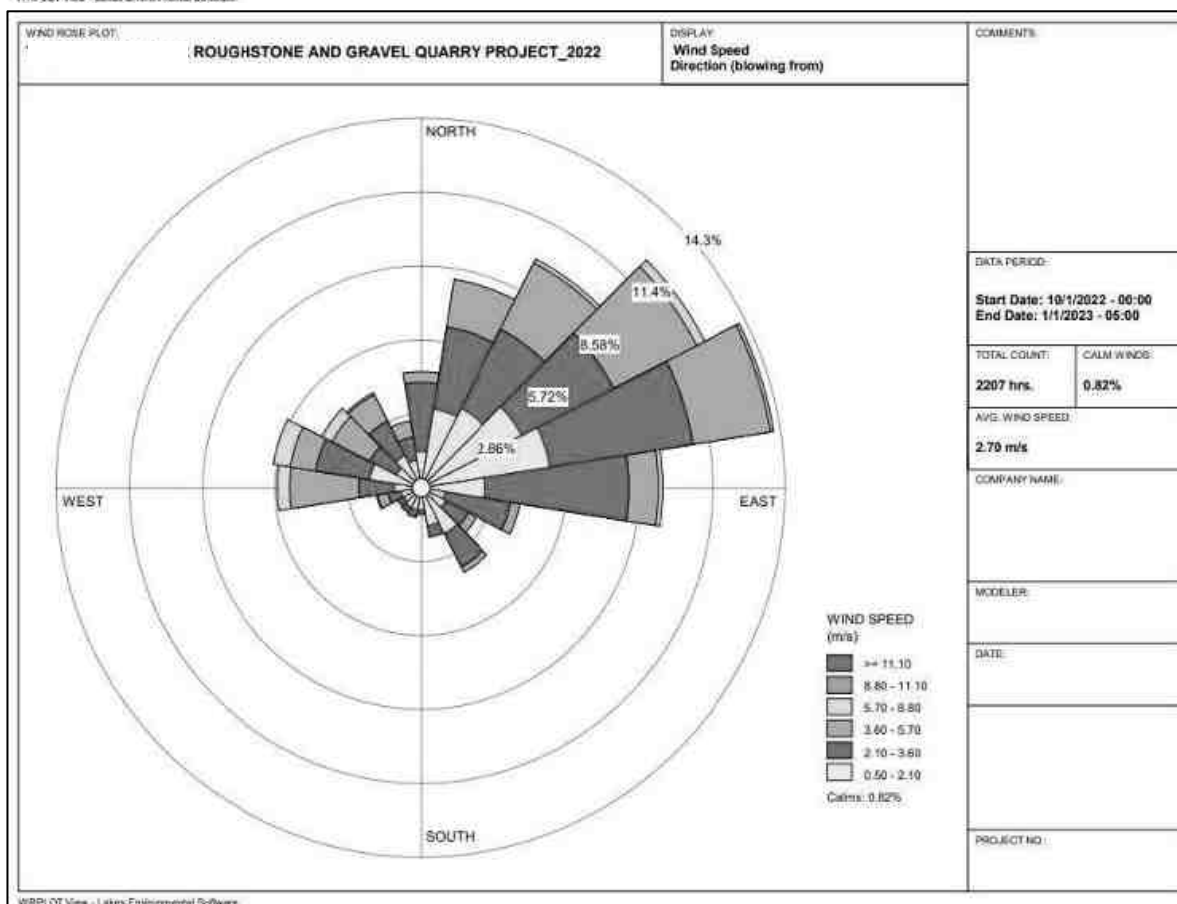
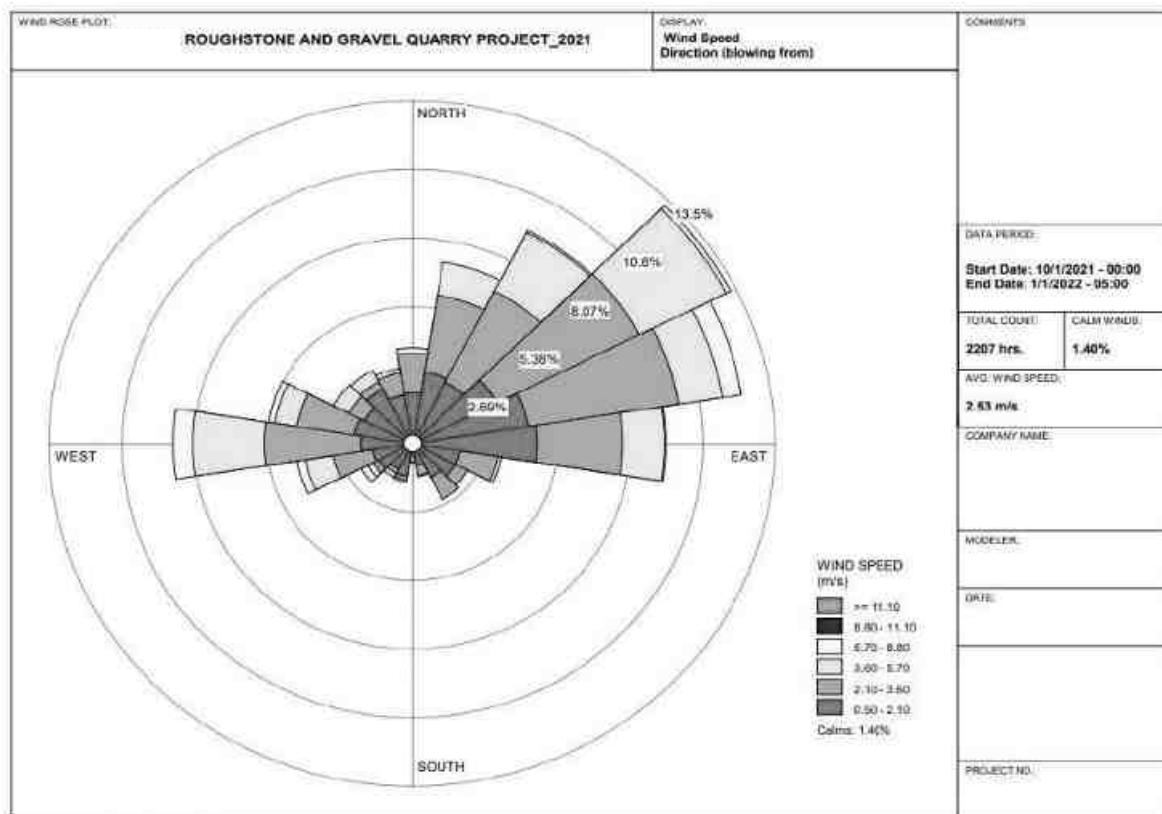


Figure 3.13a Windrose Diagram for 2021 and 2022 (October to December)

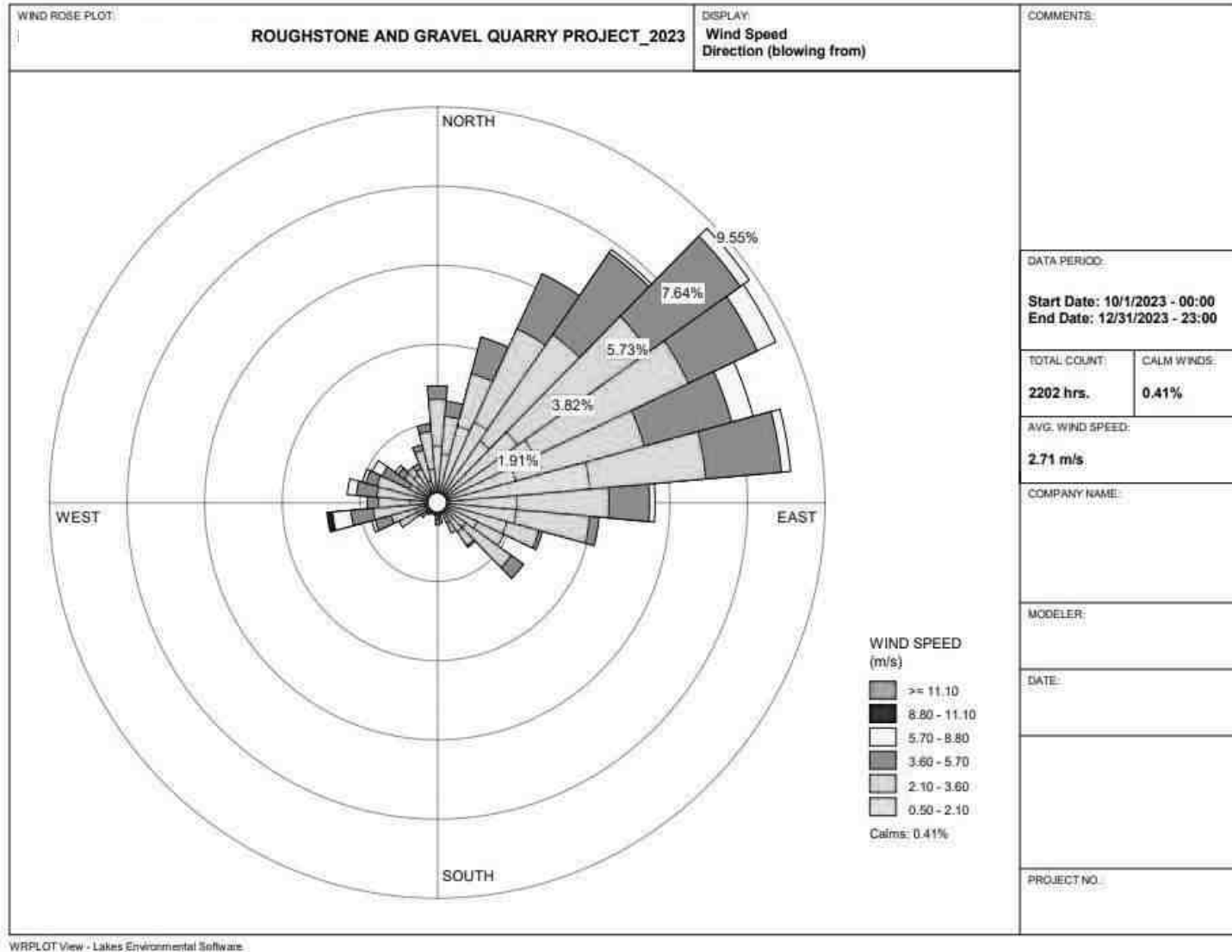


Figure 3.14 Onsite Wind Rose Diagram

3.3.2 Ambient Air Quality Study

The baseline ambient air quality is studied 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

Table 3.13 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method Beta attenuation method	Fine Particulate Sampler
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hoch heiser modified method)	Respirable Dust Sampler with gaseous attachment

Source: Sampling Methodology based *Excellence Laboratory* & CPCB Notification

Table 3.14 National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	SO ₂ (µg /m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	NO _x (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	PM ₁₀ (µg/m ³)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	PM _{2.5} (µg/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

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at Eight (08) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October to December, 2023 as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least $3 \pm 0.5\text{m}$ above the ground level at each monitoring station for negating the effects of wind-blown ground dust. The equipment was placed at space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results. The baseline data of ambient air were generated for $\text{PM}_{2.5}$, PM_{10} , sulphur dioxide (SO_2) and nitrogen dioxide (NO_x). The sampling locations are shown in Figure 3.15 and average concentrations of air pollutants are summarized in Tables 3.15 and are shown in Figures 3.16-3.20.

Table 3.15 Ambient Air Quality (AAQ) Monitoring Locations

Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
AAQ1	Nearby Core	0.36	SW	10°58'47.37"N	77°56'11.25"E
AAQ2	Salipalayam	0.64	NW	10°59'18.06"N	77°56'4.04"E
AAQ3	K. Paramathi	3.75	SW	10°57'32.03"N	77°54'49.24"E
AAQ4	Puthurpatti	2.82	NE	11° 0'16.30"N	77°57'18.38"E
AAQ5	Kuppam	3.46	NW	11° 0'45.56"N	77°55'31.42"E
AAQ6	Malapalayampudur	4.83	SE	10°56'34.66"N	77°57'29.31"E
AAQ7	Kurumpapatti	3.85	SE	10°58'22.31"N	77°58'22.95"E
AAQ8	Munnur	3.20	W	10°59'10.03"N	77°54'32.19"E

Source: On-site monitoring/sampling *Excellence Laboratory* in association with GTMS

Results

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $14.4 \mu\text{g}/\text{m}^3$ to $16.7 \mu\text{g}/\text{m}^3$; PM_{10} from $35.8 \mu\text{g}/\text{m}^3$ to $41.5 \mu\text{g}/\text{m}^3$; SO_2 from $5.3 \mu\text{g}/\text{m}^3$ to $7.1 \mu\text{g}/\text{m}^3$; NO_x from $11.7 \mu\text{g}/\text{m}^3$ to $15.7 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index

The AQI shows that the air quality of the study area falls within good category 39 causing minimal impact to human health.

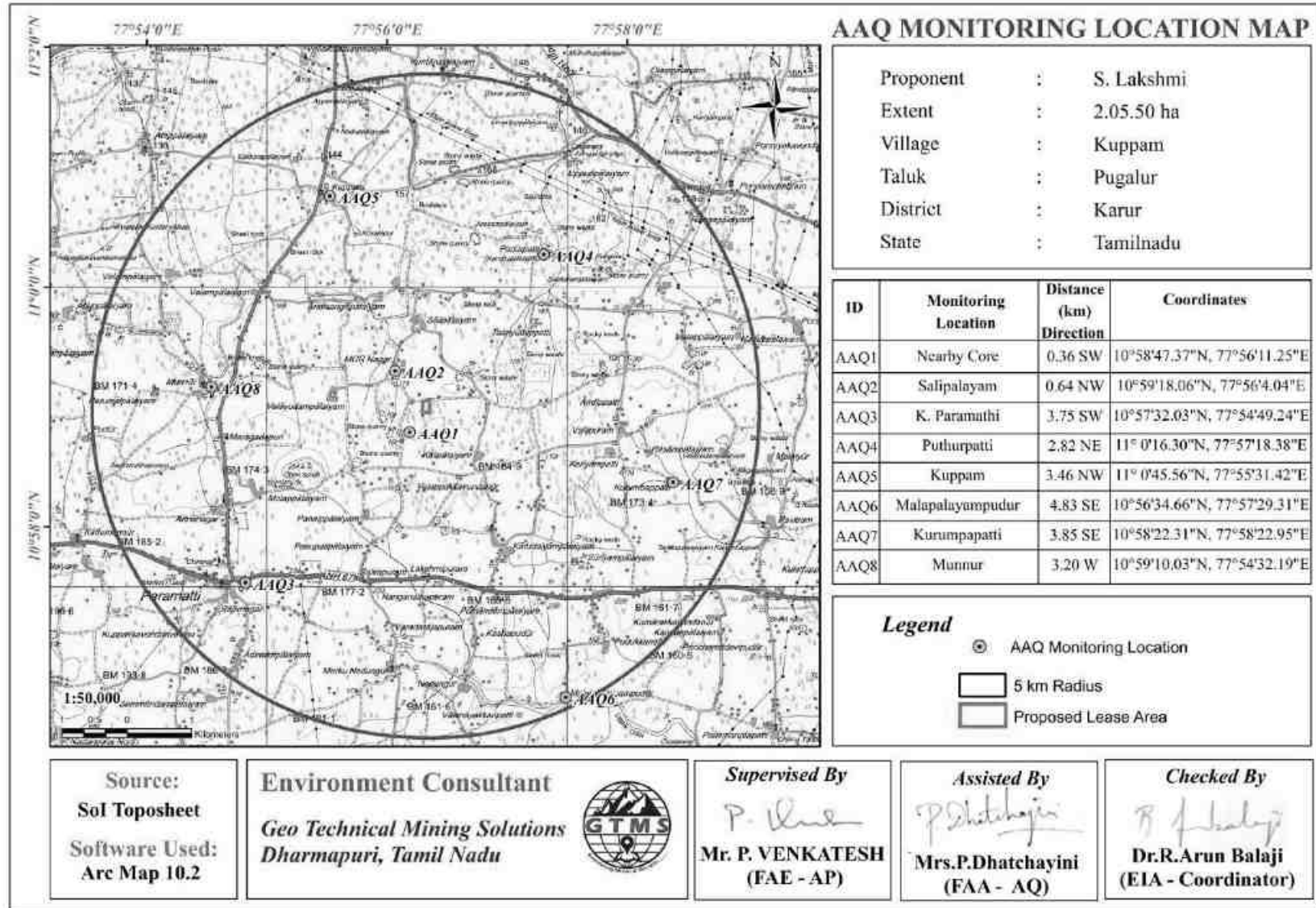


Figure 3.15 Map Showing Ambient Air Quality Monitoring Station Locations Around 5 km Radius from Proposed Project Site

Table 3.16 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	17.6	15.5	16.7	17.6	44.0	38.8	41.8	44.0
AAQ2	15.6	13.0	14.5	15.6	38.9	32.4	36.2	38.7
AAQ3	17.6	16.5	17.0	17.5	44.1	41.3	42.6	44.1
AAQ4	15.8	13.7	14.8	15.8	39.5	34.3	37.0	39.3
AAQ5	17.5	14.4	15.7	17.5	43.8	36.0	39.3	43.7
AAQ6	15.6	11.9	13.7	15.6	38.9	29.7	34.3	38.4
AAQ7	16.2	14.6	15.5	16.2	40.6	36.5	38.8	40.6
AAQ8	17.3	15.2	16.3	17.3	42.2	37.0	39.7	42.1
SO ₂					NO _x			
AAQ1	6.9	5.2	6.2	6.9	14.5	10.9	12.9	14.4
AAQ2	7.7	6.2	6.8	7.7	16.4	13.3	14.6	16.4
AAQ3	10.9	7.9	9.4	10.9	22.9	16.6	19.8	22.9
AAQ4	7.2	5.2	6.1	7.2	14.9	10.9	12.7	14.9
AAQ5	8.1	6.2	7.1	8.1	17	13	14.9	17.0
AAQ6	5.5	4.1	4.7	5.5	11.6	8.6	9.8	11.6
AAQ7	4.3	2.6	3.5	4.3	10.8	6.5	8.7	9.7
AAQ8	6.5	5.2	5.7	6.5	17.4	13.9	15.3	16.0

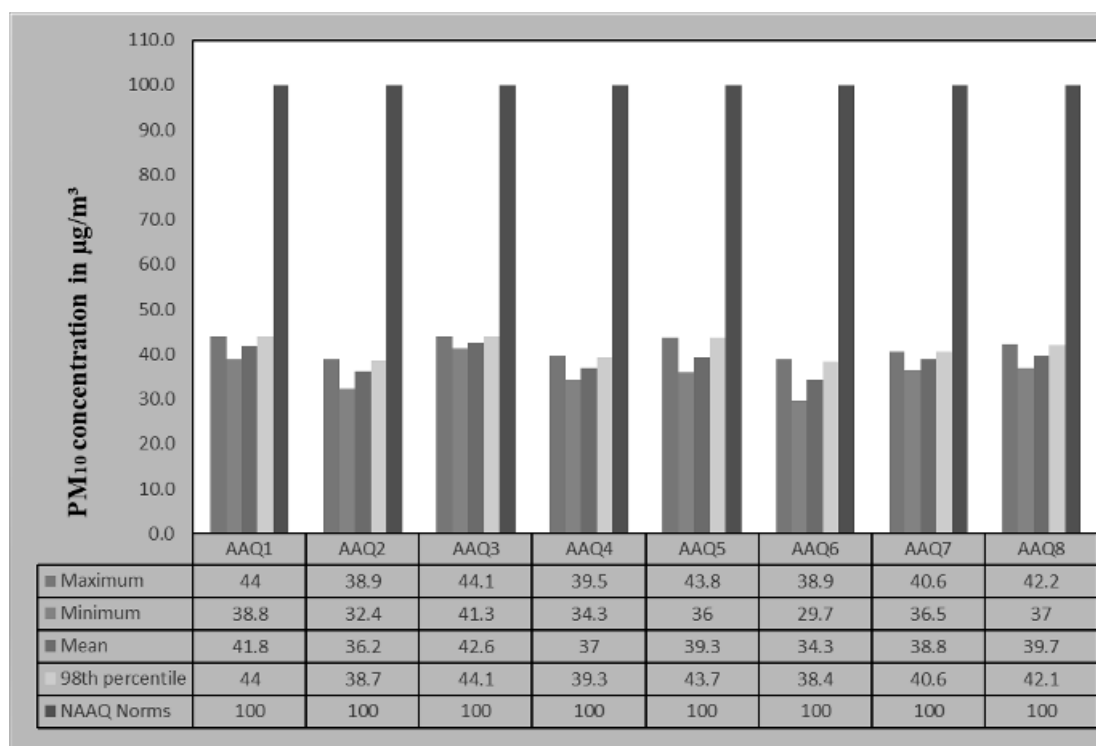


Figure 3.16 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 8 Air Quality Monitoring Stations within 5 km Radius

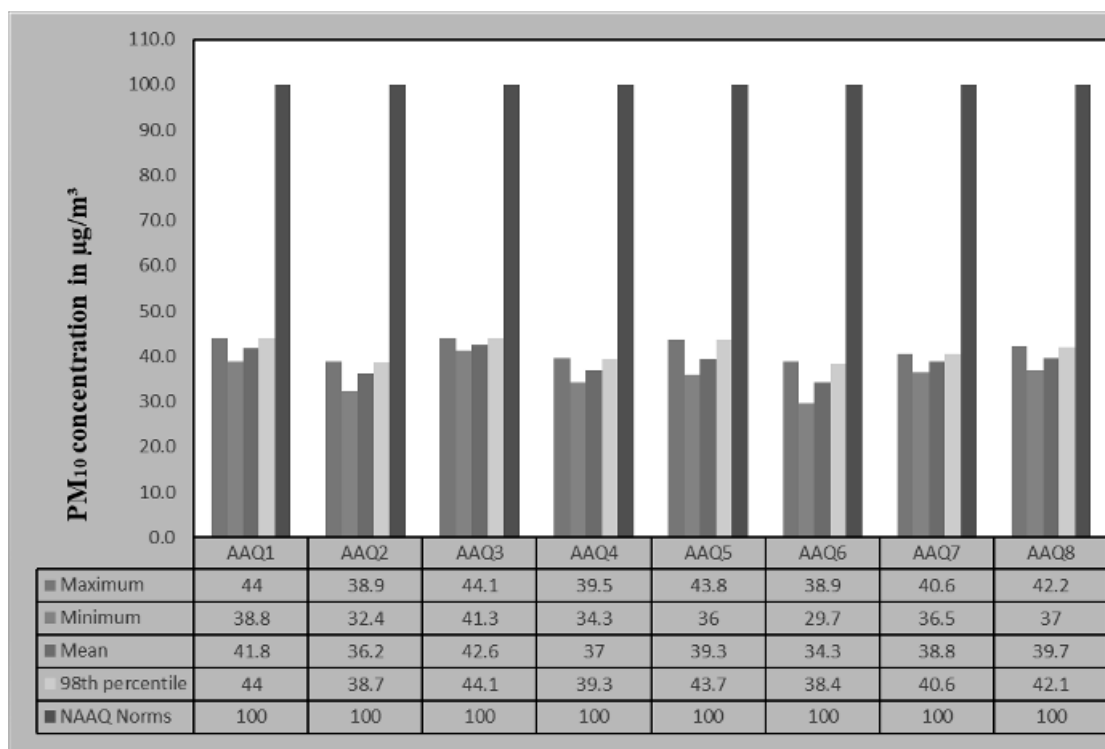


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

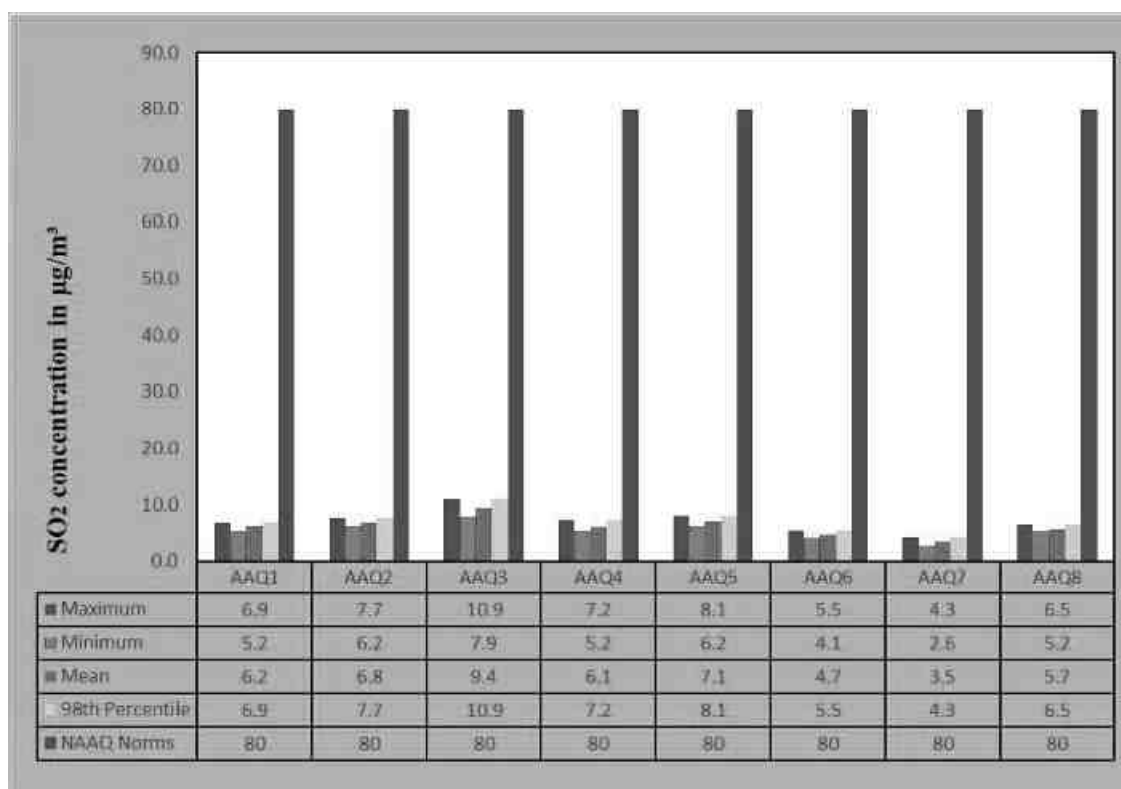


Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

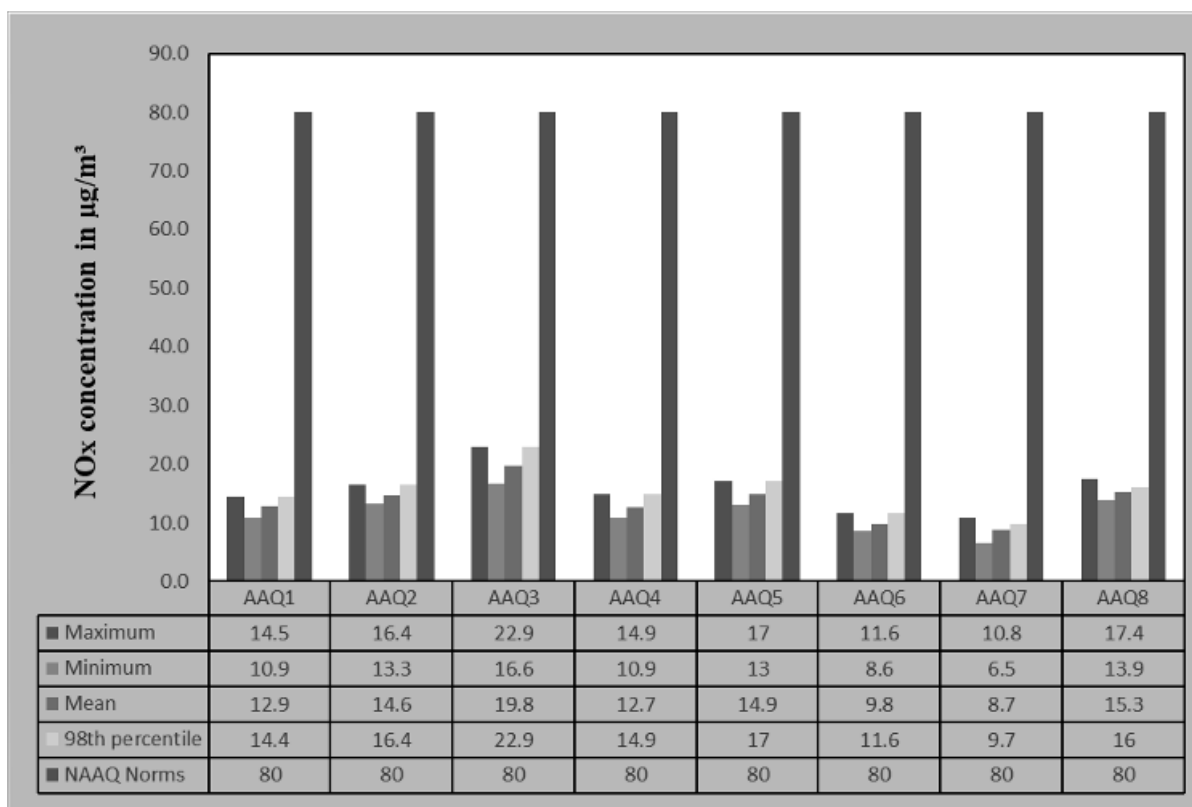


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of NO_x Measured from 8 Air Quality Monitoring Stations within 5km Radius

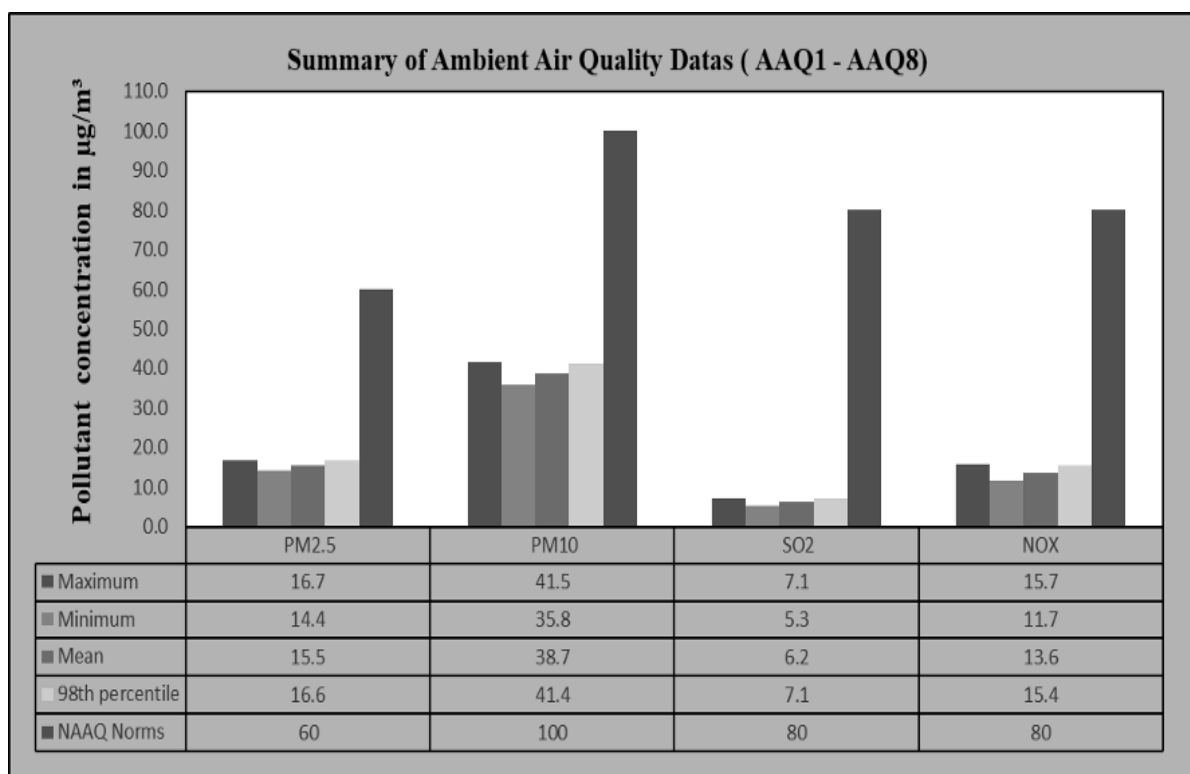


Figure 3.20 Bar Chart Showing Maximum, Minimum, And Average Concentrations of Pollutants in Atmosphere within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at eight (08) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.17 and spatial occurrence of the locations are shown in Figure 3.21.

Table 3.17 Noise Monitoring Locations

S. No.	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
					Latitude	Longitude
1	N1	Nearby Core	0.35	SW	10°58'50.47"N	77°56'7.73"E
2	N2	Salipalayam	0.64	NW	10°59'18.87"N	77°56'4.69"E
3	N3	K. Paramathi	3.95	SW	10°57'31.64"N	77°54'40.12"E
4	N4	Puthurpatti	2.76	NE	11° 0'15.33"N	77°57'16.04"E
5	N5	Kuppam	3.49	NW	11° 0'46.24"N	77°55'30.89"E
6	N6	Malapalayampudur	4.80	SE	10°56'36.88"N	77°57'30.73"E
7	N7	Kurumpapatti	3.81	SE	10°58'22.52"N	77°58'21.67"E
8	N8	Munnur	3.28	W	10°59'9.37"N	77°54'30.29"E

Source: On-site monitoring/sampling by **Excellence Laboratory** in association with GTMS

Table 3.18 Ambient Noise Quality Result

Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (Leq in dB (A))	
N1	Nearby Core	Industrial Area	47.2	35.4	75	70
N2	Salipalayam		42.2	32.6	75	70
N3	K.Paramathi	Residential Area	52.4	42.2	55	45
N4	Puthurpatti		44.6	34.4	55	45
N5	Kuppam		46.8	39.8	55	45
N6	Malapalayampudur		39.8	30.6	55	45
N7	Kurumpapatti		38.6	32.2	55	45
N8	Munnur		47.2	39.4	55	45

Source: On-site monitoring/sampling by **Excellence Laboratory** in association with GTMS

The Table 3.18 shows that noise level in core zone was 47.2 dB (A) Leq during day time and 35.4 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.6 to 52.4dB (A) Leq and during night time from 30.6 to 42.2dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.22 and 3.23.

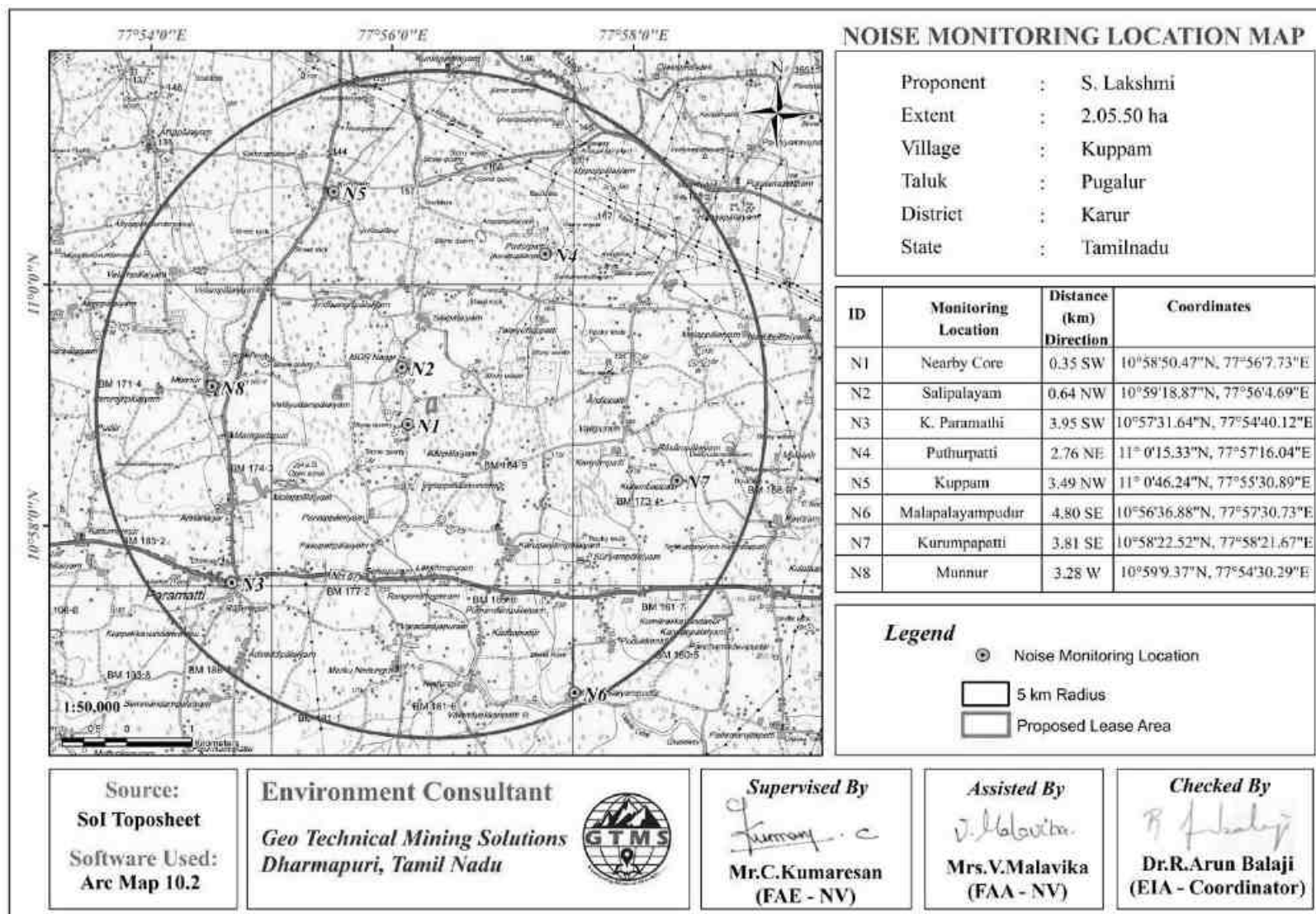


Figure 3.21 Map Showing Noise Level Monitoring Station Locations around 5 km Radius from Proposed Project Site

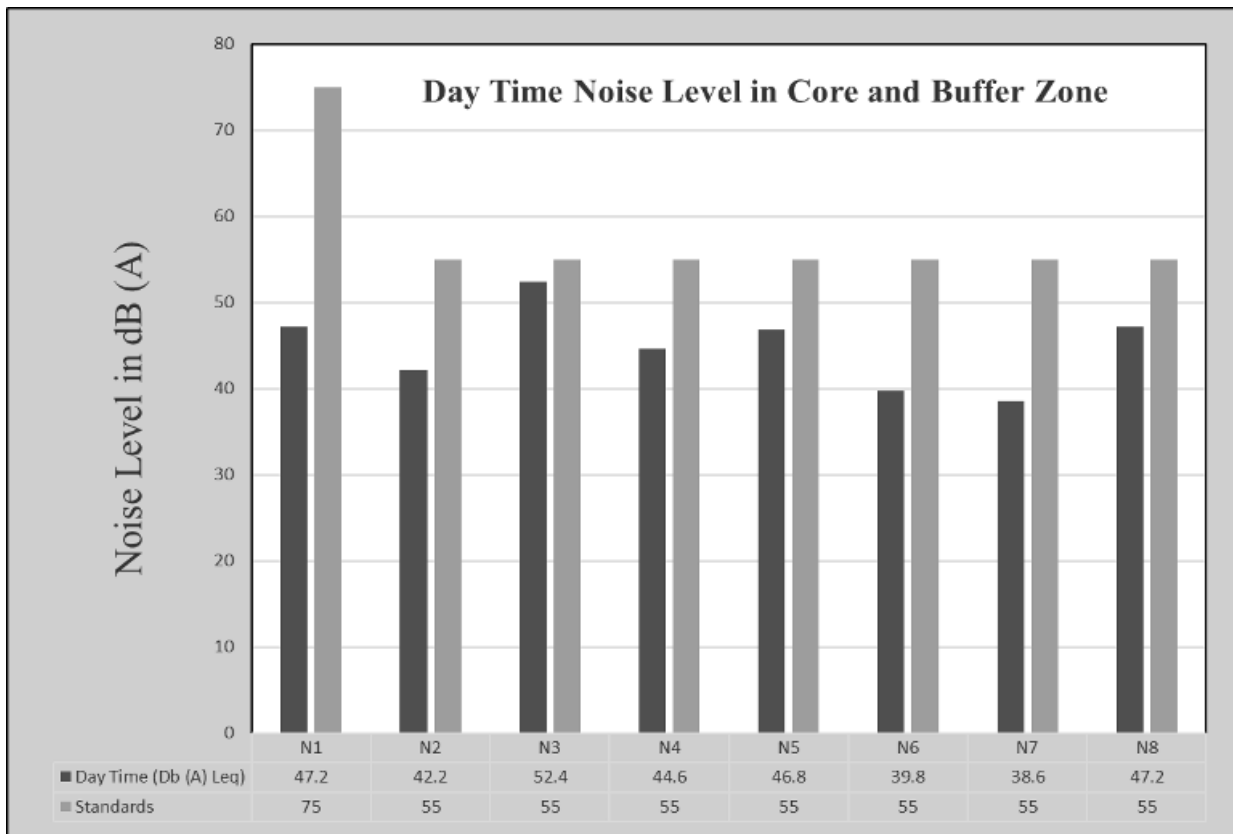


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

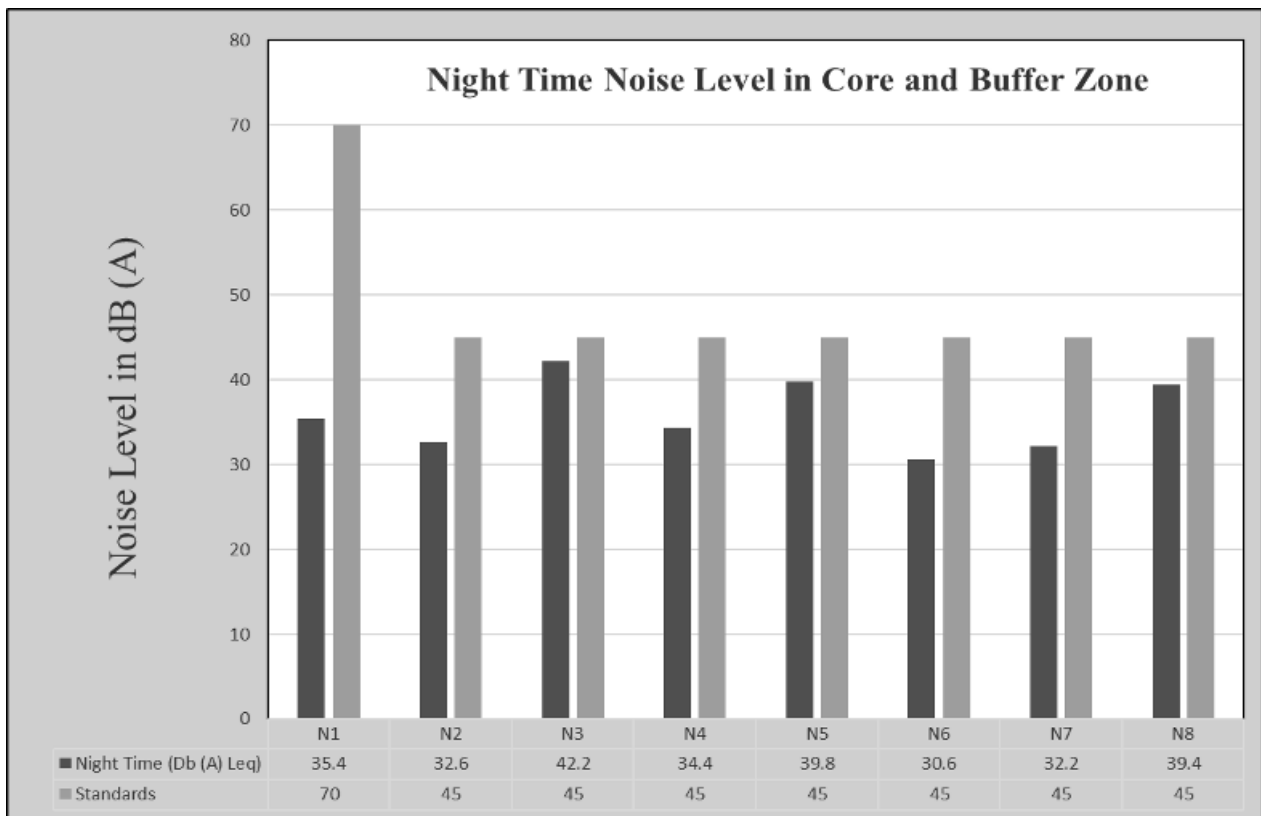


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

3.5 BIOLOGICAL ENVIRONMENT

An ecological survey was conducted to collect the baseline data regarding flora and fauna in the study area of 10 km radius. Data were collected from different sources, i.e., government departments such as District Forest Office and Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared.

Methodology

Sampling locations were selected with reference to topography, land use, vegetation pattern, etc. In this study, quadrats of 25 m × 25 m were laid down to assess trees and quadrats of 10 m × 10 m were laid down for shrubs, as shown in Figure 3.24.



Figure 3.24 Quadrates Sampling Methods of Flora

Phyto-Sociological Studies

Phyto sociological parameters, such as **Density, Frequency, Abundance and Importance Value Index** of individual species were determined in randomly placed quadrat of different sizes in the study area, as shown in Table 3.19. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, *Density, Frequency, Relative Density & Relative Frequency were found*. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the study area of 10 km radius. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

Table 3.19 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

Parameters	Formula
Density	Total No. of individuals of species/ Total No. of Quadrats used in sampling
Frequency (%)	(Total No. of Quadrats in which species occur/ Total No. of Quadrats studied)100
Abundance	Total No. of individuals of species/ No. of Quadrats in which they occur
Relative Density	(Total No. of individuals of species/Sum of all individuals of all species) * 100
Relative Frequency	(Total No. of Quadrats in which species occur/ Total No. of Quadrats occupied by all species) * 100
Important Value Index	Relative Density + Relative Frequency

Shannon – Wiener Index, Evenness and Richness

Biodiversity index is a quantitative measure that reflects how many different types of species, there are in a dataset, and simultaneously takes into account how evenly the basic entities (such as individuals) are distributed among those types of species. The value of biodiversity index increases both when the number of types increases and when evenness increases. For a given number of type of species, the value of a biodiversity index is maximized when all type of species is equally abundant. The corresponding formulas are given in Table 3.20.

Table 3.20 Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness

Description	Formula
Species diversity – Shannon – Wien Index	$H = -\sum [(p_i) * \ln(p_i)]$ Where p_i : Proportion of total sample represented by species i : number of individuals of species i / total number samples
Evenness	$H/H_{\max}$, $H_{\max} = \ln(s)$ = maximum diversity possible S =No. of species
Species Richness by Margalef	$RI = S - 1/\ln N$ Where S = Total Number of species in the community N = Total Number of individuals of all species in the Community

3.5.1 Flora

Flora study was conducted using the above said methodology to inventory the existing terrestrial plants in both core and buffer zones. Details of plants have been described in the succeeding sections.

Flora in mine lease area (core zone)

The mine lease area contains total of 14 species belonging to 9 families have been recorded from the mine lease area. 2 Trees, 4 shrubs, 8 herbs were identified. It is a grassy land. There are no endangered species in mine lease area. Details of vegetation with scientific name indicated in Table 3.21.

Table 3.21 Flora in mine lease area

S.no	Local name	Scientific name	Family name
Trees			
1	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae
2	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae
Shrubs			
1	Avaram chedi	<i>Senna auriculata</i>	Fabaceae
2	Earuku	<i>Calotropis gigantea</i>	Apocynaceae
3	communist pacha	<i>Chromolaena odorata</i>	Asteraceae
4	Unnichadi	<i>Lantana camara</i>	Verbenaceae
Herbs /Climber			
1	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
2	Thathapondu	<i>Tridax procumbens</i>	Asteraceae
3	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae
4	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae
5	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae
6	pill	<i>Cenchrus ciliaris</i>	Poaceae
7	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae
8	American mint	<i>Hyptis suaveolens</i>	Lamiaceae

The Flora in lease area and 300 m radius (Buffer zone)

There is no agricultural land nearby lease area. It contains a total of 31 species belonging to 21 families have been recorded from the buffer zone. 6 Trees, 5 Shrubs and Herbs and Climbers, Creeper, Grass & Cactus 20 were identified. Details of flora with the scientific name details and of diversity species Richness index were mentioned in Table 3.22-24 and Figure 3.25. There is no threatened species in 300 m radius.

Flora in 10 km radius buffer zone

Similar type of environment occurs in both core and buffer zone but more floral diversity noticed in buffer zone compared with core zone area. Buffer area contains a total species belonging to 38 families have been recorded. The floral (75) varieties among them 35 Trees (46%), 15 Shrubs (15%) Herbs and Climbers, Creeper, Grass & Cactus, 25 (33%) were identified. Details of flora with the scientific name mentioned in Table 3.25.

Table 3.22 Flora in 300 m Radius

S.No.	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Trees													
1	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	4	3	5	0.8	60.0	1.3	16.7	16.7	33.3	Not Listed
2	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	3	2	5	0.6	40.0	1.5	12.5	11.1	23.6	Not Listed
3	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	5	1.0	80.0	1.3	20.8	22.2	43.1	Not Listed
4	Vealli vealan	<i>Vachellia leucophloea</i>	Babesiae	4	3	5	0.8	60.0	1.3	16.7	16.7	33.3	least concern
5	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	2	5	0.6	40.0	1.5	12.5	11.1	23.6	Not Listed
6	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	5	4	5	1.0	80.0	1.3	20.8	22.2	43.1	Not Listed
Shrubs													
1	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	10	0.8	70.0	1.1	21.6	21.9	43.5	Not Listed
2	Uumaththai	<i>Datura metel</i>	Solanaceae	6	5	10	0.6	50.0	1.2	16.2	15.6	31.8	Not Listed
3	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	10	0.7	60.0	1.2	18.9	18.8	37.7	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	24.3	25.0	49.3	Not Listed
5	Unichadi	<i>Lantana camara</i>	Verbenaceae	7	6	10	0.7	60.0	1.2	18.9	18.8	37.7	Not Listed
Herbs													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.9	3.8	7.7	Not Listed

2	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae	7	6	15	0.5	40.0	1.2	4.6	4.5	9.2	Not Listed
3	pill	<i>Cenchrus ciliaris</i>	Poaceae	9	8	15	0.6	53.3	1.1	5.9	6.1	12.0	Not Listed
4	pulapoo	<i>Aerva lanata</i>	Amaranthaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed
5	kapok bush	<i>Aerva javani</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.9	3.8	7.7	Not Listed
6	Rail poundu	<i>Croton bonplandianus</i>	Euphorbiaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed
7	Yanai neariji	<i>pedalium murex</i>	Pedaliaceae	7	6	15	0.5	40.0	1.2	4.6	4.5	9.2	Not Listed
8	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	10	9	15	0.7	60.0	1.1	6.6	6.8	13.4	Not Listed
9	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	6	5	15	0.4	33.3	1.2	3.9	3.8	7.7	Not Listed
10	Umathai	<i>Datura metel</i>	Solanaceae	7	6	15	0.5	40.0	1.2	4.6	4.5	9.2	Not Listed
11	Sethamutti	<i>Sida cordata</i>	Malvaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed
12	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	9	8	15	0.6	53.3	1.1	5.9	6.1	12.0	Not Listed
13	Ishappukol Vitai	<i>Plantago coronopus</i>	Plantaginaceae	6	5	15	0.4	33.3	1.2	3.9	3.8	7.7	Not Listed
14	Vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	4.6	4.5	9.2	Not Listed
15	Seppu nerinji	<i>Indigofera linnaei Ali</i>	Fabaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed
16	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	9	8	15	0.6	53.3	1.1	5.9	6.1	12.0	Not Listed
17	Pal kodi	<i>Cynanchum viminalis</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	3.9	3.8	7.7	Not Listed
18	Ilia perandai	<i>Cissus rotundifolia</i>	Vitaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed
19	Katralai	<i>Aloe vera</i>	Asphodelaceae	9	8	15	0.6	53.3	1.1	5.9	6.1	12.0	Not Listed
20	Seammulli	<i>Barleria prionitis</i>	Acanthaceae	8	7	15	0.5	46.7	1.1	5.3	5.3	10.6	Not Listed

Table 3.23 Calculation of Species Diversity in 300 m Radius

S.No.	Common name	Scientific name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Trees						
1	Karuvealan	<i>Prosopis juliflora</i>	4	0.17	-1.79	-0.30
2	Palm tree	<i>Borassus flabellifer</i>	3	0.13	-2.08	-0.26
3	Vembu	<i>Azadirachta indica</i>	5	0.21	-1.57	-0.33
4	Vealli vealan	<i>Vachellia leucophloea</i>	4	0.17	-1.79	-0.30
5	Unjai maram	<i>Albizia amara</i>	3	0.13	-2.08	-0.26
6	Vetpalai	<i>Wrightia tinctoria</i>	5	0.21	-1.57	-0.33
H (Shannon Diversity Index) =1.77						
Shrubs						
1	Erukku	<i>Calotropis gigantea</i>	8	0.22	-1.53	-0.33
2	Uumaththai	<i>Datura metel</i>	6	0.16	-1.82	-0.29
3	Thuthi	<i>Abutilon indicum</i>	7	0.19	-1.67	-0.32
4	Avarai	<i>Senna auriculata</i>	9	0.24	-1.41	-0.34
5	Unichadi	<i>Lantana camara</i>	7	0.19	-1.67	-0.32
H (Shannon Diversity Index) =1.60						
Herbs						
1	Nayuruv	<i>Achyranthes aspera</i>	6	0.04	-3.23	-0.13
2	Nearunji mull	<i>Tribulus zeyheri</i> Sond	7	0.05	-3.08	-0.14
3	Pill	<i>Cenchrus ciliaris</i>	9	0.06	-2.83	-0.17
4	pulapoo	<i>Aerva lanata</i>	8	0.05	-2.94	-0.15
5	kapok bush	<i>Aerva javani</i>	6	0.04	-3.23	-0.13
6	Rail poondu	<i>Croton bonplandianus</i>	8	0.05	-2.94	-0.15
7	Mookuthi poondu	<i>pedalium murex</i>	7	0.05	-3.08	-0.14
8	Perandai	<i>Cissus quadrangularis</i>	10	0.07	-2.72	-0.18
9	Thumbai chadi	<i>Leucas aspera</i>	6	0.04	-3.23	-0.13
10	Umathai	<i>Datura metel</i>	7	0.05	-3.08	-0.14
11	Sethamutti	<i>Sida cordata</i>	8	0.05	-2.94	-0.15
12	Kolunji	<i>Tephrosia purpurea</i>	9	0.06	-2.83	-0.17
13	Ishappukol Vitai	<i>Plantago coronopus</i>	6	0.04	-3.23	-0.13
14	Vealiparuthi	<i>Pergularia daemia</i>	7	0.05	-3.08	-0.14
15	Seppu nerinji	<i>Indigofera linnaei</i> Ali	8	0.05	-2.94	-0.15
16	Sapathikalli	<i>Opuntia ficus-indica</i>	9	0.06	-2.83	-0.17
17	Pal kodi	<i>Cynanchum viminalis</i>	6	0.04	-3.23	-0.13
18	Ilia perandai	<i>Cissus rotundifolia</i>	8	0.05	-2.94	-0.15
19	Katralai	<i>Aloe vera</i>	9	0.06	-2.83	-0.17
20	Seammulli	<i>Barleria prionitis</i>	8	0.05	-2.94	-0.15
H (Shannon Diversity Index) =2.98						

Table 3.24 Species Richness (Index) in 300 m radius

Details	H	H max	Evenness	Species Richness
Trees	1.77	1.79	0.99	1.57
Shrubs	1.60	1.61	0.99	1.11
Herbs	2.98	3.00	1.00	3.78

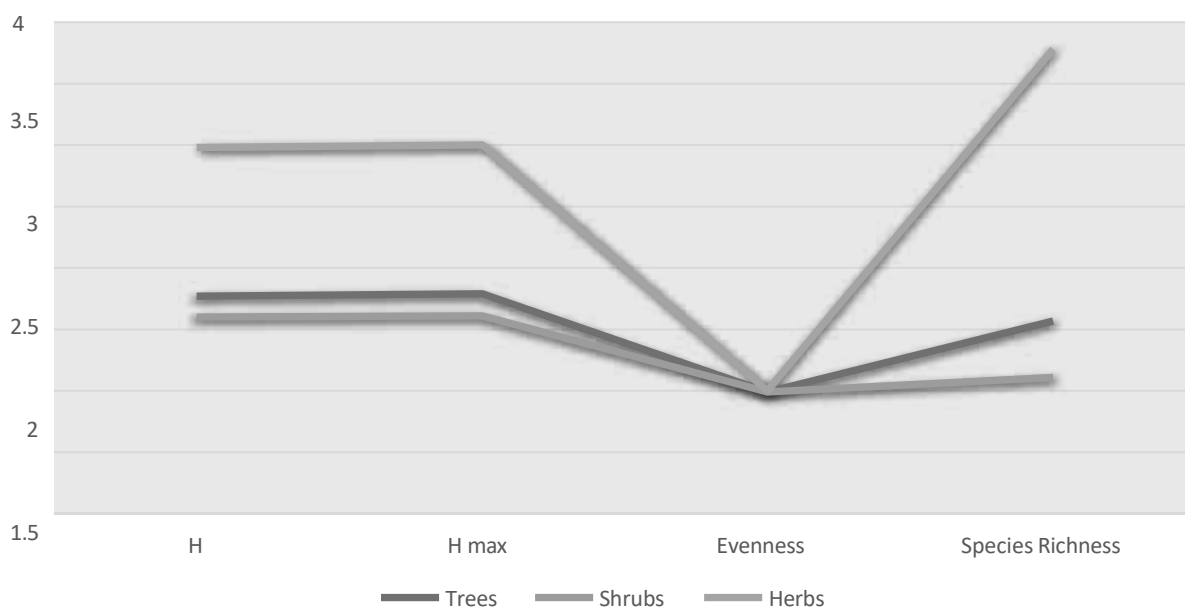


Figure 2.25 Bar Chart Showing in Species Richness

Table 3.25 Flora in Buffer Zone

S.No	Local Name	Scientific name	Family name
TREES			
1	Vembu	<i>Azadirachta indica</i>	Meliaceae
2	Thekku	<i>Tectona grandis</i>	Verbenaceae
3	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
5	Manga	<i>Mangifera indica</i>	Anacardiaceae
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes
7	Vadanarayani	<i>Delonix elata</i>	Fabaceae
8	Thenpazham	<i>Muntingia calabura</i>	Tiliaceae
9	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae
10	Ilanthai	<i>Ziziphus jujubha</i>	Rhamnaceae
11	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae
12	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae
13	Arai nelli	<i>Phyllanthus acidus</i>	Euphorbiaceae
14	Panai maram	<i>Borassus flabellifer</i>	Arecaceae
15	Sapota	<i>Manilkara zapota</i>	Sapotaceae
16	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae
17	Alamaram	<i>Ficus benghalensis</i>	Moraceae
18	Vazhaimaram	<i>Musa</i>	Musaceae
19	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae
20	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae
21	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae
22	Maramalli	<i>Millingtonia hortensis</i>	Bignoniaceae
23	Kuduka puli	<i>Pithecellobium dulce</i>	Mimosaceae
24	Karungali	<i>Acacia sundra</i>	Legumes

25	Nochi	<i>Vitex negundo</i>	Lamiaceae
26	Karimurungai	<i>Moringa olefera</i>	Moraginaceae
27	Pappali maram	<i>Carica papaya L</i>	Caricaceae
28	Poovarasu	<i>Thespesia populnea</i>	Malvaceae
29	Arasanmaram	<i>Ficus religiosa</i>	Moraceae
30	Vilvam	<i>Aegle marmelos</i>	Rutaceae
31	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae
32	Nettilingam	<i>Polyalthia longifolia</i>	Annonaceae
33	Koyya	<i>Psidium guajava</i>	Myrtaceae
34	Seethapazham	<i>Annona reticulata</i>	Annonaceae
35	Savukku	<i>Casuarina L.</i>	Casuarinaceae
SHRUBS			
1	Avarai	<i>Senna auriculata</i>	Fabaceae
2	Sundaika	<i>Solanum torvum</i>	Solanaceae
3	Puramuttai	<i>Chrozophora rottleri</i>	Euphorbiaceae
4	Arali	<i>Nerium indicum</i>	Apocynaceae
5	Seemaigaththi	<i>Cassia alata</i>	Caesalpinaceae
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae
7	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae
8	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae
9	Idlipoo	<i>xoracoc cineia</i>	Rubiaceae
10	Thuthi	<i>Abutilon indicum</i>	Meliaceae
11	Nithyakalyani	<i>Cathranthus roseus</i>	Apocynaceae
12	Uumaththai	<i>Datura metel</i>	Solanaceae
13	Kundumani	<i>Abrus precatorius</i>	Fabaceae
14	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
15	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae
Herbs, Climber, Creeper & Grasses			
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae
2	Veetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae
3	Mukkirattai	<i>Boerhaavia diffusa</i>	Nyctaginaceae
4	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae
5	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae
6	Korai	<i>Cyperus rotundus</i>	Cyperaceae
7	Thumbai	<i>Leucas aspera</i>	Lamiaceae
8	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae
9	Parttiniyam	<i>Parthenium hysterophorus</i>	Asteraceae
10	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae
11	Arugampul	<i>Cynodon dactylon</i>	Poaceae
12	Thoiya keerai	<i>Digeria muricata</i>	Amaranthaceae
13	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae
14	Perandai	<i>Cissus quadrangularis</i>	Vitaceae

15	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae
16	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae
17	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae
18	Sangupoo	<i>Clitoriaternatia</i>	Fabaceae
19	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae
20	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae
21	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae
22	mookuthi poondu	<i>Wedelia trilobata</i>	Asteraceae
23	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae
24	Musthakasu	<i>Kyllinga brevifolia</i>	Cyperaceae
25	Nagathali	<i>Opuntia dillenii</i>	Cactaceae

Aquatic Vegetation

There are no water bodies in 1km radius of mine lease area. So, no aquatic flora and fauna in 1km radius.

Forest Vegetation

There are no biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thathampalayam R.F. located on 7.82 km South-eastern side of the lease area. There are few plants and no endangered species in Thampalayam reserve forest. the *Azadirachta indica*, *Vachellia leucophloea*, *albizia amara* these three types of plants are abundant in Thampalayam reserve forest. the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive.

Endangered and endemic species as per the IUCN Red List

There are no rare, endangered and endemic species found in the study area. There are no biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), ecologically sensitive zone.

3.5.2 Fauna

The faunal survey was carried out for Mammals, Birds, Reptiles, Amphibians and Butterflies. There are no rare, endangered, threatened (RET) and endemic species present in core area.

Table 3.26 Methodology applied during survey of fauna

S. No.	Taxa	Method of Sampling	References
1	Insects	Random walk, Opportunistic observations	Pollard (1977); Kunte (2000)
2	Reptiles	Visual encounter survey (Direct Search)	Daniel J.C (2002)
3	Amphibians	Visual encounter survey (Direct Search)	
4	Mammals	Tracks and Signs	Menon V (2014)
5	Avian	Random walk, Opportunistic observations.	Grimmett R (2011); Ali S (1941)

Fauna in Core Zone

The 25 varieties of species observed in the core zone. Among them numbers of Insects 8 (32%), Reptiles 3 (12%), Mammals 5 (20%) and Avian 9 (36%). A total of 25 species belonging to 22 families have been recorded from the core mining lease area. Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and eight species are under schedule IV according to Indian wild life Act 1972. A total eight species of birds were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table. 3.27.

Fauna in Buffer Zone

A total of 47 species belonging to 34 families were recorded in the buffer zone. Based on habitat classification the majority of species were Birds 18 (40%), followed by Insects 15 (31%), Reptiles 7 (15%), 4 Mammals (8%) and amphibians 3 (6%). There are 4 schedule II species and 24 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.28.

Table 3.27 Fauna in Core Zone

S. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	NL	NL
2	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
3	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
4	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
5	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
6	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
7	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
8	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
REPTILES					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
2	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
3	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
2	Cow	Bovidae	<i>Bos taurus</i>	NL	NL
3	Common dog	Canidae	<i>Canis lupus familiaris</i>	NL	NL
4	Common cat	Felidae	<i>Felis silvestris catus</i>	NL	NL

5	Squirrel	Sciuridae	<i>Funambulus palmarum</i>	NL	NL
AVES					
1	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
2	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
3	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
4	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
5	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
6	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	Schedule IV	LC
7	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	Schedule IV	LC
8	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
9	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

*NE- Not Evaluated; LC- Least Concern, NT –Near Threatened, T-Threatened

Table 3.28 Fauna in Buffer Zone

S. No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
INSECTS					
1	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
4	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
10	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
11	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
12	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
13	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
14	Lesser grass blue	Lycaenidae	<i>Zizina otis indica</i>	Schedule IV	LC
15	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
REPTILES					
16	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
17	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
18	Indian chameleon	Chamaeleonidae	<i>Chamaeleo zeylanicus</i>	Sch II (Part I)	LC

19	Olive keelback water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
20	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
21	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
22	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
MAMMALS					
23	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
24	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC
25	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
26	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
AVES					
27	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
28	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
29	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
30	Red-breasted parakeet	Psittaculidae	<i>Psittacula alexandri</i>	NL	LC
31	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
32	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
33	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
34	Koel	Cuculidae	<i>Eudynamis</i>	Schedule IV	LC
35	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
36	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
37	Brahminy starling	Sturnidae	<i>Sturnia pagodarum</i>	Schedule IV	LC
38	golden oriole	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC
39	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameria</i>	NL	LC
40	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
41	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
42	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
43	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
44	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
AMPHIBIANS					
45	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
46	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
47	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	Schedule IV	LC

*NL-Not listed, LC-Least concern, NT-Near threatened.

3.5.3 Agriculture & Horticulture in Karur district:

The principal crops of the district are paddy, millets, pulses, oilseeds, sugarcane and banana. The major paddy area is in Kulithalai and Krishnarayapuram taluks. Pulses are grown in rice fallow areas. In uplands millets like sorghum, pearl millet pulses such as red gram, horse gram oilseeds such as groundnut, gingelly and sunflower are grown both under irrigated and rain fed conditions.

Major Agricultural Crops 1km radius

Major horticulture crops cultivated in this district are vegetables crops like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and horticulture in 1km radius is given in Table. 3.29.

Table 3.29 Major Crops in 1km radius

S. No	Major crops	Scientific name	Families
1	Sorghum	<i>Sorghum bicolor</i>	Poaceae
2	Gingelly	<i>Sesamum indicum</i>	Pedaliaceae
3	Groundnut	<i>Arachis hypogaea</i>	Legumes
4	Millets	<i>Panicum miliaceum L</i>	Poaceae
5	Sesame	<i>Sesamum indicum</i>	Pedaliaceae
6	Cotton	<i>Gossypium herbaceum</i>	Malvaceae

Major Horticulture Crops 1km radius

Horticulture includes cultivation of fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants. It also includes plant conservation, landscape restoration, landscape and garden design.

Horticulture 1km radius

Major horticulture crops cultivated in Karur district are fruit crops like mango, banana, Sapota and guava, vegetables like tomato, brinjal, Veandai, chillies, onion and tapioca, spices like turmeric. Details of major field crops and horticulture cultivation in 1km radius is given in Table 3.30.

Table 3.30 Major Field Crops & Horticulture cultivation in 1km radius.

S. No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Guava	<i>Psidium guajava</i>	Myrtaceae
2	Sapota	<i>Manilkara zapota</i>	Sapotaceae
3	Lemon	<i>Citrus × limon</i>	Rutaceae
4	Papaya	<i>Carica papaya</i>	Caricaceae
Vegetables			
5	Onion	<i>Allium cepa</i>	Amaryllidaceae
6	Tapioca	<i>Manihot esculenta</i>	Spurges

7	Brinjal	<i>Solanum melongena</i>	Nightshade
8	Tomato	<i>Solanum lycopersicum</i>	Nightshade
9	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
10	Veandai kai	<i>Abelmoschus esculentus</i>	Mallows
11	Moringa	<i>Moringa oleifera</i>	Moringaceae

Results

Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study has also been designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of REET species if any. The study found that there is no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

3.6 SOCIO ECONOMICS ENVIRONMENT

The major developmental activities in the mining and industrial sector are crucial for economic development and the creation of direct and indirect employment opportunities. These activities also fulfil society's basic and modern needs of the society, ultimately improving the quality of life through advancements in social, economic, health, education, and nutritional status within the project region, state, and country. In this manner all developmental projects have direct as well as indirect relationships with socioeconomic aspects, which also include public acceptability for developmental projects. Thus, the study of socio-economic environment component incorporating various facets related to prevailing social and cultural conditions and economic status of the mining (rough stone quarry) project region is an important part of the EIA study. The study of these parameters helps in identification, prediction and evaluation of the likely impacts on the socio-economics and parameters of human interest due to the project.

Objectives of the Study

The objectives of the socio-economic impact assessment are as follows:

- a) To study the socio-economic status of the people living in the study area of the project.
- b) To identify the basic needs of the nearby villages within the study area.
- c) To assess the impact on socio-economic environment due to the project.
- d) To provide the employment and improved living standards.
- e) To analysis of impact of socio economic and Environmental Infrastructure facilities and road accessibility.

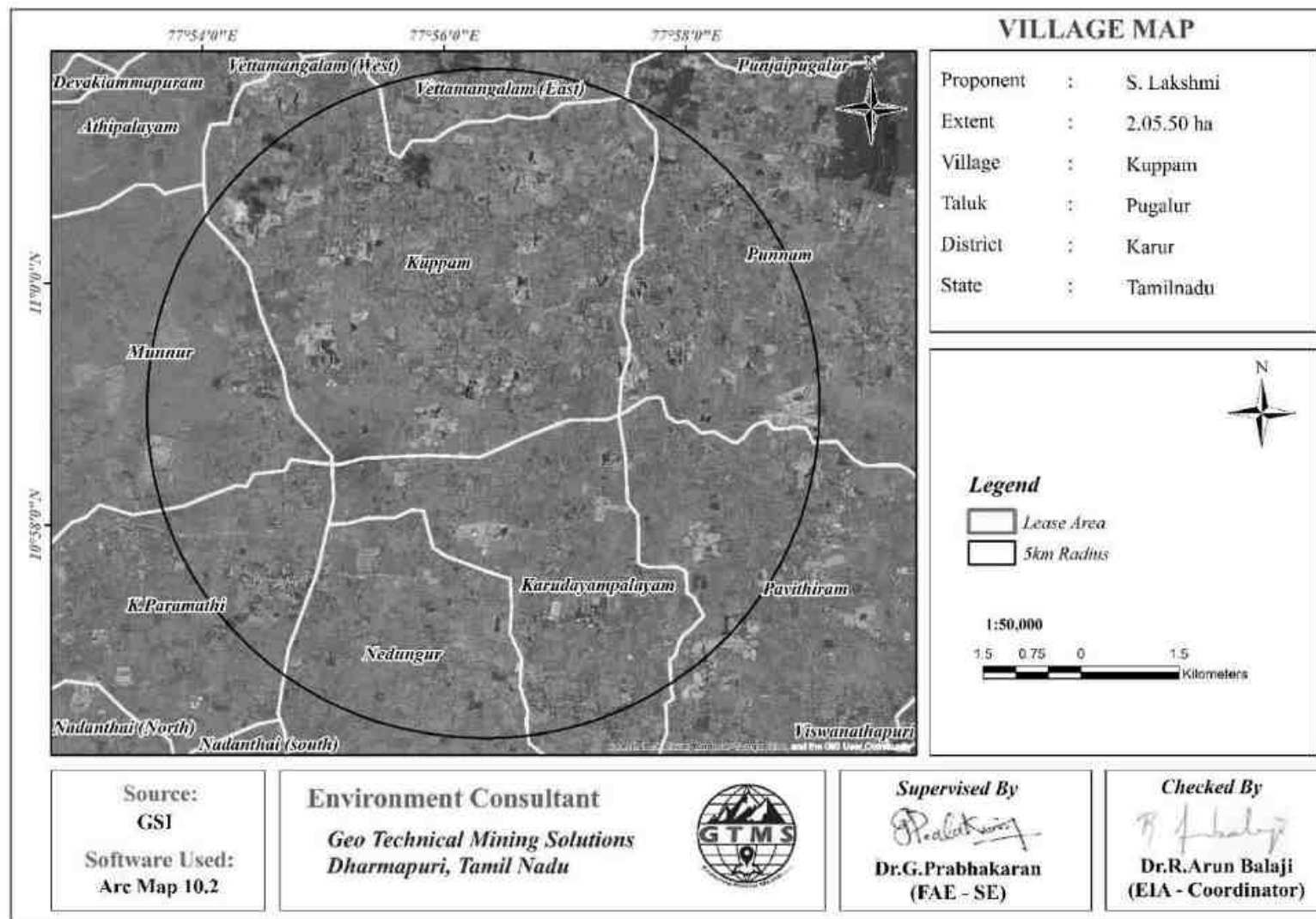


Figure 3.26 Details Village Boundaries within 1 km and 5 km Radius of the Project Lease area

Methodology

The study employed cluster sampling to outline two zones around the proposed project site: Zone 1 (Core Zone, 0-1 km radius) and Zone 2 (Low Impact Zone, 1–5 km radius). The primary data collection was conducted through structured interviews, field observation, and focus group discussions with the local people of in Kuppam Village, Pugalur Taluk of Karur District, Tamil Nadu. The secondary data were collected from the Census report 2011 and official records, covering demographics and basic services including information on population, number of households, literacy rates, sex ratios, worker details and the availability of basic services. This study covers the positive and negative impacts of the project's establishment, and provides recommendations for analysing and mitigating adverse effects. The study areas are illustrated in Figure 3.26.

Demographic Profile of Karur District

An official Census 2011 detail of Karur, a district of Tamil Nadu has been released by Directorate of Census Operations in Tamil Nadu. Enumeration of key persons was also done by census officials in Karur District of Tamil Nadu. In 2011, Karur had population of 1,064,493 of which male and female were 528,184 and 536,309 respectively. In 2001 census, Karur had a population of 935,686 of which males were 465,538 and remaining 470,148 were females. Karur District population constituted 1.48 percent of total Maharashtra population. In 2001 census, this figure for Karur District was at 1.50 percent of Maharashtra population. There was change of 13.77 percent in the population compared to population as per 2001. In the previous census of India 2001, Karur District recorded increase of 9.54 percent to its population compared to 1991.

Karur Literacy Rate

Average literacy rate of Karur in 2011 were 75.60 compared to 75.60 of 2001. If things are looked out at gender wise, male and female literacy were 84.54 and 66.86 respectively. For 2001 census, same figures stood at 79.63 and 56.76 in Karur District. Total literate in Karur District were 727,044 of which male and female were 401,726 and 325,318 respectively. In 2001, Karur District had 566,728 in its district.

Karur Sex Ratio

With regards to Sex Ratio in Karur, it stood at 1015 per 1000 male compared to 2001 census figure of 1010. The average national sex ratio in India is 940 as per latest reports of Census 2011 Directorate. In 2011 census, child sex ratio is 939 girls per 1000 boys compared to figure of 930 girls per 1000 boys of 2001 census data.

Source : <https://www.census2011.co.in/census/district/35-karur.html>

Profile of Study Area - Kuppam Village

Kuppam is a large village located in Aravakurichi Taluka of Karur district, Tamil Nadu with total 1120 families residing. The Kuppam village has population of 3503 of which 1697 are males while 1806 are females as per Population Census 2011. In Kuppam village population of children with age 0-6 is 264 which makes up 7.54 % of total population of village. Average Sex Ratio of Kuppam village is 1064 which is higher than Tamil Nadu state average of 996. Child Sex Ratio for the Kuppam as per census is 1079, higher than Tamil Nadu average of 943. Kuppam village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Kuppam village was 60.11 % compared to 80.09 % of Tamil Nadu. In Kuppam Male literacy stands at 72.80 % while female literacy rate was 48.17 %. As per constitution of India and Panchyati Raaj Act, Kuppam village is administrated by Sarpanch (Head of Village) who is elected representative of village. Our website, don't have information about schools and hospital in Kuppam village.

Table 3.31 Kuppam Village Population Facts

Kuppam Village	
Number of Households	1120
Population	3503
Male Population	1697
Female Population	1806
Children Population	264
Sex-ratio	1064
Literacy	60.11%
Male Literacy	72.80%
Female Literacy	48.17%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	600
Total Workers	2246
Main Worker	1941
Marginal Worker	305

Working Population- Kuppam Village

In Kuppam village out of total population, 2246 were engaged in work activities. 86.42 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 13.58 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2246

workers engaged in Main Work, 822 were cultivators (owner or co-owner) while 529 were Agricultural labourer.

Benefits:

The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. The number of villages and human settlements within a radius of 5 km from the project site along with population, their education level etc. Table 3.34 presents detailed demographic, social, and economic indicators for villages in the study area. The study area has a population of 1697 males and 1806 females, with a sex ratio of 956 females per 1,000 males, slightly below the national average. The child population (0-6 years) is 264 of the total, indicating a young demographic. Nearly 83% of the habitation and human settlement area is located in the state of Tamil Nadu.

Caste Factor

Schedule Caste (SC) constitutes 17.13 % of total population in Kuppam village. The village Kuppam currently doesn't have any Schedule Tribe (ST) population.

Table 3.32 Population and Literacy Data of Study Area

Village	No of Households	Total Population Person	Total Population Male	Total Population Female	Literates Population Person	Literates Population Male	Literates Population Female	Illiterate Persons	Illiterate Male	Illiterate Female
Ariyur	443	1378	694	684	887	512	375	491	182	309
Athipalayam	730	2062	1014	1048	1271	757	514	791	257	534
K.Paramathi	25475	82268	40825	41443	53384	30733	22651	28884	10092	18792
Karudayampalayam	577	2347	1211	1136	1614	977	637	733	234	499
Munnur	826	2582	1289	1293	1649	980	669	933	309	624
Nedungur	403	1190	586	604	800	469	331	390	117	273
Pavithiram	1799	5881	2862	3019	3738	2165	1573	2143	697	1446
Punnam	1452	5446	2839	2607	3679	2208	1471	1767	631	1136
Vettamangalam (East)	807	2657	1310	1347	1521	900	621	1136	410	726
Vettamangalam (west)	1827	5882	2887	2995	3953	2225	1728	1929	662	1267

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Table 3.33 Details on Educational Facilities, water, and Drainage & Health Facilities

Village	Ariyur	Athipalayam	K.Paramathi	Karudayam palayam	Munnur	Nedungur	Pavithiram	Punnam	Vettamangalam (East)	Vettamangalam (west)
Private Primary School (Numbers)	0	0	0	0	0	0	1	1	0	0
Govt. Vocational Training School/ITI (Numbers)	0	0	0	0	0	0	0	0	0	0
Primary Health Centre (Numbers)	0	0	1	0	0	0	0	1	1	0
Tap Water Untreated	1	1	1	1	1	1	1	1	1	1
River/Canal	2	2	2	2	2	2	1	1	1	1
Is the Area Covered under Total Sanitation Campaign (TSC)?	2	1	2	1	1	1	2	2	1	1
Telephone (landlines)	1	1	1	1	1	1	1	1	1	1
Public Bus Service	1	2	1	1	1	1	1	1	1	1
Gravel (kutchu) Roads	1	1	1	1	1	1	1	1	1	1
Commercial Bank	2	2	1	2	2	2	2	2	2	1
Agricultural Credit Societies	2	2	1	2	2	2	2	1	1	1
Self - Help Group (SHG)	1	1	1	1	1	1	1	1	1	1
Nutritional Centres- Anganwadi Centre	1	1	1	1	1	1	1	1	1	1
Community Centre with/without TV	1	1	2	1	2	1	1	1	1	1
Power Supply For Domestic Use	1	1	1	1	1	1	1	1	1	1

Table 3.34 Workers' Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Working Population Male	Main Working Population Female	Main Cultivator Population Person	Main Agricultural Laborers Population Person	Main Other Workers Population Person	Non-Working Population Person
Ariyur	790	493	297	790	493	297	337	309	130	588
Athipalayam	1372	713	659	1309	701	608	442	551	281	690
K.Paramathi	49254	27760	21494	46414	26489	19925	14265	17270	13726	33014
Karudayampalayam	1176	646	530	847	501	346	301	265	251	1171
Munnur	1577	882	695	1434	805	629	420	638	355	1005
Nedungur	753	432	321	734	418	316	409	241	81	437
Pavithiram	3293	1875	1418	2879	1682	1197	747	829	1242	2588
Punnam	2718	1531	1187	2665	1504	1161	731	632	1269	2728
Vettamangalam (East)	1609	894	715	1593	886	707	419	940	210	1048
Vettamangalam (west)	3541	1966	1575	3455	1920	1535	1268	1410	729	2341

Table 3.35 Enumeration of Structures from 0 - 300m Radius

S.No	Radius in m	Distance Directions	Purpose of structures	Type of structures	No of Occupants	Structure belongs to owner (Yes/No)
1	0-100	70m -N	Crusher	Framed Structure	Nil	Yes
		15m -N	Shed	Sheet Structure	3Nos	Yes
2	100-200	-Nil-				
3	200-300	219m-NE	Farm House	Sheet Structure	1Nos	Yes

Table 3.36 Enumeration of Structures from 300m-1km Radius

S.No	Radius in m	Purpose of structures	No. of structures	Type of structures	No of Occupants	Structure belongs to owner (Yes/No)
1	300-400	House	15	Sheet Structure	10Nos	Yes
2	400-600	House	20	Sheet Structure	15Nos	Yes
3	600-700	Village	25	Sheet Structure	50Nos	Yes
			20	RCC Structure	40Nos	Yes
4	700-800	Shed	1	Sheet Structure	1nos	Yes
		Habitation	7	RCC Structure	15Nos	Yes
5	800-900	Abandoned Rose Garden	1	Sheet Structure	Nil	Yes
		Cow Shed	1	Sheet Structure	Nil	Yes
		Habitation	2	RCC Structure	7Nos	Yes
		Shed	1	Sheet Structure	Nil	Yes
6	900m-1km	Habitation	4	RCC Structure	17Nos	Yes
		Rose Garden	1	Sheet Structure	1nos	Yes
		Shed	1	RCC Structure	Nil	Nil

Recommendation and Suggestion

- ✚ Awareness program should be conducted to make the population aware of education and to get a better livelihood.
- ✚ Vocational training programme should 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 should be generated.
- ✚ Health care centre and ambulance facility should be provided to the population to get easy access to medical facilities. 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.

Summary & Conclusion

The socio-economic study in the study area 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 a 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.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Rough Stone and gravel is proposed to be transported mainly through Village Road and K.Paramathi to Karur (NH-67) as shown in Table 3.35-3.38 and in Figure 3.27. Traffic density measurements 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. Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Table 3.39 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	0.93Km-South	Village Road
TS2	K.Paramathi to Karur (NH-67)	2.5 Km- South	Karur to Vellaikovil (NH 81)

Source: On-site monitoring by GTMS FAE & TM

Table 3.40 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	50	150	60	60	58	29	239
TS2	145	435	188	188	220	110	733

Source: On-site monitoring by GTMS FAE & TM

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

Table 3.41 Rough Stone and Gravel Transportation Requirement

Transportation of Rough Stone and Gravel Per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	30	90

Source: Approved Mining Plan

Table 3.42 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
Village Road	239	90	329	1200
K.Paramathi to Karur (NH-67)	733	90	823	1200

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

- Due to these projects the existing traffic volume will not exceed the traffic limit. 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

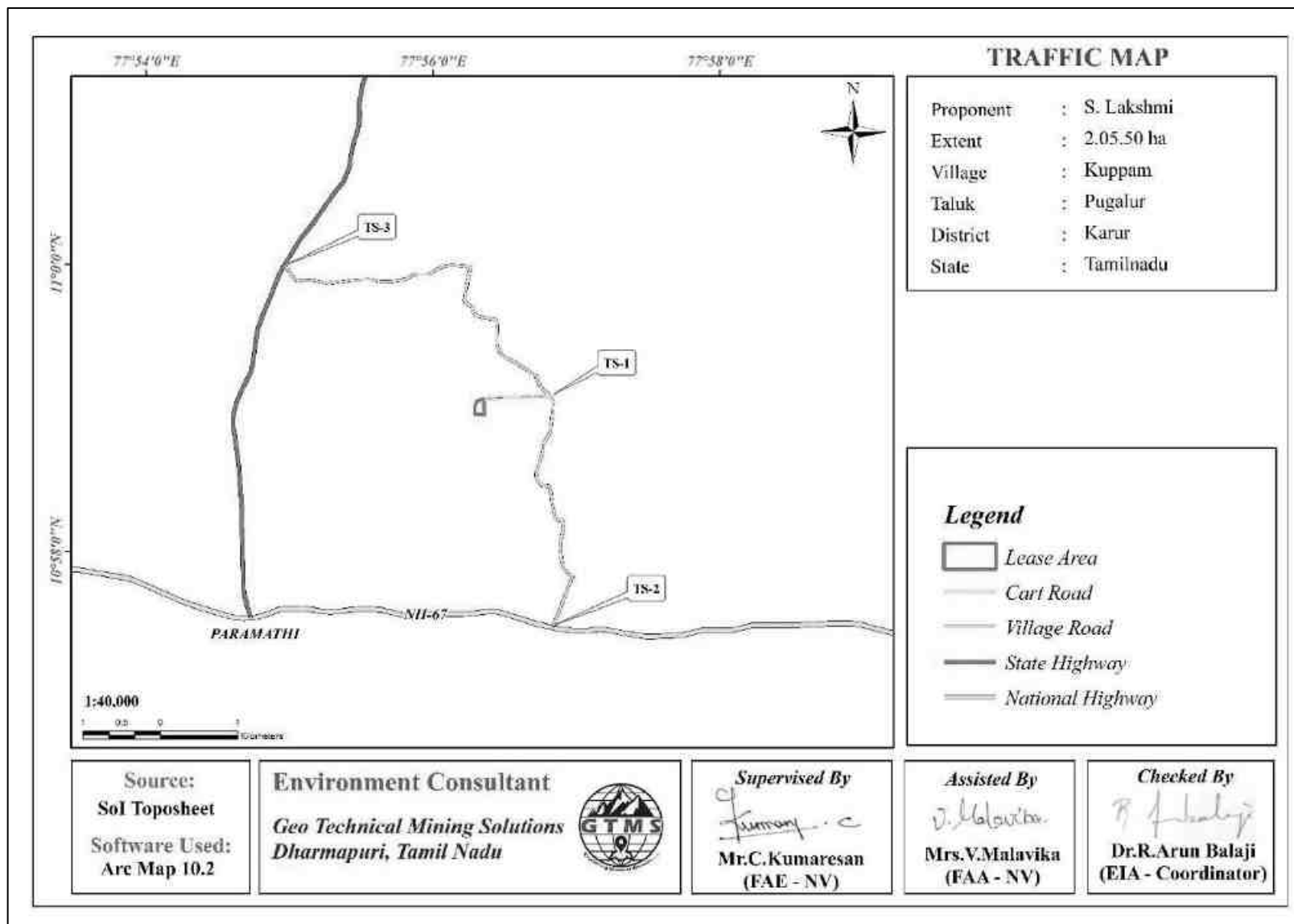


Figure 3.28 Traffic Density Maps

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries and National Park within 10 km radius. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environmentally sensitive areas around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.37.

Table 3.43 Details of Environmentally Sensitive Ecological Features in the Study Area

S. No.	Sensitive Ecological Features	Name	Areal Distance in km
1	National Park / Wild life Sanctuaries	Vellode Bird Sanctuary	42.51km NW
		None	Nil within 10 km radius
2	Reserve Forest & River	Thathampalayam R. F	7.77 km SE
		Vangal R.F	20.59km NE
		Amaravathi River	5.09 km SE
		Kocheeswaran dam	11.05km SE
		Karvazhi Noyyal Dam	13.25 km NW
		Noyyal River	7.10 km North
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Densely Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Centrally Protected Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
School, College, Primary Health Centre			
10	Schools	1.P.U.M.School - salipalayam -1.11km-N 2.Government School – kurumpatti -3.86km-E 3.Panchayat Union Primary School - K. Paramathi – 4.04km-S 4.Govt Higher Sec School- K. Paramathi-4.32km-SW 5.Panchayat Union Elementary School -Velayuthampalayam-1.38km-E 6.Panchayat Union Elementary School-Pasupathipalayam – 2.21km-S	
11	Colleges	1.Cheran College of Engineering- K. Paramathi-5.07km-SW 2.VSB Engineering College-Karudayampalayam -3.32km-S 3.Kaliammal College Of Education- Pavithram-5.05km-SE 4.Karur Velalar College of Arts and Science for Women – Uppupalayam-4.48km-N 5.Cheran College of Education-5.95km-NE	
12	Defense Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet



Figure 3.29 Field Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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. This chapter discusses the anticipated impacts on soil, land, water, air, noise, biological, and socioeconomic environments.

4.1 LAND ENVIRONMENT

Anticipated Impact

- ❖ Permanent or temporary change on land use and land cover.
- ❖ Change in topography of the mine lease area will change at the end of the life of the mine.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ Degradation of the aesthetic environment of the core zone due to quarrying
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season
- ❖ Siltation of water course due to wash off from the exposed working area

Mitigation Measures from Proposed Project

- ❖ The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigate 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, 10m and 50m safety barrier and other safety provided) so as to help minimize 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.

4.2 SOIL ENVIRONMENT

Anticipated Impact on Soil Environment

Following impacts are anticipated due to mining operations:

- ❖ Removal of protective vegetation cover
- ❖ Exposure of subsurface materials which are unsuitable for vegetation establishment

Common Mitigation Measures from proposed project

- ❖ Run-off diversion – Garland drains will be constructed 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 sediment 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.

4.3 WATER ENVIRONMENT

Anticipated Impact

- ❖ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ❖ As the proposed project acquires 3.5KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

Common Mitigation Measures for the Proposed Project

- ❖ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ❖ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits

- ❖ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ❖ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ❖ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ❖ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program.

4.4 AIR ENVIRONMENT

Anticipated Impact from proposed project

Emission of air pollutants such as particular matter (PM), gases such as sulphur dioxide, oxides of nitrogen at various stages of activities such as excavation and transportation of materials. The rate of emission and the incremental concentration of pollutants is estimated in the following sections before providing mitigation measures.

Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chaulya et al.,2001. The equations used for SPM emission estimation have been given in Table 4.1.

Table 4.1 Empirical Formula for Emission Rate from Overall Mine

	Pollutant	Source Type	Empirical Equation	Parameters
Overall Mine	SPM	Area	$E = [u^{0.4} a^{0.2} \{9.7 + 0.01p + b/(4 + 0.3b)\}]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s). V = Average Vehicle Speed, f= Frequency (no.of holes/Day), S=Slit Content (%)
Transport road	SPM	Road	$E = \{(100 - m) s / \{m / (100 - s)\} \}^{0.1} u^{1.6} \{1.64 + 0.01(v + f)\} \} 10^{-3}$	

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. It is important to note that PM₁₀ emission rate is derived from the SPM estimation in the background that PM₁₀ constitutes 52% of SPM emission. The PM_{2.5} and PM₁₀ emission results have been given in Table 4.2.

Table 4.2 Estimated Emission Rate

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m ²	Calculated Value (g/s/m ²)
Overall Mine	SPM	25.55568657	20550	0.0021243586
Transport road	SPM	0.008469833		4.12157E-07

Modelling of Incremental Concentration

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500 m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3.

4.4.1 Model Results

The post project resultant concentrations of SPM (GLC) is given in Tables 4.3.

Table 4.3 Incremental & Resultant GLC of SPM

Station ID	Distance to core area (km)	Direction	SPM concentrations(µg/m ³)			Comparison against air quality standard (500 µg/m ³)	Magnitude of change (%)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total				
AAQ1	0.36	SW	58.5	123	181.5	Below standard	210.3	210.3	Not significant
AAQ2	0.64	NW	50.7	80	130.7		157.8	157.8	
AAQ3	3.75	SW	59.6	8	67.6		13.4	13.4	
AAQ4	2.82	NE	51.8	30	81.8		57.9	57.9	
AAQ5	3.46	NW	55	10	65		18.2	18.2	
AAQ6	4.83	SE	48	8	56		16.7	16.7	
AAQ7	3.85	SE	54.3	0	54.3		0.0	0.0	
AAQ8	3.20	W	56	30	86		53.6	53.6	

The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further.

4.4.2 Mitigation Measures

Haul Road and 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 to < 20 km/hr to avoid generation of dust
- ❖ Water sprinkling on haul roads and 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 and reduces pollution.
- ❖ The un-metalled haul roads will be compacted weekly before being put into use.
- ❖ Overloading of tippers will be avoided to prevent spillage.
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ❖ Haul roads and service roads will be graded to clear accumulation of loose materials.

Green Belt

- ❖ Planting of trees all along mine haul roads outside the lease and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of tractors/tippers.
- ❖ Green belt of adequate width will be developed around the project site.

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 and tipper drivers.

Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed.

4.5 NOISE ENVIRONMENT

Anticipated Impact

- 🔊 Mining operations generate significant noise impacting both worker health and nearby communities.
- 🔊 These impacts can range from annoyance and sleep disturbance to structural damage and hearing loss. Effective management of noise is crucial to mitigate these adverse effects.

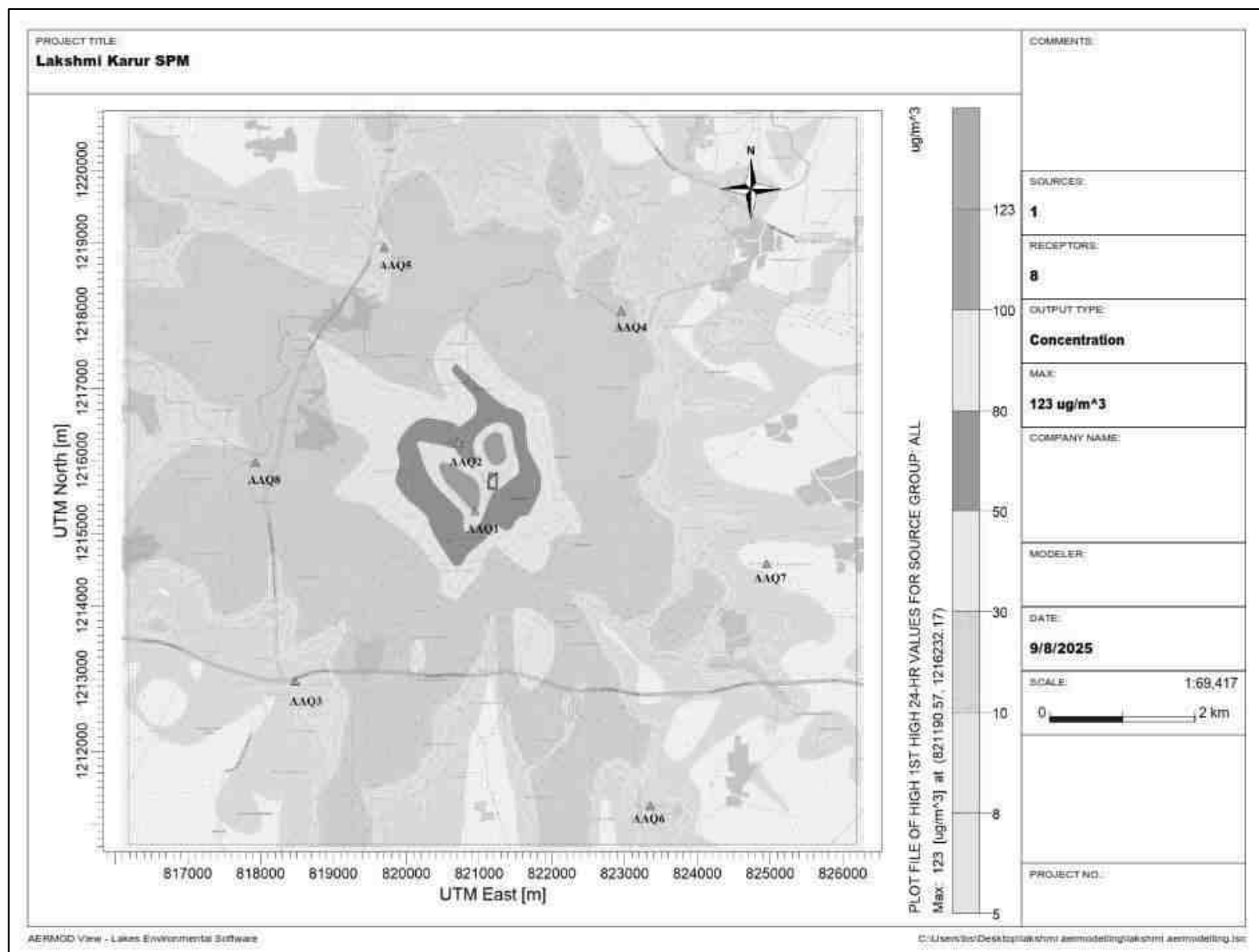


Figure 4.1 Predicted Incremental Concentration of SPM

Sources of Noise in Mining:

- ✚ **Drilling and Blasting:** Prolonged exposure to high-intensity noise from drilling and blasting can lead to hearing loss and other auditory problems
- ✚ **Heavy Machinery:** Excavators, haul trucks, and other equipment used in mining operations generate substantial noise.
- ✚ **Loading and Transportation:** The movement and handling of materials within the mine site contribute to noise pollution.

Noise pollution is mainly due to operation like playing 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 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 a mathematical 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 and 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.

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

Anticipated 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 4.4.

Table 4.4 Activity and Noise Level Produced by Machinery

S. 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			95.8

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 95.8 dB (A).

Table 4.5 Predicted Noise Incremental Values

Noise Monitoring Location	Distance From Project Site(m)	Baseline Noise Level (dBA)m During Day Time	Predicted Noise Level (dBA)	Total (dBA)
Core	350	47.2	33.1	47.4
Salipalayam	640	42.2	27.8	42.4
K. Paramathi	3950	52.4	12.0	52.4
Puthurpatti	2760	44.6	15.1	44.6
Kuppam	3490	46.8	13.1	46.8
Malapalayampudur	4800	39.8	10.3	39.8
Kurumpapatti	3810	38.6	12.3	38.6
Munnur	3280	47.2	13.6	47.2
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time - 55 dB (A) & Night Time- 45 dB (A)			

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. Therefore, no impact is anticipated on the noise environment due to the project.

Common Mitigation Measures

The following noise mitigation measures are proposed for control of noise:

- ✚ Optimizing blast design to minimize ground noise.
- ✚ Constructing noise barriers or enclosing noisy equipment can help reduce noise propagation.
- ✚ Proper maintenance and operation of mining equipment can help minimize noise generation.
- ✚ 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
- ✚ Greenbelt/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

4.5.1 Ground Vibrations

Noise and Vibration:

- ✚ Mining operations generate significant noise and vibration impacting both worker health and nearby communities.
- ✚ These impacts can range from annoyance and sleep disturbance to structural damage and hearing loss. Effective management of noise and vibration is crucial to mitigate these adverse effects.

Sources of Noise and Vibration in Mining:

- ✚ **Drilling and Blasting:** A primary source of both noise and ground vibrations, with the intensity dependent on the amount of explosives, atmospheric conditions and proximity to the blast.
- ✚ **Heavy Machinery:** Excavators, haul trucks, and other equipment used in mining operations generate substantial noise.
- ✚ **Loading and Transportation:** The movement and handling of materials within the mine site contribute to noise pollution.

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 kutchha 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 given below:

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

Where,

V = peak particle velocity (mm/s)

K = site and rock factor constant (500)

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

Table 4.6 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s	Air Blast	
				Pressure (kPa)	Sound Level (dB)
P1	6.3	640	0.07	0.01	116

Table 4.7 Predicted PPV Values due to Blasting at 100-500 m radius

Location ID	Maximum Charge in kgs	Radial Distance in m	PPV in mm/s	Air Blast	
				Pressure (kPa)	Sound Level (dB)
P1	6.3	100	1.37	0.12	136
		200	0.45	0.05	128
		300	0.23	0.03	124
		400	0.15	0.02	121
		500	0.10	0.02	119

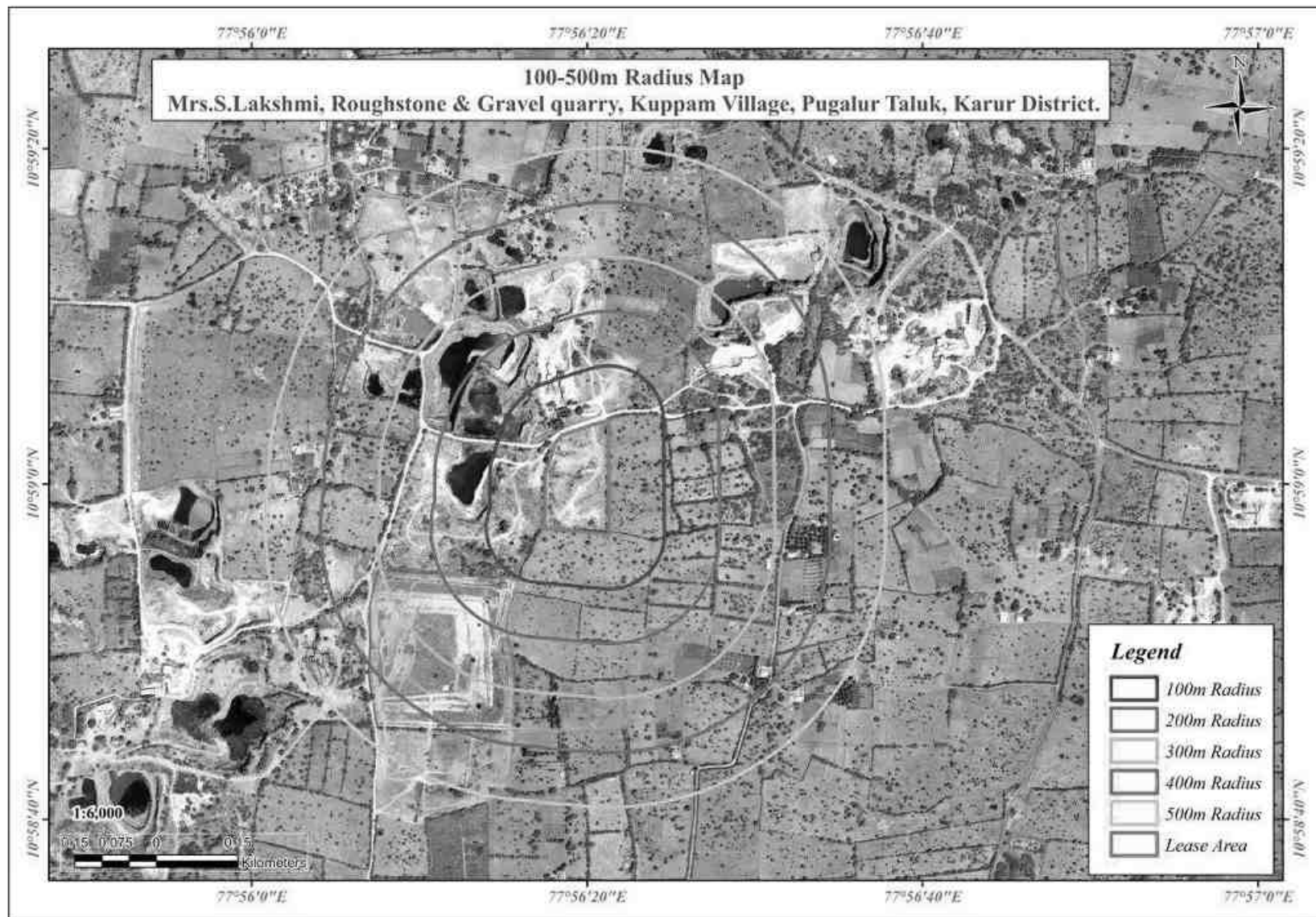


Figure 4.3: Predicted PPV Values due to Blasting at 100-500m radius

Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, 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 in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s.
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 Impact on Ecology and Biodiversity

- ❖ There shall be negligible air emissions or effluents from the project site. During loading 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 crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region. There are no trees in mine lease area.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 186kg per day, 50167kg per year and 296162kg over ten years, as provided in Table 4.8.

Table 4.8 Carbon Released During Ten Years of Rough Stone and Gravel Production

	Per day	Per year	Per Ten years
Fuel consumption of excavator	9	2459	45326
Fuel consumption of compressor	760	205213	250836
Fuel consumption of tipper	186	50167	296162
Total fuel consumption in liters	498	134448	793714
CO ₂ emission in kg	91	24635	123177

4.6.2 Mitigation Measures on Flora

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new
- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 123177kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.10), about 1020 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 670537kg of the total carbon, as provided in Table 4.9.

Table 4.9 CO₂ Sequestration

CO ₂ sequestration in kg	91	24635	123177
Remaining CO ₂ not sequestered in kg	407	109812	670537
Trees required for environmental compensation	4581		
Area required for environmental compensation in hectares	9		

Table 4.10 Recommended Species for Greenbelt Development Plan

S. No	Botanical Name of the Plant	Family Name	Common Name	Category	Dust Capturing Efficiency Features
1	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree	Well distinct thick at both the layer Well distinct in Palisade & Spongy parenchyma. Spongy parenchyma is present at lower epidermis Many vascular bundles arranged almost parallel series
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	Nettilling	Tree	
4	<i>Albizia lebbeck</i>	Fabaceae	Vagai	Tree	
5	<i>Delonix regia</i>	Fabaceae	Cemmayir-konrai	Tree	
6	<i>Bauhinia racemose</i>	Fabaceae	Aathi	Tree	
7	<i>Cassia fistula</i>	Fabaceae	Sarakondrai	Tree	
8	<i>Aegle marmelos</i>	Rutaceae	Vilvam	Tree	
9	<i>Pongamia pinnata</i>	Fabaceae	Pungam	Tree	
10	<i>Thespesia populnea</i>	Malvaceae	Puvarasu	Tree	

Table 4.11 Greenbelt Development Plan

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m ²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	411	329	3699
	Number of plants outside the mine lease area		
	617	493	5549
Total	1028	822	9248

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

4.6.3. Anticipated Impact on Fauna

- ❖ Direct impact is anticipated on fauna of core zone
- ❖ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use. There is no fauna in mine lease area.

4.6.4 Mitigation Measures on Fauna

- ❖ Fencing will be constructed around the proposed mine lease area to restrict the entry of stray animals
- ❖ The workers shall be trained not to harm any wildlife near the project site

4.6.5 Impact on agriculture and horticulture crops in 1km Radius

- ❖ Problems to agricultural and horticulture land due to dust caused by movement of heavy vehicles.
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season.
- ❖ The fugitive dust released from the mining operations may cause effect on the agricultural and horticulture land who are directly exposed to the fugitive dust.
- ❖ Dust from the quarries is likely to affect reproductive systems in nearby agricultural and horticulture lands.
- ❖ Dust from quarries can affect plant growth and reduce vegetable yields.

4.6.6 Mitigation Measures on agriculture and horticulture crops.

- ❖ The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases.
- ❖ Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled.
- ❖ A green belt will be created in 7.5 safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ❖ 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 to < 20 km/hr to avoid generation of dust.

Aquatic Biodiversity

Mining activities will not disturb the existing 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. Hence, aquatic biodiversity is not observed in the mine lease area.

4.7 SOCIO ECONOMIC ENVIRONMENT

4.7.1 Anticipated Impact from Proposed and Existing Projects

- ❖ 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.

4.7.2 Common 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.
- ❖ Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region.

4.8 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

4.8.1 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

4.8.2 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.

4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards

- ❖ Specific personnel training on work-site safety management will be taken up;
- ❖ 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.

4.8.4 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.

4.9 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.10 MINE CLOSURE

Mine closure plan is the most important environmental requirement in mining project. 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.

4.10.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.10.1.1 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.,

4.10.1.2 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 discharges 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.

4.10.1.3 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.
- ❖ Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor. For example, development of green barriers

The Mine closure plan should be as per the approved mining 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.

CHAPTER V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

Consideration of alternatives to a proposed project is a requirement of EIA process. During the scoping process, alternatives to a proposed project 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

The proposed project is site specific and has the 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 area.
- ❖ 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.
- ❖ As the proposed project area falls in seismic zone II, 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 the mine site is mineral specific.

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Manual open cast mining method with secondary blasting will be applied to extract rough stone and gravel in the area. The proposed mining lease areas have following advantages:

- ❖ As the mineral deposition is homogeneous and batholith formation, opencast method of working is preferred over underground method.
- ❖ The material will be loaded with the help of excavators into tractors/tippers and transported to the need by customers.
- ❖ 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 this project. 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.

CHAPTER VI

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-TN as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTE/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 project; 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 the proposed quarry. 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 the proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA-TN 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). The Environmental Monitoring Cell will be formed for the proposed project. The structure of the cell will be as shown in Figure 6.1.

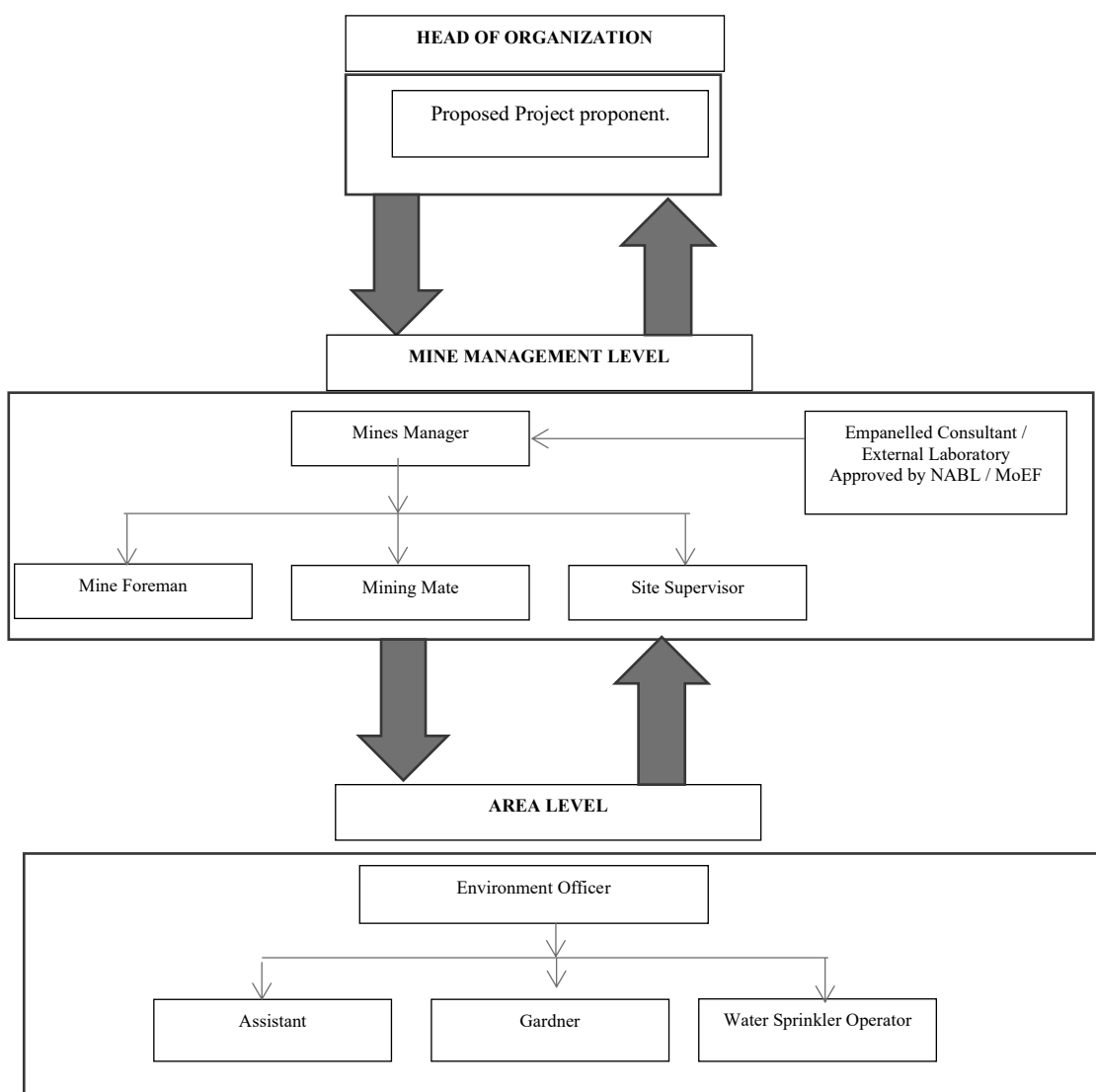


Figure 6.1 Proposed Environmental Monitoring Chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in chapter IV 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 Proposed Project

S. 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 proposed monitoring schedule have been provided in Table 6.2.

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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 m 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 ENVIRONMENT MONITORING PROGRAM

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 recurring cost for Environmental Monitoring Programme is Rs 2,95,000 /- per annum for the proposed project site.

Table 6.3 Environment Monitoring Budget

S. No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs 60,000/-
2	Meteorology	-	Rs 15,000/-
3	Water Quality	-	Rs 20,000/-
4	Water Level Monitoring	-	Rs 10,000/-
5	Soil Quality	-	Rs 20,000/-
6	Noise Quality	-	Rs 10,000/-
7	Vibration Study	-	Rs 1,50,000/-
8	Greenbelt	-	Rs 10,000/-
Total		-	Rs 2,95,000 /-

Source: Field Data

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.

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ Public Consultation for Proposed Project
- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

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 was made and the public opinions on the proposed project will be updated in the final EIA/EMP report.

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The methodology for the risk assessment is 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 proposed project. 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 Table 7.1.

Table 7.1 Risk Assessment & Control Measures for Proposed Project

S. No.	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and	Improper handling and	✓ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines

	heavy mining machineries.	unsafe working practice	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; Due to high pressure of compressed air, hoses may burst; Drill Rod may break;	✓ Safe operating procedure established for drilling (SOP) will be strictly followed. ✓ Only trained operators will be deployed. ✓ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ✓ Drilling shall not be carried on simultaneously on the benches at places directly one above the other. ✓ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ✓ 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.
3	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes Vibration due to movement of vehicles	✓ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast 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 is and will be distinctly demarcated (by means of red flags)
4	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 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
5	Natural calamities	Unexpected happenings	✓ Escape Routes will be provided to prevent inundation of storm water ✓ Fire Extinguishers & Sand buckets
6	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.

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. 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. Structure of the team has been shown in Figure 7.1.

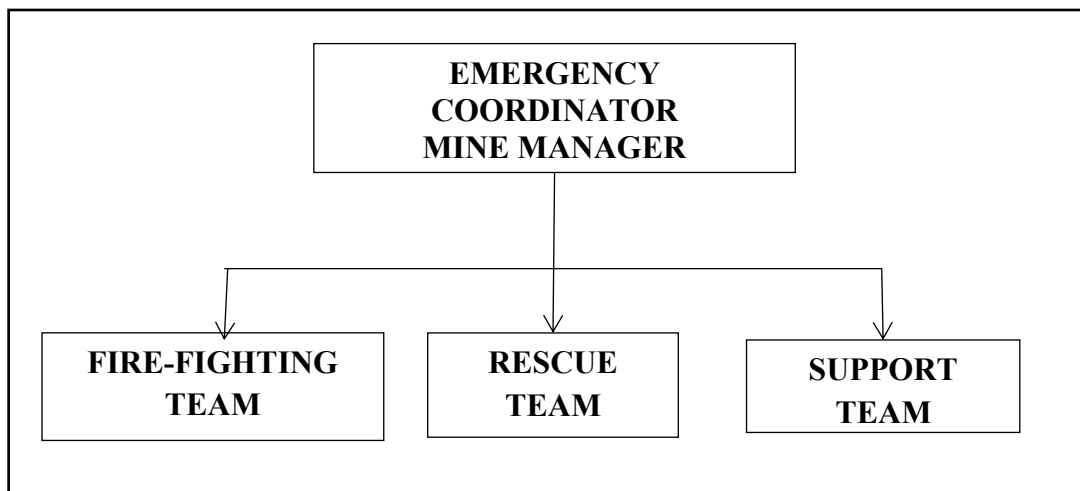


Figure 7.1 Disaster management team layout for proposed project

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

7.3.1 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

7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the projects within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, there is only one proposed project known as P1 is taken into consideration. The details of P1 have been given in Table 7.2 and E1, E2, E3 are given in the Table 7.3-7.4,7.5.

Table 7.2 Salient Features of the cluster Project 'P1'

Name of the Quarry	Mr. S.Lakshmi, Rough stone and gravel quarry
Type of Land	Patta Land
Extent	2.05.50 Ha
Toposheet No	58 F/13
Location of Project Site	10°58'56.9967"N to 10°59'3.7896"N

	77°56'17.2793"E to 77°56'21.3158"E			
Highest Elevation	198m AMSL			
Proposed depth of Mining	50m BGL			
Geological Resources	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	922590	2537123	102510	205020
Mineable Reserves	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	238260	655215	70890	141780
Proposed reserves for five years	Rough Stone in m ³		Gravel in m ³	
	m ³	Tons (m ³ * 2.75)	m ³	Tons (m ³ * 2)
	238260	655215	70890	141780
Method of Mining	Open-Cast Mechanized mining			
Topography	Flat Topography			
Machinery proposed	Jack Hammer		5	
	Compressor		2	
	Tipper		5	
	Hydraulic Excavator		2	
	Rock Breaker		1	
Blasting Method	The quarrying operation is proposed to carried out by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone.			
Proposed Manpower Deployment	30Nos			
Project Cost	Rs. 82,17,500/-			
CER Cost	Rs. 5,00,000/-			
Proposed Water Requirement	3.5 KLD			

Table 7.3 Salient Features of the cluster Project 'E1'

Name of the Quarry	M/s. Annai Blue Metals rough stone and gravel quarry
Type of Land	Patta Land
Extent	1.92.0 Ha
S.F. No	682(part)
Toposheet No	58-F/13
Location of Project Site (Centre Point)	10° 59'2.28"N to 10°58'57.34"N 77° 56'13.64"N to 77°56'8.30"N
Highest Elevation	47 m AMSL
Ultimate Depth of Mining	50m BGL

Geological Resources	Rough Stone in (m ³ & Ts)	Top Soil in (m ³ & Ts)
	784728 & 2158002	20592 & 41184
Mineable Reserves	Rough Stone in (m ³ & Ts)	Top Soil in (m ³ & Ts)
	227340 & 625185	15256 & 30512
Proposed reserves for five years	Rough Stone in (m ³ & Ts)	Top Soil (m ³ & Ts)
	227340 & 625185	15256 & 30512
Method of Mining	Open-Cast Semi Mechanized mining	
Topography	Flat Topography	
Machinery proposed	Jack Hammer	1
	Compressor	1
	Tipper	2
	Excavator	1
Blasting Method	The quarrying operation is proposed to carried out by open cost, using jack hammer drilling followed by manual breaking will be adopted to release the rough stone and Nonel blasting is proposed in this lease area.	
Proposed Manpower Deployment	15 Nos	
Project Cost	Rs.92,80,000/-	
CER Cost	Rs. 5,00,000/-	
Proposed Water Requirement	1.675 KLD	

Table 7.4 Salient Features of the cluster Project 'E2'

Name of the quarry	Mr.T.Manoj Prabakar Rough stone and gravel quarry	
Type of land	Patta Land	
Extent	4.11.5 Ha	
S.F. No	683/2 (Part) & 686/1 (Part)	
Toposheet no.	58-F/13	
Location of project site	10° 58'46.65"N to 10°58'53.45"N 77°56'06.93"E to 77°56'14.02"E	
Highest elevation	200 m AMSL	
Ultimate depth of mining	45 m BGL	
Geological resources as per ToR	Rough stone in (m ³ & Ts)	Gravel in (m ³ & Ts)
	1639440 & 4508460	204930 & 409860
Mineable reserves as per ToR	Rough stone in (m ³ & Ts)	Gravel in (m ³ & Ts)
	821400 & 2258850	173850 & 347700

Proposed depth of reserves for five years as per ToR	Rough stone in (m ³ & Ts)	Gravel in (m ³ & Ts)
	764750 & 2103063	173850 & 347700
Method of mining	Opencast semi mechanized mining	
Topography	Flat	
Machinery proposed	Jack Hammer	4
	Compressor	1
	Tipper	8
	Excavator	1
Blasting method	The quarrying operation is proposed to carried out by open cost, using jack hammer drilling followed by manual breaking will be adopted to release the rough stone and NONEL blasting is proposed in this lease area.	
Proposed manpower deployment	24 Nos	
Project cost	Rs.1,27,00,500	
CER cost	Rs. 6,15,000	
Proposed water requirement	4.0 KLD	

Table 7.5 Salient Features of the cluster Project 'E3'

Name of the quarry	Mr. M. Gunasekaran rough stone and gravel quarry		
Type of land	Patta Land		
Extent	1.92.5 Ha		
S.F. No	710/3, 712/2		
Toposheet No	58-F/13		
Location of project site	10° 58'49.04"N to 10° 58'55.76"N 77°55'56.49"E to 77°56'02.53"E		
Highest elevation	179 m AMSL		
Ultimate pit dimensions	Length (m)	Width (m)	Depth (m)
	170	114	37
Depth of mining	37 m BGL		
Geological resources	Rough Stone in (m ³ & Ts)	Gravel in (m ³ & Ts)	
	724430 & 1992182	29112 & 58224	
Mineable reserves	Rough Stone in (m ³ & Ts)	Gravel in (m ³ & Ts)	
	160982 & 442701	11446 & 22892	
Proposed reserves for five years	Rough Stone in (m ³ & Ts)	Gravel in (m ³ & Ts)	
	140607 & 386669	11446 & 22892	

Method of mining	Open-Cast Semi mechanized mining	
Topography	Flat Topography	
Machinery proposed	Jack Hammer	4
	Compressor	1
	Tipper	2
	Excavator	1
Blasting method	The quarrying operation is proposed to carried out by open cost, using jack hammer drilling followed by manual breaking will be adopted to release the rough stone and Nonel blasting is proposed in this lease area.	
Proposed manpower deployment	20 Nos	
Project Cost	Rs. 47,30,000/-	
CER Cost	Rs. 5,00,000/-	
Proposed Water Requirement	1.5 KLD	

7.4.1 Air Environment

As the production of rough stone and gravel plays a vital role in affecting the air environment. The data on the cumulative production resulting from cluster project have been given in Tables 7.6.

Table 7.6 Cumulative Production Load of Rough Stone

Quarry	10 Years in (m ³)	10 Years in Ts (m ³ X 2.75)	Per Year in (m ³)	Per Year in Ts (m ³ X 2.75)	Per Day in (m ³)	Per Day in Ts (m ³ X 2.75)	Number of Lorry Load Per Day
P1	238260	655215	23826	65522	88	242	15
E1	227340	625185	45460	125037	168	463	28
E2	764750	2103063	152950	420613	566	1558	94
E3	140607	386669	28121	77334	104	286	17
Total	1370957	3770132	250357	688506	926	2549	154

Table 7.7 Cumulative Production Load of Gravel

Quarry	Production Year m ³	Production Year Ts (m ³ X 2.75)	Yearly Production m ³	Yearly Production Ts (m ³ X 2.75)	Daily Production m ³	Daily Production Ts (m ³ X 2.75)	Number of Lorry Loads Per Day
P1	70890	141780	23630	47260	88	175	15
E1	15256	30512	5085	10170	19	38	3
E2	173850	347700	57950	115900	214	429	36
E3	11446	22892	3815	7631	14	28	2
Grand Total	271442	542884	90480	180961	335	678	56

The cumulative study shows that the overall production of rough stone from the proposed quarry is 926m³ & 2549 Ts per day with a capacity of 154 trips of rough stone per day and that production of gravel from the proposed quarry is 335m³ & 678 Ts per day accounting for 56trip/day.

7.4.2 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the cluster projects on air environment of the cluster have been provided in Table 7.8 The cumulative values resulting from the three projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.8 Cumulative impact results from the cluster projects

Pollutants	Baseline Data (µg/m ³)	Incremental Values (µg/m ³)	Cumulative Value (µg/m ³)
		P1	
SPM	58.5	123	181.5

7.4.2 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 projects within the 500m radius.

Table.7.9 Cumulative impact of noise from cluster projects

Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	640	SE	42.2	27.8	42.4	55
Cumulative Noise (dB (A))					42.4	

Source: Lab Monitoring Data

The cumulative analysis of noise due to cluster proposed projects shows that habitation will receive about 42.4dB (A) respectively. The cumulative results for all the villages in consideration do not exceed the limit set by CPCB for residential areas for day time.

Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the all the cluster projects have been shown in Table 7.10.

Table 7.10 Cumulative effect of ground vibrations resulting from cluster projects

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	6.3	640	0.07
E1	12.0	460	0.20
E2	40.40	730	0.25
E3	7.40	630	0.08
Total			0.60

Results from the above tables 7.8 indicate that the cumulative PPV value of each habitation 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.

7.4.3 Socio Economic Environment

Socio Economic benefits of the three proposed project were calculated and the results have been shown in Table 7.11. The cluster project will contribute Rs. 20,00,000/-towards CER fund.

Table 7.11 Socio Economic benefits from the cluster project

Location ID	Project Cost	CER Cost
P1	Rs. 82,17,500/-	Rs. 5,00,000/-
E1	Rs.92,80,000/-	Rs. 5,00,000/-
E2	Rs.1,27,00,500/-	Rs. 5,00,000/-
E3	Rs. 47,30,000/-	Rs. 5,00,000/-
Grand Total	Rs. 3,49,28,000/-	Rs. 20,00,000/-

Table 7.12 Employment benefits from the cluster projects

Location ID	Employment
P1	30
E1	15
E2	24
E3	20
Grand Total	89

A total of 89 people will get employment due to the cluster project in cluster

7.4.4 Ecological Environment

Table 7.13 Greenbelt Development Benefits from cluster Projects

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	1028	9248	822	

E1	978	8798	782	<i>Azadirachta indica, Albizia lebbeck, Delonix regia, Tectona grandis, etc.,</i>
E2	1330	11970	1064	
E3	1078	9698	862	
Total	4414	39174	3530	

Cumulative studies show that the three proposed Projects will plant about 4414 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Tectona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 3530 trees will survive in this green belt development program.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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.

7.5.1 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.

A detailed action plan to manage plastic waste has been provided in Table 7.14.

Table 7.14 Action Plan to Manage Plastic Waste

S. 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 FAEs and EC

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Kuppam Village aims to produce **238260m³ & 655215 Ts** of rough stone and **70890m³ & 141780 Ts of gravel** over a period of 5 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 30 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

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 project is located in Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu. The area has already well-established communications roads and other facilities. The following physical infrastructure facilities will further improve due to proposed project.

- ❖ 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.,

8.6 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 5 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 mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Kurumbapalayam Village. CSR budget is allocated.

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

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, being a green field project & capital investment is ≤ 100 crores, the proposed project shall contribute 2% of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund on the basis of the extent of the project. Therefore, Rs. 5,00,000 is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

Table 8.1 CER Action Plan

S. No.	Activity	Budget (Rs.in Lakh)
1	The applicant Indents to involve in corporate environment responsibilities (CER) activities such as renovation of existing toilet, plantation within the school premises, donating environment related books to the nearby school library, etc.	Rs.5,00,000
	Total	Rs.5,00,000

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

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs.3,09,95,888** to the state government through various ways, as provided in Table 8.2.

Table 8.2 Project Benefits to the State Government

Particulars	Budget for Rough Stone (Rs.)	Budget for Gravel (Rs.)
CER	5,00,000	
Seigniorage @ Rs.90/m ³ of rough stone Rs.56/m ³ of gravel	21443400	3969840
District Mineral Foundation Tax @ 10% of Seigniorage	2144340	396984
Green Tax @ 10% of Seigniorage	2144340	396984
Total	26232080	4763808

CHAPTER IX
ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER X

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 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 Mrs.S. Lakshmi 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 programs 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.

10.1.1 Description of the Administration and Technical Setup

The environment monitoring cell discussed under Chapter VI 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 program.
- ❖ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the company for execution of Environmental Management Plan. The Table 10.1 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.1 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost	Recurring Cost/annum
			(Rs.)	(Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	20550	20550
	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

	Air quality will be regularly monitored as per norms within ML area & ambient area	Yearly compliance as per CPCB norms	0	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	125000	12500
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the atmosphere	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	20000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	6250
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual) / hectare	0	41100

	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			1015550	220400
Noise Environment	Source of noise will be transportation vehicles, and 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 implementations 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 / Competent 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 tons of blasted material	0	667128
Total Noise Environment			50000	669128
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum (2.96.5 X 10000)	20550	10275
Total Water Environment			20550	10275
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	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
Total Waste Management			30000	22000

Implementation of EC, Mining Plan & DGMS	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	10000	1000
Total Implementation of EC, Mining Plan			10000	1000
Occupational Health and Safety	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	120000	30000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	30000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	8220
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum (2.28.0hectare)	411000	20550
	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	102750	20550

	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
Total Occupational Health and Safety			673750	896320
Development of Green Belt	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 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))"	82200	12330
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	184950	18495
Total Development of Green Belt			267150	30825

Mine Closure	Closure includes 10% of the amount allotted for Greenbelt development, wire fencing, and garland drainage (Rule 27 in MCDR 2017 for Cat B mines will pay 2 lakhs per hectare or minimum amount of financial assurance of 5 lakhs)		0	69870
	G.O.(Ms)No.23, Dated: 28.09.2021	Section IVA of TNMMCR 1959 (@10% of Seigniorage Fee) (Seigniorage Fee for rough stone = Rs.90)	74880795	0
TOTAL			76952795	1849948

Table 10.2 Estimation of Overall EMP Budget after Adjusting 5% Annual Inflation

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year	Total Recurring Cost	Total EMP Cost
1849948	1942445	2039568	2141546	2248623	23268444	100221239
VIth Year	VIIth Year	VIIIth Year	IXth Year	Xth Year		
2361054	2479107	2603062	2733215	2869876		

In order to implement the environmental protection measures, an amount of **Rs.76952795** as capital cost and recurring cost as **Rs. 1849948** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be **Rs. 100221239** as shown in Table 10.2.

10.3 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.

CHAPTER XI

SUMMARY AND CONCLUSION

11.1 INTRODUCTION

As the proposed rough stone and gravel mining project (B1) falls within the quarry cluster of 500 m radius with the total extent of 10.01.50ha, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F. Nos. 675/1 & 675/2 over the extent of 2.05.50ha is situated in the cluster falling in Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu. The projects involved in the calculation of cluster extent are of one proposed quarry and three existing quarries.

11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes 10°58'56.9967"N to 10°59'3.7896"N Longitudes from 77°56'17.2793"E to 77°56'21.3158"E in Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu. According to the approved mining plan, about 238260m³ & 655215Ts of rough stone and 70890m³ & 141780Ts of gravel will be mined up to the depth of 50 m BGL in the five years. The quarrying operation is proposed to be carried out by open cast semi-mechanized mining method involving drilling and formation of benches of the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

Baseline data were collected to evaluate the existing environmental condition in the core and buffer areas during **October through December 2023** as per CPCB guidelines. The data were collected by both the FAEs and NABL accredited and MoEF notified **Excellence Laboratory** for the environmental attributes including soil, water, noise, air and by FAEs for ecology and biodiversity, traffic, and socio-economy.

11.3.1 Land Environment

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 7 LULCs were mapped using ArcGIS software version-10.2. The areal extent of each LULC is provided in Table 3.2. Of the total cluster area, mining area covers only 486.87 ha accounting for 5.96 %, of which lease area of 2.05.50 ha contributes only about 0.020%. Hence very least percentage of mining activities shall not have any significant impact on the land environment.

Comparative study of Land Use Land Cover (LULC) Changes within 5 km Radius (2020 vs 2025) was done and significant changes in land use and land cover were observed (Table 3.2a). Crop land has decreased from 5560.53 ha (68.09%) to 4643.42ha (56.86%),

indicating the decrease in agricultural activities, this change is due to the land are not suitable for agriculture and source of irrigation is uncertain. But that cultivation land is included in the bare ground and fallow land whose extent have been increased. Mining activity has been increased to a little extent from 448.87 ha (5.50%) to 486.7 ha (5.96%), suggesting increased demand of building materials for various infrastructure developments. The increase in common vegetation has noticed of 2.02 ha (0.02%) in last five years due to the afforestation activities carried out by the past quarry proponents. Built-up areas also rose from 1118.50 ha (13.70%) to 1201.19 ha (14.71%), pointing out the urban development due to increase in economic activity. In fact, the agricultural land has been reduced but that too included in fallow land which can be reversible during availability of irrigation factors.

11.3.2 Soil Environment

The soil is nutrient-rich, well-balanced, and structurally suitable for agriculture. No corrective measures are immediately necessary, but continued monitoring and sustainable land management practices are recommended to maintain soil health.

11.3.3 Water Environment

Ground water

The analysis of surface water in the study area shows that the water quality is excellent and meets the standards for drinking (after simple disinfection), irrigation, domestic use, and supporting aquatic life.

Key findings include:

pH (6.9 0– 7.6)

- pH is 6.5–8.5 for drinking water.
- All values within this range.
- Interpretation: Neutral pH, no corrosion or scaling tendency.

Fluoride (0.31 – 0.92 mg/l)

- Fluoride is beneficial in small quantities but harmful in excess (>1.5 mg/l causes fluorosis).
- All values are below the 1.0 mg/l limit.
- Interpretation: No risk of dental or skeletal fluorosis.

Total Dissolved Solids (TDS) (459 – 890 mg/l)

- TDS represents total minerals and salts in water.
- Acceptable limit is 500 mg/l; permissible up to 2000 mg/l.
- BW01, BW03, and BW05 exceed the acceptable but are within permissible.
- Interpretation: Slightly mineral-rich water; taste may be affected but safe to use.

Electrical Conductivity (EC) (756 – 1452 $\mu\text{S}/\text{cm}$)

- Indicates overall ionic concentration in water.
- Higher EC = higher salinity.
- $\text{EC} > 1000 \mu\text{S}/\text{cm}$ (in BW01 and BW05) suggests moderately saline water.
- Interpretation: Suitable for irrigation, but may need softening for drinking.

Conclusion:

The groundwater quality assessment reveals that the water is generally safe and suitable for drinking, domestic, and irrigation purposes. All tested heavy metals such as barium, boron, copper, lead, mercury, arsenic, chromium, and zinc were found to be below detection limits, indicating no industrial or geogenic contamination. Key health-related parameters including fluoride, nitrate, iron, and pH levels are well within the acceptable standards, posing no health risk. Some physico-chemical parameters like calcium, magnesium, total hardness, total dissolved solids (TDS), electrical conductivity (EC), and chloride showed slightly elevated levels in a few samples, but they remain within permissible limits prescribed by BIS standards.

11.3.4 Air Environment

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $14.4 \mu\text{g}/\text{m}^3$ to $16.7 \mu\text{g}/\text{m}^3$; PM_{10} from $35.8 \mu\text{g}/\text{m}^3$ to $41.5 \mu\text{g}/\text{m}^3$; SO_2 from $5.3 \mu\text{g}/\text{m}^3$ to $7.1 \mu\text{g}/\text{m}^3$; NO_x from $11.7 \mu\text{g}/\text{m}^3$ to $15.7 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index

The AQI shows that the air quality of the study area falls within good category 39 causing minimal impact to human health.

11.3.5 Noise Environment

Noise level in core zone was 47.2 dB (A) Leq during day time and 35.4 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.6 to 52.4 dB (A) Leq and during night time from 30.6 to 42.2 dB (A) Leq . Thus, the noise level for industrial and residential area meets the requirements of CPCB

11.3.6 Biological Environment

The study found that there is no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

Flora in core zone

There is no agricultural land nearby lease area. It contains a total of 31 species belonging to 21 families have been recorded from the buffer zone. 6 Trees, 5 Shrubs and Herbs and Climbers, Creeper, Grass & Cactus 20 were identified.

Flora in 10 km radius buffer zone

Similar type of environment occurs in both core and buffer zone but more floral diversity noticed in buffer zone compared with core zone area. Buffer area contains a total species belonging to 38 families have been recorded. The floral (75) varieties among them 35 Trees (46%), 15 Shrubs (15%) Herbs and Climbers, Creeper, Grass & Cactus, 25 (33%) were identified.

Fauna in Core Zone

The 25 varieties of species observed in the core zone. Among them numbers of Insects 8 (32%), Reptiles 3 (12%), Mammals 5 (20%) and Avian 9 (36%). A total of 25 species belonging to 22 families have been recorded from the core mining lease area. Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and eight species are under schedule IV according to Indian wild life Act 1972. A total eight species of birds were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable and endemic species were observed.

Fauna in Buffer Zone

A total of 47 species belonging to 34 families were recorded in the buffer zone. Based on habitat classification the majority of species were Birds 18 (40%), followed by Insects 15 (31%), Reptiles 7 (15%), 4 Mammals (8%) and amphibians 3 (6%). There are 4 schedule II species and 24 schedule IV species according to Indian wild life Act 1972.

11.3.7 Socio Economic Environment

The proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of people's standard of living.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.4.1 Land Environment

Anticipated Impact

-  Change in land use and land cover and topography of the mine lease area
-  Problems to human habitations due to dust and noise caused by movement of heavy vehicles

- ✚ Soil erosion and sediment deposition in the nearby water bodies during the rainy season
- ✚ Siltation of water course due to wash off from the exposed working area
- ✚ Deterioration of soil quality in the surrounding area due to runoff from the project area
- ✚ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation.

Mitigation Measures

- ✚ Construction of garland drains, settling pits, and check dams to prevent runoff and siltation.
- ✚ Runoff water will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site.
- ✚ The vegetation will be retained at the site wherever possible.
- ✚ Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

11.4.2 Soil Environment

Anticipated Impact

- ✚ Removal of protective vegetation cover
- ✚ Exposure of subsurface materials which are unsuitable for vegetation establishment

Mitigation Measures

- ✚ Run-off diversion – Garland drains will be constructed 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 sediment 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.

11.4.3 Water Environment

Anticipated Impact

- ✚ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ✚ As the proposed project acquires 3.5KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

Mitigation Measures

- ✚ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ✚ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits
- ✚ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ✚ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ✚ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ✚ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program.

11.4.4 AIR ENVIRONMENT

Anticipated Impact

Anticipated increase of the air pollutants due to quarrying activities have been predicted using AERMOD software. The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further

Mitigation Measures

Haul Road and 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 to < 20 km/hr to avoid generation of dust
- ✚ Water sprinkling on haul roads and 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 and reduces pollution.
- ✚ The un-metalled haul roads will be compacted weekly before being put into use.
- ✚ Overloading of tippers will be avoided to prevent spillage.
- ✚ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ✚ Haul roads and service roads will be graded to clear accumulation of loose materials.

Green Belt

- ✚ Planting of trees all along mine haul roads outside the lease and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of tractors/tippers.
- ✚ Green belt of adequate width will be developed around the project site.

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 and tipper drivers.
- ✚ Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed

11.4.5 Noise Environment

Anticipated Impact

- ✚ Mining operations generate significant noise impacting both worker health and nearby communities.
- ✚ These impacts can range from annoyance and sleep disturbance to structural damage and hearing loss. Effective management of noise is crucial to mitigate these adverse effects.

Sources of Noise in Mining:

- ✚ ***Drilling and Blasting:*** Prolonged exposure to high-intensity noise from drilling and blasting can lead to hearing loss and other auditory problems

- ✚ **Heavy Machinery:** Excavators, haul trucks, and other equipment used in mining operations generate substantial noise.
- ✚ **Loading and Transportation:** The movement and handling of materials within the mine site contribute to noise pollution.

Common Mitigation Measures

The following noise mitigation measures are proposed for control of noise:

- ✚ Optimizing blast design to minimize ground noise.
- ✚ Constructing noise barriers or enclosing noisy equipment can help reduce noise propagation.
- ✚ Proper maintenance and operation of mining equipment can help minimize noise generation.
- ✚ 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
- ✚ Greenbelt/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

Ground Vibrations

Noise and Vibration:

- ✚ Mining operations generate significant noise and vibration impacting both worker health and nearby communities.

- ✚ These impacts can range from annoyance and sleep disturbance to structural damage and hearing loss. Effective management of noise and vibration is crucial to mitigate these adverse effects.

Sources of Noise and Vibration in Mining:

- ✚ **Drilling and Blasting:** A primary source of both noise and ground vibrations, with the intensity dependent on the amount of explosives, atmospheric conditions and proximity to the blast.
- ✚ **Heavy Machinery:** Excavators, haul trucks, and other equipment used in mining operations generate substantial noise.
- ✚ **Loading and Transportation:** The movement and handling of materials within the mine site contribute to noise pollution.

Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, 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 in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s.
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

11.4.6 Biological Environment

Anticipated Impact

- ❖ There shall be negligible air emissions or effluents from the project site. During loading 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 crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region. There are no trees in mine lease area.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 752kg per day, 50167kg per year and 296162kg over five years

Mitigation Measures

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new
- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 123177kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.11), about 1020 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 670537kg of the total carbon.

11.4.7 Socio Economic Environment

Anticipated Impact

- ⚡ 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

Mitigation Measures

- ✚ 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

11.4.8 Occupational Health

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

11.5 Environment Monitoring Program

Table 11.2 Environment Monitoring Program

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 m 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

11.6 ADDITIONAL STUDIES

11.6.1 Risk Assessment

The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. 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 proposed project.

11.6.2 Disaster Management Plan

The objective of the disaster management plan is to make use of the combined resources of the mine and the outside services to:

- ✚ Rescue and treat 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.

11.6.3 Cumulative Impact Study

- ✚ The results on the cumulative impact of the three proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.
- ✚ The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time
- ✚ PPV resulting from three proposed project is well below the permissible limit of Peak Particle Velocity of 5 mm/s.
- ✚ The cluster projects will allocate Rs. 20,00,000/- towards CER as recommended by SEAC
- ✚ The cluster projects will directly provide jobs to 89 local people, in addition to indirect jobs
- ✚ The cluster projects will plant 4414 about trees in and around the lease area.
- ✚ The cluster projects will add 630PCU per day to the nearby roads.

11.7 Project Benefits

Various benefits are envisaged due to the three proposed mine and benefits anticipated from the proposed project to the locality, neighbourhood, region and nation as a whole are:

- ✚ Direct employment to 30 local people
- ✚ Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,
- ✚ Strengthening of existing community facilities through the Community Development Program
- ✚ Skill development & capacity building like vocational training.
- ✚ Rs. 5,00,000 will be allocated for CER

11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of **Rs.76952795** as capital cost and recurring cost as **Rs. 1849948** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be **Rs. 100221239**.

11.9 OVERALL STUDY AREA CONCLUSION

The Environmental Impact Assessment (EIA) for the proposed rough stone and gravel quarry project in Kuppam Village, Karur District, Tamil Nadu, has comprehensively evaluated the baseline environmental conditions and projected impacts associated with quarry operations. The study concludes that the project is environmentally sustainable with appropriate mitigation and management practices in place.

The land use analysis using Sentinel II imagery reveals that agricultural land dominates the study area, with limited urbanization and industrial activity. While minor land use changes are expected due to quarrying, these are localized and reversible.

The soil environment is assessed to be healthy and agriculturally productive, with good moisture retention, neutral to slightly alkaline pH, and moderate nutrient levels.

Surface and groundwater quality are generally good. Surface water meets all drinking and irrigation standards with minimal treatment, and groundwater is safe for consumption after mild treatment for hardness and taste. No microbial contamination was detected, and key parameters fall within permissible limits.

Air quality and noise levels are within Central Pollution Control Board (CPCB) norms, and the Air Quality Index remains causing minimal impact to human health. Quarrying impacts on air and noise can be effectively controlled through dust suppression, green belt development, and controlled blasting techniques.

The biological environment in the core zone shows limited flora and fauna due to existing quarry activity, but the buffer zone hosts a healthy diversity of species with no presence of endangered or migratory species. Green belt development and post-mining reclamation plans are proposed to enhance biodiversity and carbon sequestration.

The socio-economic environment will benefit from direct and indirect employment, infrastructure development, and improved livelihoods. The project also contributes to the local economy through taxes, royalty payments, and community development initiatives under Corporate Environmental Responsibility (CER).

Potential environmental impacts such as dust, noise, and runoff are anticipated but can be managed with the proposed Environment Management Plan (EMP). Adequate provisions have been made for water management, air pollution control, soil conservation, occupational health, and post-mining restoration. Risk assessment and a disaster management plan have been integrated to ensure safety and emergency preparedness.

Overall, the study concludes that the proposed quarry project is technically feasible, environmentally sound, and socio-economically beneficial. With strict implementation of the mitigation measures and monitoring programs, the project can proceed without causing significant adverse impacts on the environment or local communities.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **Tmt.S.Lakshmi** has engaged **Geo Technical Mining Solutions**, a NABET accredited consultancy for carrying out the EIA study as per the ToR issued.

Address of the consultancy:

No: 1/213B Natesan Complex,
Oddapatti, Dharmapuri – 636705,
Tamil Nadu, India.
Email: info.gtmsdpi@gmail.com
Web: www.gtmsind.com
Phone: 04342 232777.

The accredited experts and associated members who were engaged in this EIA study are given below:

S.No	Name of the expert	In house/ Empanelled	Sector	Functional Area	Category
Approved Functional Area Experts & EC					
1	Dr.R.Arunbalaji	EIA Coordinator (EC) In-house	1(a)(i)	AQ, AP & NV	B
2	P. Vellaiyan	In-house, FAE	1(a)(i)	GEO	B
3	Dr. D.Kalaimurugan	In-house, FAE	1(a)(i)	EB	B
4	Dr. G. Prabakaran	In-house, FAE	1(a)(i)	SE	B
5	Dr. D.Kalaimurugan	In-house, FAE	1(a)(i)	SC	B
6	J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW, AP	B
7	R.Revathy	In-house, FAE	1(a)(i)	WP	B
8	G. Umamaheswaran	In-house, FAE	1(a)(i)	HG	B
9	P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
10	C. Kumaresan	In-house, FAE	1(a)(i)	NV	B
11	G. Prithiviraj	In-house, FAE	1(a)(i)	LU & LC	B
Approved Functional Area Associates					
12	V.Malavika	FAA	1(a)(i)	NV	B
13	P.Dhatchayini	FAA	1(a)(i)	AQ	B
15	C.Ragul	FAA	1(a)(i)	LU & LC	B
16	K.Ravichandiran	FAA	1(a)(i)	GEO	B

17	K.Prithivi	FAA	1(a)(i)	HG	B
Abbreviations					
EC	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 modelling, and prediction	HW	Hazardous Wastes		
EB	Ecology and bio-diversity	GIS	Geographical Information System		

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

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

Signature : 

Date :

Name : **Dr.R.Arun Balaji**

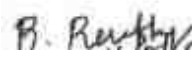
Designation : EIA Coordinator

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

Period of Involvement : Till date

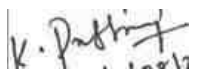
We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for **Tmt.S.Lakshmi** rough stone and gravel quarry project with the extent of 2.05.50 ha situated in the cluster with the extent of 10.01.50ha in Kuppam Village, Pugalur Taluk, Karur District of Tamil Nadu is true and correct to the best of our knowledge.

List of Functional Area Experts Engaged in this Project

S. No.	Functional Area	Involvement	Name of the Experts	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	P.Venkatesh	
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.	R.Revathy	
3	HG	○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics	G.Umamaheshwaran	
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.	P. Vellaiyan	
5	SE	○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive Management Plan ○ Corporate Environment Responsibility.	Dr. G. Prabhakaran	
6	EB	○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as	Dr. D.Kalaimurugan	

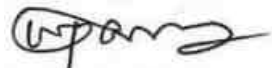
		per IUCN list. ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development.		
7	RH	○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety.	J.N. Manikandan	
8	LU	○ Construction of Land use Map ○ Impact of project on surrounding land use ○ Suggesting post closure sustainable land use and mitigative measures.	G. Prithviraj	
9	NV	○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP.	C. Kumaresan	
10	AQ	○ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ○ Recommending mitigations measures for EMP	Dr.R. Arun Balaji	
11	SC	○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. D.Kalaimurugan	
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.	J.N. Manikandan	

List of Functional Area Associate Engaged in this Project

S.No.	Name	Functional Area	Involvement	Signature
1	V. Malavika	NV, SHW	- Site visit along with FAE Assistance in report preparation. - Assistance to FAE in both primary and secondary data collection - Assistance in noise prediction modelling	
2	P. Dhatchayini	AQ	- Site visit with FAE - Assistance to FAE in collection of both primary and secondary data	
3	K.Prithivi	HG	- Site visit with FAE - Provide inputs & Assisting FAE for HG	
4	K.Ravichandiran	GEO	- Field visits along with FAE - Assistance to FAE in both primary and secondary data collection	
5	C.Ragul	LU & LC	- Field visits along with FAE - Assistance to FAE in both primary and secondary data collection	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for **Mr. S.Lakshmi** rough stone and gravel quarry project with the extent of 2.05.50ha situated in the cluster with the extent of 10.01.50ha in Kuppam Village, Pugalur Taluk, Karur District of Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No & Issue Date : NABET/EIA/23-26/RA 0319

Validity : Till 31.12.2026



File No: 12458
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 04/09/2025



To,

S. Lakshmi
W/o. Rajeshkumar, Door.No.267/12, Sindu Nagar, Kongu Mess Opposite, Andankovil East,
Manmangalam Taluk, Karur District, TAMIL NADU - 639002.
lakshmirajesh0208@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 lease over an extent of 2.05.50 Ha at S.F.No. 675/1 & 675/2 of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu by S. Lakshmi - under project category – “B1” and Schedule S.No. 1(a) – “Mining of Minerals” – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/544747/2025, Dated: 14/07/2025.
2. Minutes of the 602nd Meeting of SEAC-II held on 07.08.2025.
3. Minutes of the 876th SEIAA meeting held on 25.08.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO25B0108TN5981163N
(ii) File No.	12458
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals, 1(a) Mining of minerals
(vii) Name of Project	Kuppam Village Rough Stone and Gravel Mining Laese
(viii) Name of Company/Organization	SUGUMAR LAKSHMI
(ix) Location of Project (District, State)	KARUR, TAMIL NADU
(x) Issuing Authority	SEIAA
(xi) Applicability of General Conditions	no
(xii) Applicability of Specific Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal inter alia 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 in the meeting held on 25.08.2025. 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 **S. Lakshmi** 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.
8. 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.

Copy To

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

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions :

S. No	Terms of Reference
1.1	The authority noted that the subject was appraised in the 602nd Meeting of SEAC-II held on 07.08.2025. After detailed discussions, the Authority accepts the recommendation of SEAC-II and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 238260m³ of Rough Stone & 70890m³ of Gravel upto the depth of 50m (BGL) as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended

S. No	Terms of Reference
	by SEAC-II & normal conditions & the conditions mentioned in Annexure of this minutes.

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 Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report. 3. Since waterbodies are situated nearby, the PP shall carry out the hydrological study including the details of waterflow pattern to determine the impacts of the mining operation in the waterbodies. 4. The details of enumeration of structures including schools, colleges, primary health centers should be submitted along with the EIA report. 5. 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. 6. 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. 7. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 8. 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. 9. 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. 10. The PP shall prepare a conceptual action 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. 11. The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/videographic evidence along with the EIA report.

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

S. No	Terms of Reference
	(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 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.

S. No	Terms of Reference
	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, 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.

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

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the areashould be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the 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 givenwith 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 rea will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period
1.10	Land use of the study rea 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

S. No	Terms of Reference
	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 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
1.19	Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)

S. No	Terms of Reference
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 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

S. No	Terms of Reference
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 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

S. No	Terms of Reference
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, horticultural 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.

A. STANDARD TERMS OF REFERENCE

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

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

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

also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.

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

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

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

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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).

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

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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.

- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Signature Not Verified

Digitally Signed by : A R Rahul Nadh IAS
Member Secretary, SEIAA

Date: 04/09/2025

From
Dr.P.Jayapal M.Sc., Ph.D.,,
Deputy Director,
Geology and Mining,
Karur.

To
Tmt.S.Lakshmi,
W/o.Rajeshkumar,
Door No.267/12, Sindhu
Nagar,
Opp. Kongu Mess,
Andankovil East,
Manmangalam Taluk,
Karur District.

Rc.No.141/Mines/2024, Dated:07.07.2025

Sir,

Sub: Mines and Minerals – Minor Mineral – Karur District
– Pugalur Taluk - Kuppam Village - Patta lands in
S.F.Nos.675/1 (1.12.00 hectares) and 675/2
(0.93.50 hectares) Over an extent of 2.05.50
hectares - Quarry lease application preferred by
Tmt.S.Lakshmi for quarrying Rough Stone and
Gravel – Mining Plan approved - requested for the
details of Existing/ Proposed/Expired and
Abandoned quarries situated within 500 mts radial
distance - furnished – Regarding.

- Ref: 1. Quarry lease application for quarrying Rough
stone and Gravel preferred by Tmt.S.Lakshmi,
W/o.Rajeshkumar, Door No.267/12, Sindhu
Nagar, Opp. Kongu Mess, Andankovil East,
Manmangalam Taluk, Karur District dated:
08.04.2024.
2. Deputy Director, Geology and Mining, Karur
Notice Rc.No.141/Mines/2024,
Dated:29.05.2025
- 3 Mining Plan submitted by Tmt.S.Lakshmi, letter
Dated:11.06.2025
4. The Deputy Director, Geology and Mining, Karur
Mining Plan approved letter Rc.No.
141/Mines/2024, Dated:30.06.2025.
5. Tmt.S.Lakshmi letter dated:02.07.2025

In the reference 1st cited Tmt.S.Lakshmi, W/o.Rajeshkumar, Door No.267/12, Sindhu Nagar, Opp. Kongu Mess, Andankovil East, Manmangalam Taluk, Karur District has preferred for the grant of ten years lease to quarry Rough Stone and Gravel over an extent of 2.05.50 hectares of patta land in S.F.Nos.675/1 (1.12.00 hectares), and 675/2 (0.93.50 hectares) of Kuppam Village, Pugalur Taluk, Karur District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rule 1959.

Accordingly, the applicant has submitted the 3 copies of draft Mining Plan and the same was approved by the Deputy Director, Geology and Mining, Karur vide reference 4th cited.

In the reference 5th cited, the applicant has requested to the Deputy Director of Geology and Mining, Karur to provide the details of existing, proposed, expired and abandoned quarries situated within 500 meter radial distance from the subject area and the same has been furnished as follows:-

I. Existing Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1.	M/s. Annai Blue Metals, S.F. No.451 Kalipalayam, Kuppam Village, Pugalur Taluk, Karur D.T.	Rough Stone and Gravel	Pugalur Taluk Kuppam Village	682(P)	1.92.0	25.01.2025 to 24.01.2030
2.	Thiru.T.Manoj Prabhakar, S/o.K.Thirunavukkarasu, Door No450-A College Road, 3tJ Cross Paramathi Velur,	Rough Stone & Gravel	Pugalur Taluk Kuppam village,	683/2(Part) 686/1(Part)	4.11.50	30.01.2025 to 29.01.2035
3.	Thiru.M.Gunasekaran S/o. Muthusamy DNo.3/37Karaipalayam, Thirukadudhurai, Pugalur Taluk, Karur D.t.	Rough Stone & Gravel	Pugalur Taluk Kuppam Village	710/3 712/2	1.92.5	08.10.2024 to 07.10.2029

II. Proposed Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	Tmt.S.Lakshmi, W/o.Rajeshkumar, Door No.267/12, Sindhu Nagar, Opp. Kongu Mess, Andankovil East, Manmangalam Taluk, Karur District.	Rough Stone & Gravel	Pugalur Taluk, Kuppam Village	675/1 675/2	2.05.50	Proposed Area

III. Lease Expired Quarries : -

	Name of the lessee/firm it holder	Name of the Minera	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1.	Thiru.S.K.Krishnamurthy, 1/22, Kavadikaranur, Thangayur village, Edapati Taluk, Karur District.	Rough Stone	Pugalur Taluk, Kuppam Village	679, 680/1(Par)	1.95.5	04.7.2018 to 03.7.2023
2.	T.Manoharan, S/o.Moorthi, Salipalayam, Kuppam Post, Aravakurich Taluk, Karur District.	Rough Stone	Pugalur Taluk, Kuppam Village	665/1 665/2	2.66	21.2.2018 to 20.2.2023
3.	Thiru.S.Rajeshkumar S/o.Subramaniam, 267/2, Sindhu Nagar, AndankovilKeelpagam, Karur District	Rough Stone	Pugalur Taluk, Kuppam Village	666/2, 668/2, 669/2	2.155	07.2.2018 to 06.2.2023

V. Abandoned Quarries : -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1.	Nil					

[Signature]
07/7/25
Deputy Director,
Geology and Mining,
Karur.

[Signature]
7/7/25

From
Dr.P.Jayapal M.Sc., Ph.D.,
Deputy Director,
Geology and Mining,
Karur.

To
Tmt.S.Lakshmi,
W/o.Rajeshkumar,
Door No.267/12, Sindhu Nagar,
Opp. Kongu Mess,
Andankovil East,
Manmangalam Taluk,
Karur District.

Rc.No.141/Mines/2024, Dated:30.06.2025

Sir,

Sub: Mines and Minerals – Minor Mineral – Karur District –
Pugalur Taluk - Kuppam Village - Patta lands in
S.F.Nos.675/1 (1.12.00 hectares) and 675/2 (0.93.50
hectares) Over an extent of 2.05.50 hectares - Quarry
lease application preferred by Tmt.S.Lakshmi for
quarrying Rough Stone and Gravel – Precise area
communicated - mining plan submitted for approval –
Mining Plan Approved – Regarding.

- Ref: 1. Quarry lease application for quarrying Rough stone
and Gravel preferred by Tmt.S.Lakshmi,
W/o.Rajeshkumar, Door No.267/12, Sindhu
Nagar, Opp. Kongu Mess, Andankovil East,
Manmangalam Taluk, Karur District dated:
08.04.2024.
2. Order of the Hon'ble Supreme Court of India in
I.A.Nos.12-13/2011 in SLP (C) No.19628-
19629/2009, dt: 27.02.2012.
3. Government of India, Ministry of Environment and
Forest Office Memorandum, Dated:18.05.2012.
4. The Chairman, State Level Environment Impact
Assessment Authority, Tamil Nadu
D.O.Lr.No.SEIAA-TN/Minor Minerals/2012, Dated:
17.09.2012.
5. The Commissioner of Geology and Mining, Chennai
letter Rc.No.3868/LC/2012, dt: 19.11.2012.

6. The Revenue Divisional Officer, Karur, Land availability Report vide Rc.No.A1/2497/2025, dt: 08.10.2024.
7. Deputy Director, Geology and Mining, Karur Notice Rc.No.141/Mines/2024, Dated:29.05.2025
8. Mining Plan submitted by Tmt.S.Lakshmi, letter Dated: 11.06.2025

In the reference 1st cited Tmt.S.Lakshmi, W/o.Rajeshkumar, Door No.267/12, Sindhu Nagar, Opp. Kongu Mess, Andankovil East, Manmangalam Taluk, Karur District has preferred an quarry lease application for quarrying Rough Stone and Gravel over an extent of 2.05.50 hectares of patta land in S.F.Nos.675/1 (1.12.00 hectares), and 675/2 (0.93.50 hectares) of Kuppam Village, Pugalur Taluk, Karur District for a period of 10 years under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rule 1959.

The Precise area has been communicated by the Deputy Director, Geology and Mining, Karur to the applicant for the period of Ten years based on the recommendation of the Revenue Divisional Officer, Karur and Assistant Geologist, Geology and Mining, Karur in the reference 7th cited. In perusal to that the draft mining plan submitted by the applicant as per the Rule 41 in the reference 8th cited and also instructed to the applicant to submit the Environmental Clearance as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules.

The above submitted mining plan for the grant of Rough stone and Gravel quarry lease patta land in S.F.Nos.675/1 (1.12.00 hectares), and 675/2 (0.93.50 hectares) Over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District has been examined in detail.

Scrutiny remarks on the draft Mining Plan are furnished below.

- a. The Rough Stone & Gravel quarry has been planned to be operated for a period of 10 years.
- b. The Geological reserve in the subject area is assessed as 922590m³/2537123 Tons of Rough Stone and 102510 m³/205020 Tons of Gravel upto a depth of 50m below ground level only.

- c. The Mineable reserve is estimated as 238260 m³/655215 Tons of Rough Stone and 70890 m³/141780 Tons of Gravel upto a depth of 50 m below ground level only.
- d. The total quantity proposed to quarry 120330 m³/330908 Tons of Rough Stone for 5 years and 70890 m³/141780 Tons of Gravel for first 3 years upto a depth of 40 m below ground level.
- e. Machineries like tractor mounted compressor attached with jack hammers, Hydraulic excavators with attachment are proposed for quarrying operation.
- f. Water table level in the area applied is between 65 m to 70 m during the year.
- g. As per the Rule 111 of Metalliferrous Mining Regulations 1961, the boundary barrier zone of 7.5 meters is ear-marked as neutral zone.
- h. The draft Mining plan is submitted within the prescribed time limit of 90 days from the date of receipt of the precise area communication and stipulations made in the rule 36 of the TNMMCR, 1959 are adhered.
- i. The plates including Topo sketch of quarry lease applied area for 10Km Radius (1:1,00,000), Quarry lease plan (1:1,000), Surface and Geological plan (1:1,000), Conceptual plan and sections (1:1000), Topography, Geological & Year wise development & Production plan & Sections (1:1000) and Environmental plan (1:5,000) were verified with reference to the field evidences.

As per the guidelines/ instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, date: 19.11.2012. the mining plan submitted by the applicant is hereby approved, subject to the following conditions:

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

- (II) This approval of the mining plan does not in any way imply the approval of the Government in terms or 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, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (III) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (IV) The approval is valid up to five years from the date of execution of lease deed and the applicant should submit scheme of mining at lease 180 days before the expiry of the mining plan period.
- (V) As per the Deputy Director, Geology and Mining, Karur notice in Rc.No.141/Mines/2024, Dated.29.05.2025 the following conditions are incorporated in the Mining Plan plates.
1. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
 2. விண்ணப்ப புலத்திற்கு வடகிழக்கு திசையில் அமைந்துள்ள மின்கோபுரம் மற்றும் வடக்கு திசையில் கிழமேலாக செல்லும் தாழ்வழுத்த மின்பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
 3. விண்ணப்ப புலத்தில் நடுவே அமைந்துள்ள தாழ்வழுத்த மின்பாதைகளை குத்தகை உரிமம் நிறைவேற்றுவதற்கு முன்பு விண்ணப்பதாரர் அப்புறப்படுத்திக் கொள்ள வேண்டும்.
 4. குத்தகைக்கரலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ சேதம் ஏற்படாத வண்ணம் குவாரிப்பணி செய்ய வேண்டும்.
 5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.

6. குவாரி குத்தகை வழங்க ஏதுவாக துணை இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினையும், மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) அனுமதி பெற்று மாவட்ட நிர்வாகத்திற்கு விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.

- (VI) Quarrying shall be done as per the approved Mining Plan and 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.
- (VII) If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

Encl: Two copies of Approved Mining Plan.


30/6/25
Deputy Director,
Geology and Mining,
Karur.


30/6/25

MINING PLAN

FOR

KUPPAM VILLAGE ROUGH STONE AND GRAVEL MINING LEASE WITH
PROGRESSIVE QUARRY CLOSURE PLAN

Patta land /Open Cast-Semi-Mechanized mining/Non- Forest/Non-Captive Use

Lease period 10 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
DISTRICT : KARUR
TALUK : PUGALUR
VILLAGE : KUPPAM
S.F. No : 675/1 & 675/2
EXTENT : 2.05.50Hectares

ADDRESS OF THE APPLICANT

Mrs.S.LAKSHMI,
W/o.Rajeshkumar,
Door No.267/12, Sindu Nagar,
Kongu Mess Opposite, Andankovil East,
Manmangalam Taluk,
Karur District - 639 002.

(this Mining Plan is approved subject
to the conditions/stipulations
indicated in the Mining Plan approval
Letter No: 141/mines/2024
Dated: 30.06.2025)

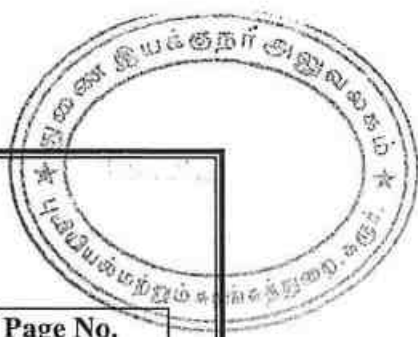
PREPARED BY

P.VELLAIYAN, M.Sc., M.Phil.,

Qualified Person

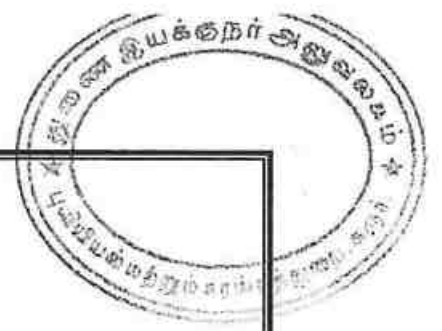
D.No.6-106-B, Athirampatti Village,
Amaragundhi Panchayat & Post,
Omalur Taluk,
Salem District-636 503.

Mob: +91 7010076626, 9751256465



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ANNEXURES

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1.	Copy of Precise Area Communication letter	I
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8.	Copy of Qualified Person Certificate	VIII

LIST OF PLATES

Sl. No.	Description	Plate No.	Scale
1	Key Map	I	Not to scale
2	Location Plan	I-A	Not to scale
3	Toposheet Map	I-B	1:1,00,000
4	Satellite Imagery Map	I-C	1: 5,000
5	Environmental Plan	I-D	1: 5,000
6	Mine Lease Plan	II	1:1000
7	Surface, Geological Plan & Sections	III	Plan 1:1000
8	Geological Sections	IIIA	Sections Hor 1:1000 Ver 1:500
9	Conceptual Plan & Sections	IV	Plan 1:1000
10	Conceptual Sections	IVA	Sections Hor 1:1000 Ver 1:500
11	Mine Layout Plan and Land Use Pattern	V	Plan 1:1000
12	Year wise Development & Production Plan	VI	Plan 1:1000
13	First Five Year wise Development & Production Sections	VIA	Sections Hor 1:1000 Ver 1:500
14	Year wise Development & Production Plan	VIB	Plan 1:1000
15	Second Five Year wise Development & Production Sections	VIC	Sections Hor 1:1000 Ver 1:500

S.Lakshmi,
W/o.Rajeshkumar,
Door No.267/12, Sindu Nagar,
Kongu Mess Opposite, Andankovil East,
Manmangalam Taluk,
Karur District - 639 002.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of rough stone and gravel quarry lease in patta land at S.F.No: 675/1 & 675/2 , over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State has been prepared by

P.VELLAIYAN, M.Sc., M.Phil., (Qualified Person)

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

P.VELLAIYAN, M.Sc., M.Phil.,
Qualified Person
D.No.6-106-B, Athirampatti Village,
Amaragundhi Panchayat & Post,
Omalur Taluk,
Salem District-636 503.
Mob: +91 7010076626, 9751256465

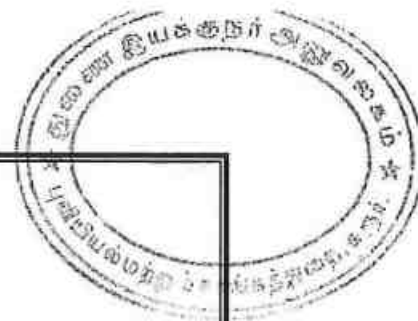
I hereby undertake that all modifications so made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Place: Karur, TN.

Date: 11.06.25


Signature of the applicant
(S.Lakshmi)

S.Lakshmi,
W/o.Rajeshkumar,
Door No.267/12, Sindu Nagar,
Kongu Mess Opposite, Andankovil East,
Manmangalam Taluk,
Karur District - 639 002.



DECLARATION

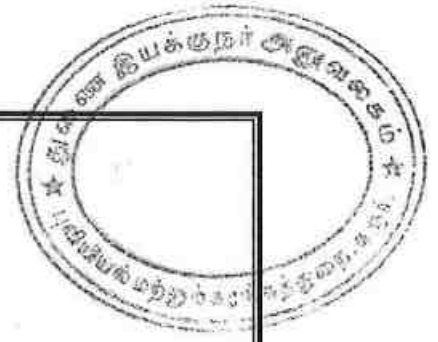
The Mining Plan in respect of rough stone quarry lease in Patta land at S.F.No: 675/1 & 675/2 , over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Karur, TN.

Date: 11.06.25

Signature of the applicant
(S.Lakshmi)

P.VELLAIYAN, M.Sc., M.Phil.,
Qualified Person
D.No.6-106-B, Athirampatti Village,
Amaragundhi Panchayat & Post,
Omalur Taluk,
Salem District-636 503.
Mob: +91 7010076626, 9751256465



CERTIFICATE

This is to certify that, the provisions of 19(1), 20 & 33 Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Mining Plan for the grant of rough stone and gravel quarry lease in S.F.No: 675/1 & 675/2 , over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State granted to **Mrs.S.Lakshmi**, Karur District.

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

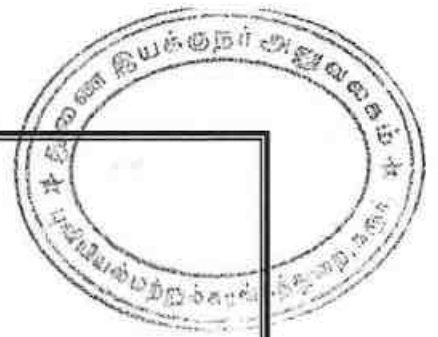
Place: Salem, TN

Date: 2/6/25

Signature of the Qualified Person

P.VELLAIYAN, M.Sc., M.Phil.,
Qualified Person
D.No. 6-106-B, Athirampatti (Vill),
Amaragundhi Panchayat & Post,
Omalur Taluk, Salem District - 636503.

P.VELLAIYAN, M.Sc., M.Phil.,
Qualified Person
D.No.6-106-B, Athirampatti Village,
Amaragundhi Panchayat & Post,
Omalur Taluk,
Salem District-636 503.
Mob: +91 7010076626, 9751256465



CERTIFICATE

I certify that, in preparation of Mining Plan for rough stone and gravel quarry lease in S.F.No: 675/1 & 675/2 over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State prepared to **Mrs.S.Lakshmi**, Karur District, covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Salem, TN

Date:

Signature of the Qualified Person

P.VELLAIYAN, M.Sc., M.Phil.,
Qualified Person
D.No. 6-106-B, Athirampatti (Vill),
Amaragundhi Panchayat & Post,
Omalur Taluk, Salem District - 636503.

MINING PLAN

FOR KUPPAM VILLAGE ROUGH STONE AND GRAVEL MINING LEASE WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta land / Open cast-Semi-Mechanized Mining / Non-forest / Non-Captive Use

Lease period 10 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

INTRODUCTORY NOTES:

- a) **Introduction:** The Mining plan with progressive quarry closure plan is prepared for Mrs.S.Lakshmi, W/o.Rajeshkumar, Door No.267/12, Sindu Nagar, Kongu Mess Opposite, Andankovil East, Manmangalam Taluk, Karur District, Tamilnadu State and filed with application for new proposals has submitted to the Deputy Director, Department of Geology and Mining (DDG & M), Karur dated 08.04.2024 had requested to grant the quarry lease for rough stone and gravel in S.F.No. 675/1 & 675/2, over an extent of 2.05.50 hectares of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State.
- b) **The Precise area communication letter:** The Deputy Director, Department of Geology and mining, Karur has directed to the applicant Mrs.S.Lakshmi, through his precise area communication letter vide **Roc.No.141/Mines/2024 Dated 29.05.2025**, for quarrying lease rough stone and gravel at Tamil Nadu State, Karur District, Pugalur Taluk, Kuppam Village in S.F.No: 675/1 & 675/2 over an extent of 2.05.50 hectares has recommended as following conditions for a period of Ten (10) years under Rule 19(1), 20 & 33 Tamil Nadu Minor Mineral concession rules, 1959.
- Excavation should be carried out properly without any damage leaving a safety distance of 7.5 meters and 10 meter to the nearby patta land and government lands.
 - Quarrying should be carried out properly without causing any damage, leaving a safety distance of 50 meters from the Transformer located to the northeast of the applied lease area and the LT EB line Passing to north Side.
 - The applicant must remove the LT EB Line located in the middle of the Applied Lease Area before executing the lease Deed.
 - During the lease period, quarrying work must be carried out in a manner that does not cause damage to the public or public property, using a hand-held drill and moderate explosives.

THIS MINING PLAN IS APPROVED SUBJECT
TO THE CONDITIONS OF THE CONCESSIONS
AND THE MINING PLAN APPROVAL

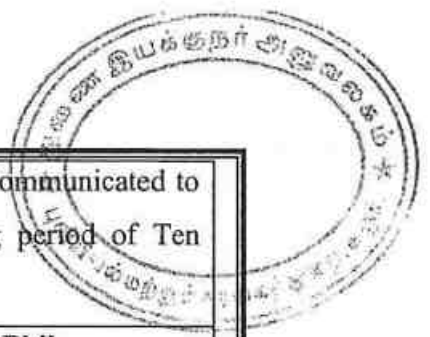
Letter No: 141/Mines/2024
Dated: 30.06.2025

- v. To ensure the safety of quarry workers, Mettalliferous Mines must set up wide and safe benches in accordance with the rules to allow vehicles to enter and exit the quarry safely and to carry out quarry work while ensuring the safety of quarry workers.
- vi. The applicant must submit the mining plan approved by the Deputy Director (Mining) to the District Administration for granting quarry lease, after obtaining the approval of the State Environmental Impact Assessment Authority (SEIAA).
- c) **Preparation and Submission of Mining Plan:** The Mining Plan with progressive quarry closure plan has been prepared under rule 41 and submitted under rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for mining lease as per conditions mentioned in the precise area communication letter **Roc.No.141/Mines/2024 Dated 29.05.2025.**
- d) **Geological resources and Mineable reserves:** Geological resource of estimated as **1025100m³ / 2742143Ts** including the resources of safety zone, gravel etc. Of which, rough stone resources of about **922590m³ / 2537123Ts** and gravel is **102510m³ / 205020Ts**. The total mineable reserve is estimated to be **309150m³ / 796995Ts** by deducting the reserve safety zone, block in benches from the total Geological resources. of which, rough stone is about **238260m³ / 655215Ts** and gravel is **70890m³ / 141780Ts** up to a depth of 50m below ground level (Refer Plate No. III & IV).
- e) **Proposed Production Schedule:** Total proposed production of rough stone is **120330m³ / 330908Ts** and gravel is **70890m³ / 141780Ts** up to a depth of 40m below ground level for first five years plan period (Refer Plate No.VIA) and remaining quantity of **117930m³/ 324307MT** will be proposed for the period of second five years up to a depth of 50m below ground level. (Refer Plate No. VIC).
- f) **Environmental Sensitivity of the proposed lease area: -**
- i). **Interstate boundary:** There is no interstate boundary around 10Km radius periphery of proposed lease area.
- ii). **Wildlife Sanctuaries any:** There are no notified wildlife sanctuaries within the radius of 10km from the project site under the wildlife (Protection) Act, 1972.
- iii). **Forest (conservation) Act, 1980:** No forest land granted for quarrying and there is no reserve forest around 60m radius.
- iv). **CRZ Notification, 2019:** There is no Sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 2019.
- h) **Environmental measures to be adopted during the ongoing activity period,**
- a. Usage of sharp drill bits while drilling which will help in reducing noise.

- b. Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders.
- c. Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained.
- d. Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise.
- e. Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.
- f. Transportation of material will be carried out during day time and material will be covered with tarpaulin.
- g. The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- h. And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

1.0 GENERAL:

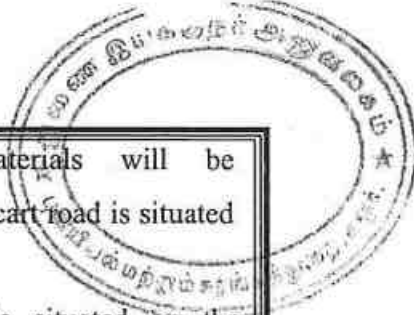
a.	Name of the Applicant	:	Mrs. S.Lakshmi,
	Applicant address	:	W/o.Rajeshkumar, Door No.267/12, Sindu Nagar, Kongu Mess Opposite, Andankovil East, Manmangalam Taluk,
	District	:	Karur
	State	:	Tamilnadu
	Pin code	:	639 002
	Phone	:	+91 9994952079
	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
	E-mail	:	.....
b.	Status of the Applicant		
	Private individual	:	Private individual
	Cooperative Association	:	---
	Private company	:	---
	Public Company	:	--
	Public Sector Undertaking	:	---
	Joint Sector Undertaking	:	---
	Other (pl. specify)	:	---
c.	Mineral(s) Which are occurring in the area and which the applicant intends to mine	:	Rough Stone and Gravel Quarry Lease



d.	Period for which the mining lease granted /renewed/ proposed to be applied	:	The precise area has been communicated to the applicant for quarrying period of Ten (10) years.
e.	Name of the QP preparing the Mining Plan	:	P.VELLAIYAN, M.Sc., M.Phil., Qualified Person
	Address	:	D.No.6-106-B, Athirampatti Village, Amaragundhi Panchayat & Post, Omalur Taluk, Salem District-636 503.
	Phone	:	+91 7010076626, 9751256465
	Fax	:	Nil
	e-mail	:	pvellaiyangp@gmail.com
	Telex	:	Nil
f.	Reference No. and date of consent letter from the state government	:	The precise area communication letter issued by the Deputy Director, Department Geology and Mining, Karur vide Roc.No.141/ Mines/2024 Dated 29.05.2025.

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:			:	Refer plate no: IA & IB		
	District & State			:	Karur, Tamil Nadu		
	Taluk			:	Pugalur		
	Village			:	Kuppam		
Khasra No./ Plot No./ Block Range/ Felling Series etc.:							
Survey No		Sub Division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F.No.	Mine lease Applied area out of total area in hect.
675		1	1.12.00	4609	S.Lakshmi W/o.Rajeshkumar	675/1	1.12.00
675		2	0.93.50	4609	S.Lakshmi W/o.Rajeshkumar	675/2	0.93.50
Total Extent			2.05.50	Applied lease area extent			2.05.50
Lease area (hectares)				:	2.05.50 Hectares		
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)				:	The proposed lease area is recorded as patta land. (Ref.Anne.No's:V)		
Ownership / Occupancy				:	This is a patta land S.F.No. 675/1 & 675/2 is registered on the name of Mrs.S.Lakshmi W/o.Rajeshkumar as patta no.4609.		



Existence of Public Road / Railway line if any nearby and approximate distance	:	✓ Exploited quarry materials will be transported through the cart road is situated on the Northern side. ✓ There is an NH-81 is situated on the southern side about 2.5km which is connecting K.Paramathy-Karur Road. ✓ There is no railway line is situated around 5km radius from the lease area.																											
Toposheet No. with latitude and longitude	:	Toposheet No. 58 F/13 Latitude: From 10° 58' 56.9967"N to 10° 59' 3.7896"N Longitude: From 77° 56' 17.2793"E to 77° 56' 21.3158"E																											
Geo-Coordinates of the lease boundary:																													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">DGPS - BOUNDARY CO-ORDINATES</th> </tr> <tr> <th style="width: 25%;">PILLAR NO</th><th style="width: 35%;">LATITUDE</th><th style="width: 40%;">LONGITUDE</th></tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td>10° 59' 3.7896" N</td><td>77° 56' 21.2567" E</td></tr> <tr><td style="text-align: center;">2</td><td>10° 58' 56.9967" N</td><td>77° 56' 21.3158" E</td></tr> <tr><td style="text-align: center;">3</td><td>10° 58' 57.3737" N</td><td>77° 56' 17.2793" E</td></tr> <tr><td style="text-align: center;">4</td><td>10° 58' 57.9840" N</td><td>77° 56' 17.4869" E</td></tr> <tr><td style="text-align: center;">5</td><td>10° 59' 0.6048" N</td><td>77° 56' 17.5013" E</td></tr> <tr><td style="text-align: center;">6</td><td>10° 59' 2.4474" N</td><td>77° 56' 18.1091" E</td></tr> <tr><td style="text-align: center;">7</td><td>10° 59' 2.9239" N</td><td>77° 56' 18.4966" E</td></tr> </tbody> </table>			DGPS - BOUNDARY CO-ORDINATES			PILLAR NO	LATITUDE	LONGITUDE	1	10° 59' 3.7896" N	77° 56' 21.2567" E	2	10° 58' 56.9967" N	77° 56' 21.3158" E	3	10° 58' 57.3737" N	77° 56' 17.2793" E	4	10° 58' 57.9840" N	77° 56' 17.4869" E	5	10° 59' 0.6048" N	77° 56' 17.5013" E	6	10° 59' 2.4474" N	77° 56' 18.1091" E	7	10° 59' 2.9239" N	77° 56' 18.4966" E
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Land use pattern (Forest, Agricultural, Grazing, Barren etc.)	:	It is an barren and Ryotwari land.																											
b. <i>Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.</i>	:	Refer plate no-IA & IB																											

i) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance	Direction
a.	Nearest post office	Karudayampalayam	2.4Km	Southeast
b.	Nearest police station	K.Paramathi	4.1km	Southwest
c.	Nearest fire station	Karur	14.8km	East
d.	Nearest medical facility	K.Paramathi	4.8km	Southwest
e.	Nearest school	Salipalayam	1.1km	North
f.	Nearest railway station	Noyal	8.3km	North
g.	Nearest port facility	Karaikal	209km	East
h.	Nearest airport	Coimbatore	98km	West
i.	Nearest DSP office	Karur	12.9km	East
j.	Nearest villages	Kuppam	0.6km	North
		Punnam	5.5km	East
		Karudayampalayam	2.0km	South
		Munnur	3.0Km	West

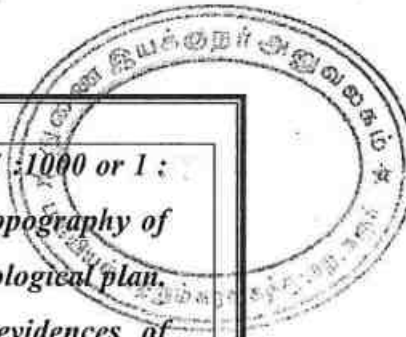
PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

(a) Briefly describe the topography and general geology and local/mine geology of the mineral deposit including drainage pattern:

(i)	Topography	:	The proposed lease area is flat topography. The maximum elevation (198m) was observed north of the site. The slope is towards northern side and falls in Toposheet no. 58 F/13
(ii)	General Geology of the District: The Karur district forms part of the Archean complex of peninsular gneiss. The general rock types of this area are Biotite gneiss. Karur District is blessed with good reserves of crystalline limestone known as "Palayam belt" in Varavanai, Thennilai, Gudalur etc., villages in Kulithalai Taluk and the occurrences of good quality of pegmatite veins constituting with glassy quartz and potash feldspar in lensoid patches in Nagampalli and Pungambadi areas in Aravakurichi Taluk. The major mineral such as limestone, quartz and feldspar are exploited in Karur district and utilized in the mineral-based industries. The Granite gneiss rocks are found to occur in K.Paramathi, Athur, Thennilai, Punnam, Godanthur South, Munnur, Punnam, Anjur villages in Karur and Aravakurichi Taluk are exploited to produce building materials and road metal (Jelly) and over burden soil appear as gray to reddish in colour called as gravel. The commercially known "Coloumbo Zubrana" the unique type in the Multi coloured granite / Granite gneiss category is occurring in Thogamalai, Naganur and Kazhugur Villages in Kulithalai Taluk. These rock type belong to minor mineral category. The arrangement of alternate layers of felsic and mafic minerals in linear pattern and exhibits wavy pattern in the rock and giving very good structure for the rock type. The well-developed gneissic pattern with linear arrangement, the rock type have attracted the granite market and found to be suitable for the exploitation of granite blocks. But in this area the banded gneissic rock has many fractures and foliation in it. So, this is not viable for dimensional stone. Order of superposition of the proposed lease area,		

	<table><tr><th>Age</th><th>Group</th><th>Rock Formation</th></tr><tr><td>Recent to Sub recent</td><td>----</td><td>Top Soil (1-2m Thick)</td></tr><tr><td>Proterozoic</td><td>Acid Intrusive</td><td>Pink medium grained granite/ Granite gneiss.</td></tr><tr><td>Archean</td><td>Charnockite Group</td><td>Pyroxene Granulite, Charnockite (acid to intermediate)/ Crystalline limestone / Quartzite</td></tr></table>	Age	Group	Rock Formation	Recent to Sub recent	----	Top Soil (1-2m Thick)	Proterozoic	Acid Intrusive	Pink medium grained granite/ Granite gneiss.	Archean	Charnockite Group	Pyroxene Granulite, Charnockite (acid to intermediate)/ Crystalline limestone / Quartzite
Age	Group	Rock Formation											
Recent to Sub recent	----	Top Soil (1-2m Thick)											
Proterozoic	Acid Intrusive	Pink medium grained granite/ Granite gneiss.											
Archean	Charnockite Group	Pyroxene Granulite, Charnockite (acid to intermediate)/ Crystalline limestone / Quartzite											
(iii)	Local / Mine Geology of The Mineral Deposit: Topography of the proposed lease area: The applied lease area exhibits an flat topography and the maximum elevation 198m was observed southern of the site. The rocks exhibits layered, medium to coarse grained hornblende biotite, orthopyroxene charnockite gneiss. The Gravel is obtained the average of 0-5.0m and a rough stone starts from 5.0m to 50m (R.L.198-148m) from the surface level. The Surface plan showing elevation, contour, accessibility road and Geological map was prepared the proposed lease area. Mode of origin: The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown, however, that many, if not all, of the rocks are metamorphic, formed by recrystallization at high pressures and moderately high temperatures. Physiography of the rocks: General characteristics of the rocks of this series has recorded that the rocks are in general bluish gray or darkish in colour and extremely fresh in appearance with an even grained granular structure. Chemical composition of rocks: The compositional characteristics of coexisting orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulite's and gneisses. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks. Order of superposition of the proposed lease area, <table><tr><th>Age</th><th>Group</th><th>Rock Formation</th></tr><tr><td>Recent to Sub recent</td><td>----</td><td>Gravel</td></tr><tr><td>Archaean</td><td>Charnockite Group</td><td>Charnockites.</td></tr></table>			Age	Group	Rock Formation	Recent to Sub recent	----	Gravel	Archaean	Charnockite Group	Charnockites.	
Age	Group	Rock Formation											
Recent to Sub recent	----	Gravel											
Archaean	Charnockite Group	Charnockites.											
(iv)	Drainage Pattern	:	There is no major river found within 50m radius. The drainage in the area is sub-dendritic in nature.										



(b)	<i>The topographic plan of the lease area prepared on a scale of 1:1000 or 1:2000 with contour interval of 3 to 10m depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan:</i>		
	a. Present status:	:	The QP examined the surface features during survey. It is a fresh quarry lease.
	b. Surface Plan	:	Surface plan showing elevation contour and accessibility road was prepared at the scale of 1:1000, as shown in Plate No. III.
(c)	Geological sections should be prepared at suitable intervals on a scale of 1:1000 / 1:2000:	:	Longitudinal and transverse geological cross sections were prepared at the horizontal scale of 1:1000 and at the vertical scale of 1:500, as shown in Plate No. IIIA
(d)	<i>Broadly indicate the Yearwise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below:-</i> No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.		

(e) Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated for the entire leasehold.

The geological resources were computed by cross section method with respect to the boundaries of the lease area. In this method, the lease area was divided into one longitudinal and two transverse section to calculate the volume of material up to the depth of 50m below ground level for ten years plan period. (Refer Plate No. III & IIIA). The one longitudinal and two transverse cross section were assigned XY-AB & XY-CD as respectively. Using the cross-sectional method, total reserve is estimated to be **1025100m³ / 2742143Ts** including the resources of safety zone, and gravel, etc. Of which, rough stone resources of about **922590m³ / 2537123Ts** and gravel is **102510m³ / 205020Ts**.

GEOLOGICAL RESOURCES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
XY-AB	I	146	117	5	85410 ✓	.....	85410	2	.....	170820 ✓
	II	146	117	5	85410 ✓	85410	.....	2.75	234877.50 ✓	.....
	III	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	IV	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	V	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	VI	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	VII	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	VIII	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	IX	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
	X	146	117	5	85410 ✓	85410	.....	2.75	234877.50	.....
TOTAL					854100 ✓	768690 ✓	85410	.....	2113898 ✓	170820 ✓
XY-CD	I	38	90	5	17100	.....	17100 ✓	2	.....	34200 ✓
	II	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	III	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	IV	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	V	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	VI	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	VII	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	VIII	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	IX	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
	X	38	90	5	17100	17100	.....	2.75	47025 ✓	.....
TOTAL					171000 ✓	153900 ✓	17100 ✓	.....	423225 ✓	34200 ✓
GRAND TOTAL					1025100 ✓	922590 ✓	102510 ✓	.....	2537123 ✓	205020 ✓

(f) Indicate mineable reserves by slice plan / level plan method, as applicable, as per the proposed mining parameters: -

The total mineable reserve is estimated to be **309150m³ / 796995Ts** by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth of 50m below ground level. Of which, rough stone is about **238260m³/655215Ts** and gravel is **70890m³/141780Ts**. The commercially viable rough stone has been prepared on 1: 1000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's. IV & IVA).

MINEABLE RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
XY-AB	I	139	102	5	70890	.....	70890	2	.....	141780
	II	129	92	5	59340	59340	.....	2.75	163185	.....
	III	119	82	5	48790	48790	.....	2.75	134173	.....
	IV	109	72	5	39240	39240	.....	2.75	107910	.....
	V	99	62	5	30690	30690	.....	2.75	84398	.....
	VI	89	52	5	23140	23140	.....	2.75	63635	.....
	VII	79	42	5	16590	16590	.....	2.75	45622	.....
	VIII	69	32	5	11040	11040	.....	2.75	30360	.....
	IX	59	22	5	6490	6490	.....	2.75	17847	.....
	X	49	12	5	2940	2940	.....	2.75	8085	.....
TOTAL					309150	238260	70890	.....	655215	141780

4.0 MINING:

a)	Briefly describe the existing / proposed method for developing / working the deposit with all design parameters. (Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)	:	The mining operation is open-cast, semi-mechanized method are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cast workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 6m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

- b) *Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.*

Total proposed production for first five yeras period of rough stone is about 120330m³ / 330908MT and gravel is 70890m³ / 141780MT up to a depth of 40m below ground level (Refer Plate No's. VIA) and remaining quantity of 117930m³/ 324307MT will be proposed for the period of second five years upto a depth of 50m below ground level.(Refer Plate No's. VIC).

Year	Pit No.(s)	Topsoil/ Overburden (m ³)	ROM (m ³)	Saleable rough stone (m ³) @ 100%	Saleable rough stone (Ts) @ 100%	Saleable Gravel (m ³)	Saleable Gravel (Ts)
I	I	...	47960	23990	65973	23970	47940
II	I	...	49750	26290	72297	23460	46920
III	I	...	47170	23710	65203	23460	46920
IV	I	...	23350	23350	64213	...	...
V	I	...	22990	22990	63222	...	...
Total		...	191220	120330	330908	70890	141780
VI	I	...	23000	23000	63250	...	...
VII	I	...	20500	20500	56375	...	...
VIII	I	...	18000	18000	49500	...	...
IX	I	...	28500	28500	78375	...	...
X	I	...	27930	27930	76807	...	...
Total	---	...	117930	117930	324307	...	...

- c) *Composite plans and Year wise sections (In case of 'A' class mines):*
- :
- Not applicable. It is a "B" class quarry lease

FIRST FIVE YEARS - PRODUCTION RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
I-YEAR	XY-AB	I	47	102	5	23970	.....	23970	2	.....	47940
		II	37	92	5	17020	17020	.....	2.75	46805	.....
		III	17	82	5	6970	6970	.....	2.75	19168	.....
TOTAL						47960	23990	23970	.....	65973	47940
II-YEAR	XY-AB	I	46	102	5	23460	.....	23460	2	.....	46920
		II	42	92	5	19320	19320	.....	2.75	53130	.....
		III	17	82	5	6970	6970	.....	2.75	19167	.....
TOTAL						49750	26290	23460	.....	72297	46920
III-YEAR	XY-AB	I	46	102	5	23460	.....	23460	2	.....	46920
		III	35	82	5	14350	14350	.....	2.75	39463	.....
		IV	26	72	5	9360	9360	.....	2.75	25740	.....
TOTAL						47170	23710	23460	.....	65203	46920
IV-YEAR	XY-AB	IV	33	72	5	11880	11880	.....	2.75	32670	.....
		V	37	62	5	11470	11470	.....	2.75	31543	.....
TOTAL						23350	23350	0	.....	64213	0
V-YEAR	XY-AB	V	12	62	5	3720	3720	.....	2.75	10230	.....
		VI	39	52	5	10140	10140	.....	2.75	27885	.....
		VII	29	42	5	6090	6090	.....	2.75	16747	.....
		VIII	19	32	5	3040	3040	.....	2.75	8360	.....
TOTAL						22990	22990	0	.....	63222	0
GRAND TOTAL						191220	120330	70890	.....	330908	141780

SECOND FIVE YEAR - PRODUCTION RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
VI-YEAR	XY-AB	II	50	92	5	23000	23000	.....	2.75	63250	.....
TOTAL						23000	23000	0	.....	63250	0
VII-YEAR	XY-AB	III	50	82	5	20500	20500	.....	2.75	56375	.....
TOTAL						20500	20500	0	.....	56375	0
VIII-YEAR	XY-AB	IV	50	72	5	18000	18000	.....	2.75	49500	.....
TOTAL						18000	18000	0	.....	49500	0
IX-YEAR	XY-AB	V	50	62	5	15500	15500	.....	2.75	42625	.....
		VI	50	52	5	13000	13000	.....	2.75	35750	.....
TOTAL						28500	28500	0	.....	78375	0
X-YEAR	XY-AB	VII	50	42	5	10500	10500	.....	2.75	28875	.....
		VIII	50	32	5	8000	8000	.....	2.75	22000	.....
		IX	59	22	5	6490	6490	.....	2.75	17847	.....
		X	49	12	5	2940	2940	.....	2.75	8085	.....
TOTAL						27930	27930	0	.....	76807	0
GRAND TOTAL						117930	117930	0	.....	324307	0

d)	Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc.	: Composite plan not prepared in this proposed lease area																																																													
e)	Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected: At this rate of production, the expected life of quarry is calculated as given below: <u>Rough stone:</u> Production reserves of rough stone (First Five Years)= 120330m³ or 330908Ts Production reserves of rough stone (Second Five Years) = 117930m³ or 324307Ts <u>Gravel:</u> Mineable reserves of gravel = 70890m³ or 141780Ts																																																														
f)	Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:																																																														
i)	Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:	: Considering the indefinite depth persistence of the rough stone deposit is proved beyond the workable limits about up to a depth of 50m below ground level (R.L.198m to 148m) from the petrogenetic character of the charnockite rock as well as from the actual mining practice in the area and with the current trend of rough stone production the quarry may sustain for 10 years.																																																													
ii)	Whether ultimate pit limit has been determined and demarcated on surface and geological plan :- The ultimate pit limit has been determined and demarcated in the conceptual plan <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="6">SECTION XY-AB</th> </tr> <tr> <th>Bench</th> <th>Period</th> <th>Overburden/ Mineral</th> <th>L (m)</th> <th>W (m)</th> <th>D (m)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td rowspan="10">Ten years Period</td> <td>Gravel</td> <td>139</td> <td>102</td> <td>5</td> </tr> <tr> <td>II</td> <td rowspan="9">Rough stone</td> <td>129</td> <td>92</td> <td>5</td> </tr> <tr> <td>III</td> <td>119</td> <td>82</td> <td>5</td> </tr> <tr> <td>IV</td> <td>109</td> <td>72</td> <td>5</td> </tr> <tr> <td>V</td> <td>99</td> <td>62</td> <td>5</td> </tr> <tr> <td>VI</td> <td>89</td> <td>52</td> <td>5</td> </tr> <tr> <td>VII</td> <td>79</td> <td>42</td> <td>5</td> </tr> <tr> <td>VIII</td> <td>69</td> <td>32</td> <td>5</td> </tr> <tr> <td>IX</td> <td>59</td> <td>22</td> <td>5</td> </tr> <tr> <td>X</td> <td>49</td> <td>12</td> <td>5</td> </tr> <tr> <td colspan="5">Total Depth</td> <td>50</td> </tr> </tbody> </table>		SECTION XY-AB						Bench	Period	Overburden/ Mineral	L (m)	W (m)	D (m)	I	Ten years Period	Gravel	139	102	5	II	Rough stone	129	92	5	III	119	82	5	IV	109	72	5	V	99	62	5	VI	89	52	5	VII	79	42	5	VIII	69	32	5	IX	59	22	5	X	49	12	5	Total Depth					50
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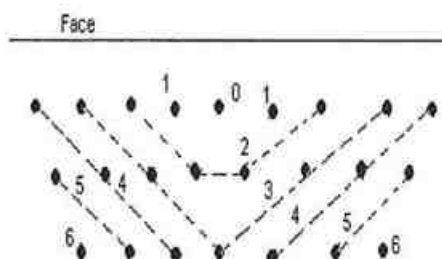
iii)	Whether the site for disposal of waste rock or an un-saleable material have/ has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity: -	: The recovery of rough stone in this quarry is 100%. There is no waste rock will be proposed in this lease area.
iv)	Whether back filling of pits after recovery of mineral up to techno -economically feasible depth envisaged. If so, describe the broad features of the proposal: -	: As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.
v)	Whether post mining land use envisaged: -	: At the end of mining activities over the quarry pit may be utilized for storage of rain water and may be converted in to dumping yards for solid waste by adopting suitable technologies.
g)	Open cast mining	
i)	Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: It is a fresh quarry lease. The mining operation is opencast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all opencast workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 6m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.
ii)	Describe briefly the layout of mine workings, the layout of faces and sites for disposal of	The rough stone is proposed to quarry at 5m bench height & width conventional opencast semi mechanized quarrying operation using

	overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice	shot hole drilling with the help of tractor mounted compressor attached with jack hammers, smooth blasting and waste and are removal using Hydraulic excavator and loaded directly to the tippers and transported to the needy customer. Bench height = 5mts. Bench width = 5mts.																									
	a. Details of Topsoil/ Overburden	There is no topsoil will be removed.																									
	b. Rough Stone waste and side burden waste:-	The recovery of rough stone in this quarry is 100%. There is no rough stone waste or side burden will be removed.																									
H	Underground Mining	Not applicable																									
i)	Extent of mechanization: Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.																										
	(1) Drilling Machines: Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Details of drilling equipment's are given below. <table border="1"> <thead> <tr> <th>Type</th><th>Nos</th><th>Dia of hole (mm)</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr> </thead> <tbody> <tr> <td>Jack Hammer</td><td>5</td><td>32 mm</td><td>Hand held</td><td>--</td><td>Diesel</td><td>--</td></tr> <tr> <td>Compressor</td><td>2</td><td>---</td><td>Air</td><td>--</td><td>Diesel</td><td>--</td></tr> </tbody> </table>						Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.	Jack Hammer	5	32 mm	Hand held	--	Diesel	--	Compressor	2	---	Air	--	Diesel	--
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	(3) Haulage and Transport Equipment (a) Haulage within the mining leasehold: <table border="1"> <thead> <tr> <th>Type</th><th>Nos</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr> </thead> <tbody> <tr> <td>Tipper</td><td>5</td><td>--</td><td>--</td><td>Diesel</td><td>--</td></tr> </tbody> </table> Whether the dumpers are fitted with exhaust conditioner should be indicated: The dumpers not used in this quarry area, hence it's a small B category mine.						Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	5	--	--	Diesel	--									
Type	Nos	Size / Capacity	Make	Motive power	H.P.																						
Tipper	5	--	--	Diesel	--																						
b)	Transport from mine head to the destination	Tipper will be used for transport rough stone from the mine head to needy customer.																									

c)	Describe briefly the transport system (please specify)	Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customer's area.												
	i) Ore transported by: own trucks / hired trucks	Hired trucks for initially production purposes												
	ii) Main destination to which ore is transported (giving to and from distance)	The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc												
a)	Details of hauling / transport equipment:													
	<table border="1"> <thead> <tr> <th>Type</th><th>Nos</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr> </thead> <tbody> <tr> <td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td></tr> </tbody> </table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	--	--	--	--	--	--	
Type	Nos	Size / Capacity	Make	Motive power	H.P.									
--	--	--	--	--	--									
4)	(4). Miscellaneous: Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.													
	(A) Operations	The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only.												
	(B) Machineries deployed	Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.												
5.	BLASTING: <i>a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.</i> Blasting pattern: The quarrying operation is proposed to carried by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone. Rough stone production for 10 years = 238260m³ <table border="1"> <thead> <tr> <th colspan="2">BLAST DESIGN</th></tr> </thead> <tbody> <tr> <td>Blasthole Diameter (D) in mm</td><td>32</td></tr> <tr> <td>Burden (B) in m</td><td>1.2</td></tr> <tr> <td>Spacing (S) in m</td><td>1.38</td></tr> <tr> <td>Subdrill in m</td><td>0.5</td></tr> </tbody> </table>		BLAST DESIGN		Blasthole Diameter (D) in mm	32	Burden (B) in m	1.2	Spacing (S) in m	1.38	Subdrill in m	0.5		
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Charge length (C) in m	0.70
Stemming	0.5
Hole Length (L) in m	1.2
Bench Height (BH) in m	2.5
Mass of explosive/hole in g	437.5
Stemming material size in mm	3.2
Burden stiffness ratio	2.08
Blast volume/hole in m ³	4.14
Production of rough stone/day in m ³	170
Number of blast holes/day	41
Number of blast round/day	2
Blasthole pattern	Staggered
Mass of explosive /day in kg	17.98
Powder factor in kg/m ³	0.11
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL

Note: If >2kg of explosives per day use for blasting if proponent get the permission from the DGMS



Staggered method of mining

b) Type of explosives used / to be used:

Following explosives are recommended for efficient blasting with safe practice.

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 primary blasting is proposed.

c) Measures proposed to minimize ground vibration due to blasting:

The control blasting measures is being adopted for minimizing ground vibration and fly rock.

Shallow depths jack hammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in rough stone for easy excavation and to control fly rock.

Delay detonators:

Delay blasting permits to divide the shot to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay 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

No of holes	:	41holes
Yield	:	170m ³
Total explosive required	:	17.98kg-Slurry explosives
Charge per hole	:	0.5kg
Blasting at day time only	:	12.0p.m-1.0p.m

c)	Powder factor in ore and overburden / waste / development heading / stope	:	Powder factor is proposed as 0.11kg per hole of explosives
d)	Whether secondary blasting is needed, if so describe it briefly	:	There is no secondary blasting involved.
e)	Storage of explosives (like capacity and type of explosive magazine)	:	1. The applicant is advised to engage an authorized explosive agency to carry out blasting. 2. First Aid Box will be keeping ready at all the time. 3. Necessary precautionary announcement will be carried out before the blasting operation.

6. **MINE DRAINAGE:**

a)	Likely depth of water table based on observations from nearby wells and water bodies	:	The ground water table is reported as of 70m in summer and 65m in rainy season from the general ground level observed in the adjacent bore well.
b)	Workings expected to be _____ m. above / reach below water table by the year _____.	:	Ultimate mining depth is 50m below ground level. Now, the present Mining lease shall be proposed above the water table and hence, quarrying may not affect the ground water.

c)	Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	:	The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 L pm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.
7. STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:			
a).	Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the years: No other wastes are removed during years.		
b).	Land chosen for disposal of waste with proposed justification	:	There is no topsoil will be removed.
c).	Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.	:	The recovery of rough stone in this quarry is 100%. If rough stone may be unsold will be keep within the lease boundary.
8. USE OF MINERAL:			
a).	Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	:	The excavated stone materials will be supplied to the consumers like stone pillar, sized stone, etc. For instance, aggregates are mostly used for building, roads and footpaths., etc
b).	Indicate physical and chemical specifications stipulated by buyers	:	Basically, the materials produced at this quarry are rough stone (charnockite) and gravel the same are used for building materials and road metal. So, there is no chemical specifications are specified. Only physical specifications are involved.

c).	Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.	:	Not blending process is involved, after blasting the rough stone and gravel will be directly loaded to the needy customer.																								
9.	OTHERS																										
	Describe briefly the following a) Site services	:	Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry laborers.																								
	b) Employment potential: As per Mines safety under the provisions of Metalliferous Mines Rules, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision. The following man power is proposed for quarrying stone material during the ten years period the same manpower will be utilize for this mining plan period to achieve the proposed production and to comply the provisions of as per the MMR, 1961 norms. <table border="1"> <tr> <td>1.</td> <td>Highly Skilled</td> <td>Mines Manager</td> <td>1No.</td> </tr> <tr> <td></td> <td></td> <td>Mine Engineer</td> <td>1No.</td> </tr> <tr> <td></td> <td></td> <td>Mine Geologist</td> <td>1No</td> </tr> <tr> <td></td> <td></td> <td>Blaster</td> <td>1No</td> </tr> <tr> <td>2.</td> <td>Unskilled</td> <td>Musdoor / Labours</td> <td>26 No's</td> </tr> <tr> <td colspan="3">Total =</td> <td>30 No's</td> </tr> </table>			1.	Highly Skilled	Mines Manager	1No.			Mine Engineer	1No.			Mine Geologist	1No			Blaster	1No	2.	Unskilled	Musdoor / Labours	26 No's	Total =			30 No's
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10	MINERAL PROCESSING/BENEFICIATIONS:																										
(a)	If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.	:	Excavated rough stone minerals directly will be used by the applicant for required size ½, ¾ and 1½ inches Jelly which are mainly used in road and building construction purpose. The recovery of rough stone in this quarry is 100%.																								

(b)	Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed to be discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam).	:	No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system.
(c)	A flow sheet or schematic diagram of the processing procedure should be attached.	:	Not applicable.
(d)	Specify quantity and type of chemicals to be used in the processing plant.	:	Not applicable
(e)	Specify quantity and type of chemicals to be stored on site / plant.	:	Not applicable
(f)	Indicate quantity (cu.m. per day) of water required for mining and processing and sources of supply of water. Disposal of water and of recycling.	:	Drinking is 0.3KLD, utilized water is 1.0KLD, Dust suppression is 1.0KLD and Green Belt is 1.2KLD. Minimum quantity of water 3.5KLD per day. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development. The sewage water to a tune of 1.0KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit.

PART – B

11.0 ENVIRONMENTAL MANAGEMENT PLAN:

a) Attach a note on the status of Baseline information with regard to the Following :

11.1	Fresh lease land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present land use pattern is given as below.																									
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11.2	Water Regime	: Water table in this area is noticed at a depth of 70m in summer and 65m in rainy season from the general ground level and presently the quarrying of rough stone is ultimate up to a depth of 50m below ground level. Hence, it will not affect the ground water depletion of this area. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development.																								
11.3	Flora and Fauna	: There is no major flora observed in this area and except bushes, shrubs, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																								
11.4	Quality of air, ambient noise level and water	: Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very																								

			minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																									
11.5	Climatic conditions: The district receives the rain under the influence of both southwest and northeast monsoons. The Northeast monsoon chiefly contributes to the rainfall in the district. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The Southwest monsoon rainfall is highly erratic and summer rains are negligible. The average annual rainfall over the district varies from about 620mm to 745mm. Rainfall: The annual rainfall normal (1970-2000) of Karur district is 742mm. 4 Projections of rainfall over Karur for the periods 2010-2040 (2020s), 2040-2070 (2050s) and 2070-2100 (2080s) with reference to the baseline (1970-2000) indicate a general decrease of 4.0%, 3.0% and 11.0% respectively.																											
11.6	Human Settlement: The nearest villages are found in the buffer zone with population as per 2011 census. <table><tr><th>S.No</th><th>Village</th><th>Distance in Kms</th><th>Direction</th><th>Population</th></tr><tr><td>1</td><td>Kuppam</td><td>0.6km</td><td>North</td><td>3503</td></tr><tr><td>2</td><td>Punnam</td><td>5.5km</td><td>East</td><td>5446</td></tr><tr><td>3</td><td>Karudayampalayam</td><td>2.0km</td><td>South</td><td>2347</td></tr><tr><td>4</td><td>Munnur</td><td>3.0Km</td><td>West</td><td>2582</td></tr></table>			S.No	Village	Distance in Kms	Direction	Population	1	Kuppam	0.6km	North	3503	2	Punnam	5.5km	East	5446	3	Karudayampalayam	2.0km	South	2347	4	Munnur	3.0Km	West	2582
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11.7	Public buildings, places of worship and monuments	:	No infrastructure like residential building, are found within radius of 300m. The places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.																									
11.8	Attach plans showing the locations of sampling stations	:	The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.																									

11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974																								
b) <i>Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines)</i>																										
i)	Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc: Due to quarrying and exploitation of the rough stone, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form: <table border="1"> <thead> <tr> <th>Sl. No.</th><th>Land Use</th><th>Area in use during the quarrying period (Hect.)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Area under Mining</td><td>1.39.55</td></tr> <tr> <td>2</td><td>Infrastructure</td><td>0.02.0</td></tr> <tr> <td>3</td><td>Roads</td><td>0.05.0</td></tr> <tr> <td>4</td><td>Green Belt</td><td>0.51.95</td></tr> <tr> <td>5</td><td>Un-Utilized Area</td><td>Nil</td></tr> <tr> <td>6</td><td>Drainage & Settling Tank</td><td>0.07.00</td></tr> <tr> <td></td><td>Grand Total</td><td>2.05.50</td></tr> </tbody> </table>		Sl. No.	Land Use	Area in use during the quarrying period (Hect.)	1	Area under Mining	1.39.55	2	Infrastructure	0.02.0	3	Roads	0.05.0	4	Green Belt	0.51.95	5	Un-Utilized Area	Nil	6	Drainage & Settling Tank	0.07.00		Grand Total	2.05.50
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ii).	Air Quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.																								
iii).	Water quality	A water sample from the open/bore wells was tested to NABL approved lab to assess hardness, Salinity, colour, Specific gravity, etc.																								
iv).	Noise levels	Quarrying of rough stone and gravel will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																								
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The																								

		maximum peak particles velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	No major river or any odai track are found around 500m radius.
vii).	Socio-economics	1. To provide Employment opportunities of the nearby villagers. 2. For the cultural development of the nearby villagers.
viii).	Historical monuments etc.	There are no historical monuments, etc found around 300m radius.

c) Attach an Environmental Management Plan (supported by appropriate plans and sections) defining the time bound action proposed to be taken with sequence & timing in the following areas (or diagrams should be used):

i).	temporary storage and utilization of topsoil	:	No separate of topsoil will be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during ten years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.	:	The ultimate mining is proposed to an average depth of 50m below ground level from the below ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of working bench with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
iii).	<i>Programme of afforestation, Yearwise for the initial ten years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares.</i> Green Belt Development: Safety barrier, nearby school area and Nearest Panchayat approach Roads		

has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below						
Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs
First	Lease Boundary	5195	600	80%	@100 Rs Per sapling	60,000/-
Second	Approach road and Nearby Village Road	--	400	80%		40,000/-
Third	Schools	--	400	80%		40,000/-
Total						1,40,000/-
iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the ten years (and upto conceptual plan period for 'A' category mines).		:	No waste or rejects shall be proposed.		
v).	Measures to control erosion / sedimentation of water courses.		:	Not applicable. There is no major dumps are stabilize in this quarry area.		
vi).	Treatment and disposal of water from mine.		:	It will not be harmful and it does not require any treatment before discharging into the natural courses.		
vii).	Measures for minimizing adverse effects on water regime.		:	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.		
viii).	Protective measures for ground vibrations / air blast caused by blasting,		:	It is a small "B" category open cast, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.		
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.		:	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.		
x).	Socioeconomic benefits arising out of mining.		:	The nearest villages are will get employment benefits.		

d). *Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)*

Not applicable. It is B category quarry

12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	Ultimate mining is proposed to depth of 50m below ground level. The mined-out area will be fenced on top of working bench with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 600 trees will be proposed in the quarry area. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	The quarry lease is a fresh mining lease, no mitigation measures observed.
12.4	Mine closure activity	:	The mining plan is proposed to depth of 50m below ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.5	Safety and security	:	Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous mine regulations, 1961, it is a small open cast mining method

			adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.
12.6	Disaster management and Risk Assessment	:	Open cast mining method is adopted in this quarry. If the benches are made with proposed height and with no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	:	A board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and man power entrenchments	:	During the ten years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 30 labors will be improved.

12.9 Proposed Financial Estimate / Budget for (EMP) Environment Management:

A	Fixed Asset Cost:	
	1. Land Cost(G-Value)	: Rs. 10,27,500
	2. Labour Shed	: Rs. 1,00,000/-
	3. Sanitary Facility	: Rs. 1,00,000/-
	4. Fencing	: Rs. 3,00,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 4,00,000/-
	Total	: Rs. 19,27,500/-
B	B. Machinery cost	: Rs. 30,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for ten years)	
	1. Drinking Water Facility	: Rs. 1,50,000/-
	2. Sanitary facility & Maintenance	: Rs. 2,00,000/-
	3. Permanent water sprinkler	: Rs. 2,50,000/-
	4. Afforestation and its maintenance	: Rs. 1,40,000/-
	5. Safety Kits	: Rs. 1,00,000/-
	6. Provision of tyre washing facility	: Rs. 1,50,000/-
	7. Blasting materials with blast mat cost	: Rs. 18,00,000/-
	8. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 32,90,000/-
D	Total Project Cost (A+B+C)	: Rs. 82,17,500/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small "B" rough stone and gravel quarry.

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone economically without any wastage and to improve the environment and ecology.
- (iii) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Assistant Director, Department of Geology and Mining, Karur vide letter **Roc.No.141/Mines/2024 Dated 29.05.2025.**
- (iv) Total proposed production for first five yeras period of rough stone is about **120330m³ / 330908MT** and gravel is **70890m³ / 141780MT** up to a depth of 40m below ground level (Refer Plate No's. VIA) and remaining quantity of **117930m³/ 324307MT** will be proposed for the period of second five years upto a depth of 50m below ground level.(Refer Plate No's. VIC).

17.0 CSR Expenditure:

CSR (Corporate Social responsibility) shall provide by the applicant @ 2.0% of average net profit of the company for the last three financial years to the nearby village on the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22nd January 2021 as circular no. CSR-05/01/2021-CSR-MCA dated 25th August 2021.

Place: Salem, TN

Date: 2/6/25

Signature of the Qualified Person

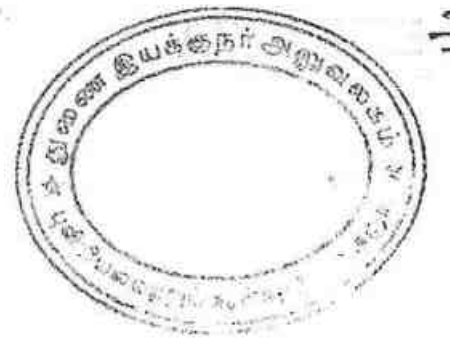
P. VELLAIYAN, M.Sc, M.Phil.,
Qualified Person
D.No. 6-106-B, Athirampatti (Vill),
Amaragundhi Panchayat & Post,
Omair Taluk, Salem District - 636503.

This Mining Plan is approved based on
Incorporation of the particulars specified in
clause 7 (iv) of the Commissioner of Geology and
Mining Chennai Lr No 3658 / IC / 2012
dt 19-11-2012 and Draft Minor Mineral
Conservation & Development Rules 2010

Deputy Director of Geology and Mining
Karur District

This Mining Plan is approved based on
to the conditions/stipulations
indicated in the Mining Plan approval
Letter No: 141 / mines / 2024
Dated: 30.06.2025

2/6/25



ந.க.எண். 141/கனிமம்/2024

மாவட்ட ஆட்சியர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
கரூர்

நாள்: 29.05.2025.

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் கரூர் மாவட்டம் - புகளூர் வட்டம் - குப்பம் கிராமம் - பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் - சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வேண்டி திருமதி.எஸ்.லட்சுமி, என்பவர் விண்ணப்பம் செய்தது - வருவாய் கோட்டாட்சியர் நிலயிருப்பு அறிக்கை வரப்பெற்றது - உதவி புவியியலாளர் புலத்தணிக்கை அறிக்கை வரப்பெற்றது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. திருமதி.எஸ்.லட்சுமி, க/பெ.ராஜேஸ்குமார், கதவு எண்.267/1,2, சிந்துநகர், கொங்கு மெஸ் எதிரில், ஆண்டாங்கோவில் கீழ்பாகம் கிராமம், மண்மங்கலம் வட்டம், கரூர் மாவட்டம் என்பவர் குவாரி குத்தகை உரிமம் வழங்கக் கோரும் விண்ணப்பம் நாள்: 08.04.2024.
 3. வருவாய் கோட்டாட்சியர், கரூர் அவர்களின் கடிதம் ந.க.எண். அ/1/2497/2025, நாள்:08.10.2024
 3. உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை கரூர் என்பவரது புலத்தணிக்கை அறிக்கை நாள்: 23.05.2025.
 4. அரசாணை (பல்வகை) எண். 169, தொழில் (எம்எம்.சி-1) துறை நாள்: 04.08.2020 இணைத்து வரப்பெற்றுள்ளது. (தமிழ்நாடு அரசிதழ் சிறப்பு வெளியீடு எண். 315 நாள்: 04.08.2020).

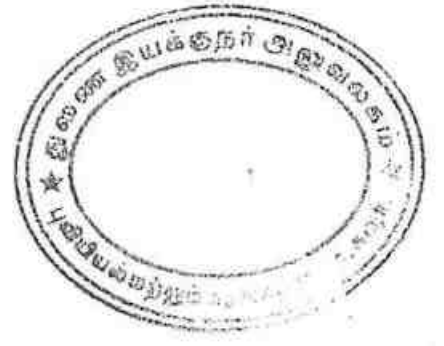
கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் பரப்பு நிலத்திலிருந்து பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க கதவு எண்.267/1,2, சிந்துநகர், கொங்கு மெஸ் எதிரில், ஆண்டாங்கோவில் கீழ்பாகம் கிராமம், மண்மங்கலம் வட்டம், கரூர் மாவட்டம் என்ற முகவரியில் வசித்துவரும் திருமதி.எஸ்.லட்சுமி, க/பெ.ராஜேஸ்குமார், என்பவர் பார்வை 1-இல் கண்டுள்ளவாறு விண்ணப்பம் செய்துள்ளார்.



மேற்படி விண்ணப்பம் தொடர்பாக, வருவாய் கோட்டாட்சியர், கரூர் மற்றும் உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் மட்டும் தமிழ்நாடு சிறு கனிமச்சலுகை விதிகளில் விதி எண்கள்.19-(1), 20 மற்றும் 33-இன் கீழ் திருமதி.எஸ்.லட்சுமி, க/பெ.ராஜேஸ்குமார், என்பவருக்கு 10 ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
2. விண்ணப்ப புலத்திற்கு வடகிழக்கு திசையில் அமைந்துள்ள மின்கோபுரம் மற்றும் வடக்கு திசையில் கிழமேலாக செல்லும் தாழ்வழுத்த மின்பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்தில் நடுவே அமைந்துள்ள தாழ்வழுத்த மின்பாதைகளை குத்தகை உரிமம் நிறைவேற்றுவதற்கு முன்பு விண்ணப்பதாரர் அப்புறப்படுத்திக் கொள்ள வேண்டும்.
4. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ சேதம் ஏற்படாத வண்ணம் குவாரிப்பணி செய்ய வேண்டும்.
5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
6. குவாரி குத்தகை வழங்க ஏதுவாக துணை இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினையும், மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) அனுமதி பெற்று மாவட்ட நிர்வாகத்திற்கு விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.

எனவே, வருவாய் கோட்டாட்சியர், கரூர் மற்றும் உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர் ஆகியோரின் பரிந்துரைகள் மற்றும் நிபந்தனைகளின் அடிப்படையில் கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண். 19(1), 20 மற்றும் 33-இன்படியும் மேலும் மேற்கண்ட நிபந்தனைகளுக்கு உட்பட்டு பத்து வருட காலத்திற்கு திருமதி.எஸ்.லட்சுமி, என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.



எனவே, அதற்கிணங்க, தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண்.41-இன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு திருமதி.எஸ்.லட்சுமி, என்பவர் கேட்டுக்கொள்ளப்படுகிறார். மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-இன்படி சுற்றுச்சூழல் தாக்கல் மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.


 துணை இயக்குநர்,
 புவிமியல் மற்றும் சுரங்கத்துறை,
 கரூர்.

பெறுநர்
 திருமதி.எஸ்.லட்சுமி,
 க/பெ.ராஜேஸ்குமார்,
 கதவு எண்.267/1,2, சிந்துநகர்,
 கொங்கு மெஸ் எதிரில்,
 ஆண்டாங்கோவில் கிழ்பாகம் கிராமம்,
 மண்மங்கலம் வட்டம், கரூர் மாவட்டம்


 29.5.25

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்கல் மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவிமியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.

மாவட்டம் (தெற்குராப்பள்ளி) கஞ்சி

விளையாட்டில்லு, எண் 23

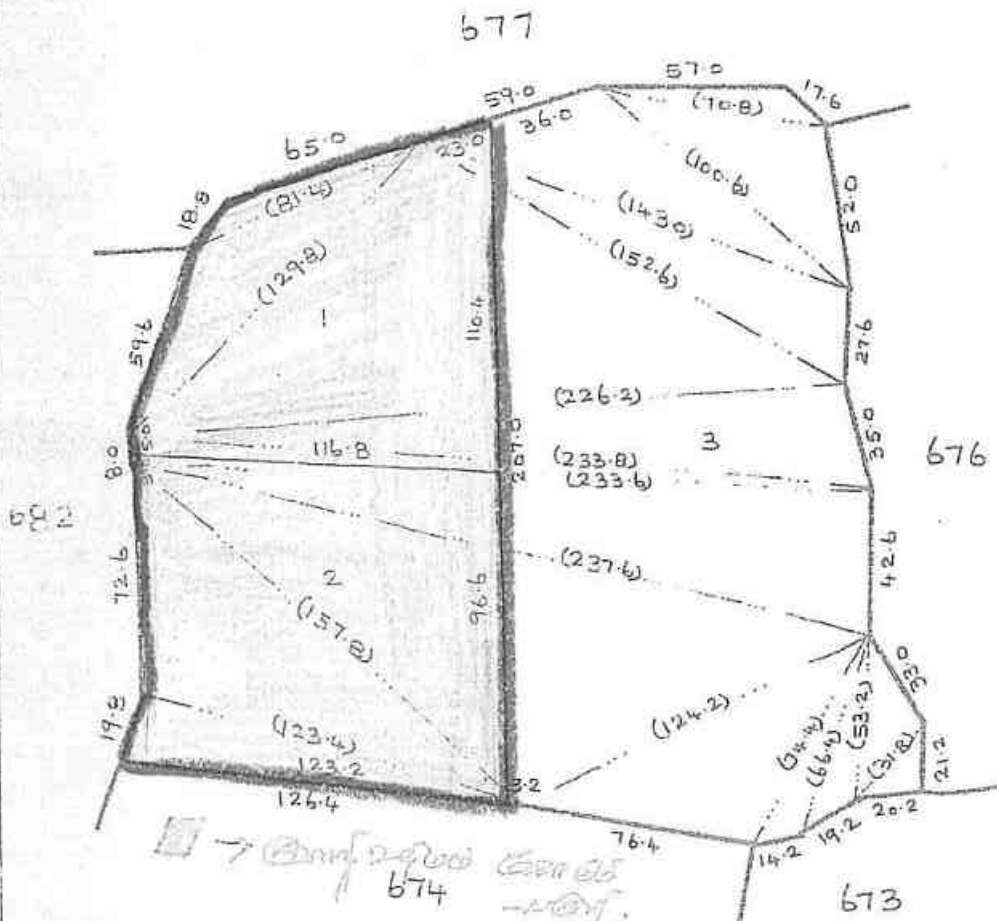
வட்டம் (கஞ்சி) அரவங்குறிச்சி

சிராமம் { எண். (9) 7
பெயர். குப்பம்

புல எண். 675

பரப்பு: ஹெக்டேர்

4 ஏ. 62.5



→ இவ்வாறு காட்ட
674 - கஞ்சி.

12 ஏ. 62.5 - 12 ஏ. 62.5

[Signature]

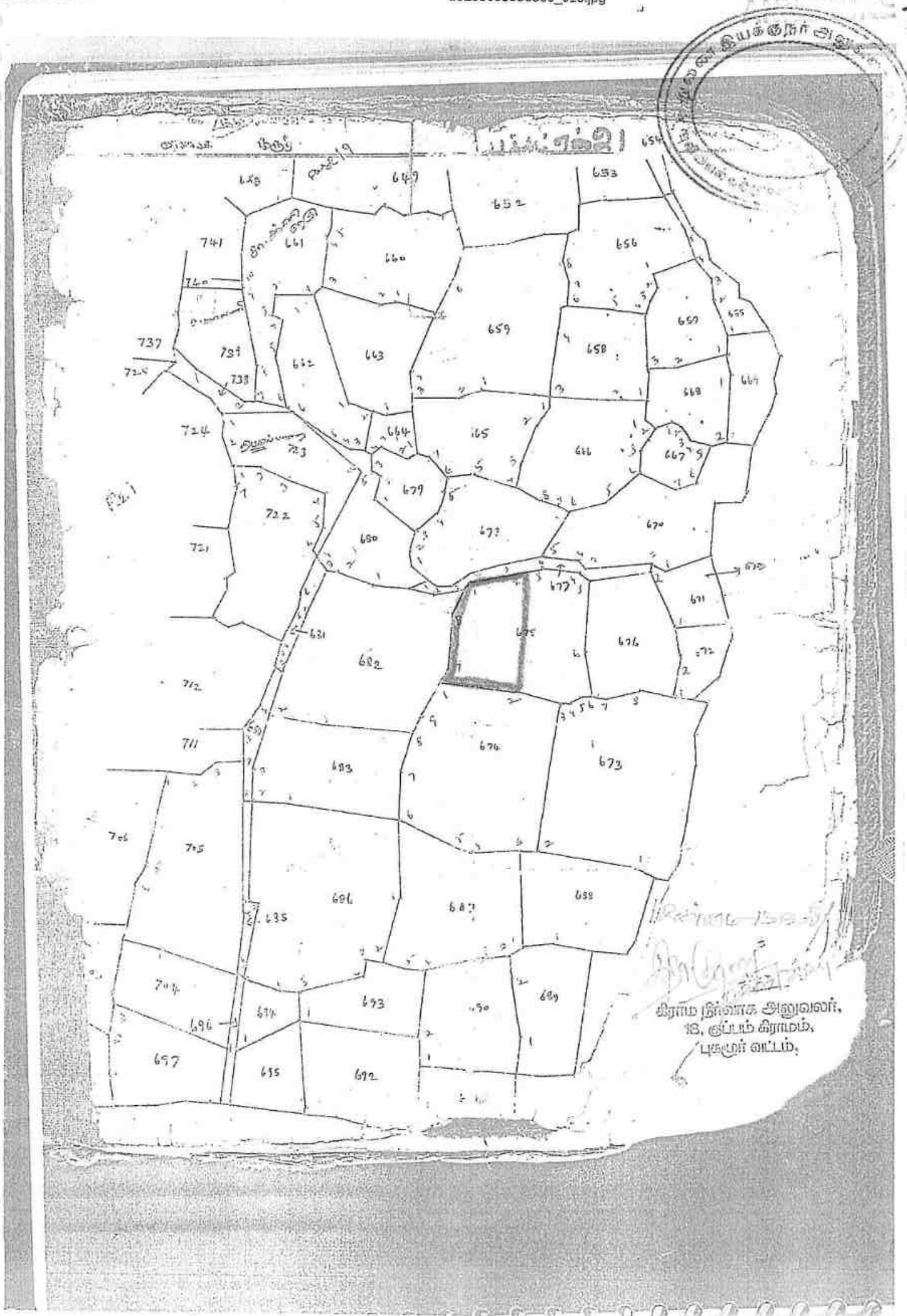
சிராம நிர்வாக அலுவலர்,
18, குப்பம் சிராமம்,
புதுச்சேரி வட்டம்.

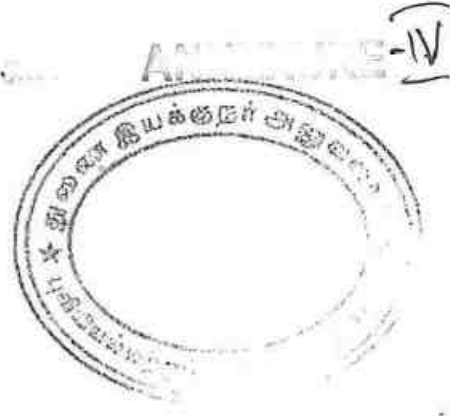
LEASE AREA

தயாசித்தவர்
அ.வே. குமார் மார்
19.4.85
புதுச்சேரி வட்டம்

அளவு. 1:2000

ஆய்வு செய்தவர்
லெட் 24 - 1





அ-பதிவேடு விவரங்கள் - ஊரகம்

மாவட்டம் : கரூர்

வட்டம் : புகழூர்

கிராமம் : குப்பம்

1. புல எண்	675	9. மண் வயனமும் ரகமும்	8 - 4
2. உட்பிரிவு எண்	1	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	675 ,	11. தீர்வை (ரூ - ஹெ)	1.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 12.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.55
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4609
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.5.லட்சுமி

குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற
இணைய தளத்தில் 14/07/018/675/1/60869 என்ற குறிப்பு எண்ணை உள்ளிடு
செய்து உறுதி செய்துகொள்ளவும்.



அ-பதிவேடு விவரங்கள் - ஊரகம்

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

கிராமம் : குப்பம்

1. புல எண்	675	9. மண் வயனமும் ரகமும்	8 - 4
2. உட்பிரிவு எண்	2	10. மண் தரம்	6
3. பழைய புல உட்பிரிவு எண்	675 ,	11. தீர்வை (ரூ - ரெற)	1.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 93.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.29
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	4609
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.5.லட்சுமி

குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற
இணைய தளத்தில் 14/07/013/675/2/60869 என்ற குறிப்பு எண்ணை உள்ளிடு
செய்து உறுதி செய்துகொள்ளவும்.



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகழூர்

வருவாய் இராமம் : குப்பம்

பட்டா எண் : 4609

உரிமையாளர்கள் பெயர்

1. ராஜேஸ்குமார்

மனைவி

S.லட்சுமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
675	1	1 - 12.00	1.55	--	--	--	--	2024/0103/14/303964--- ----- 25-03-2024
675	2	0 - 93.50	1.29	--	--	--	--	2024/0103/14/303964--- ----- 25-03-2024
		2 - 5.50	2.84					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/04609/40869 என்ற குறிப்பு எண்ணை உள்ளிட்டு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 02-07-2024 அன்று 01:54:58 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

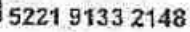
18. (2) 11.11.20

38D/40-R.F. III-A-10-20,00,000 Cps:-GBP.-MDU.-7-2022.

PHOTOCOPY OF THE LEASE AREA

Site photos in respect of rough stone and gravel quarry lease in S.F.No's: 675/1 & 675/2 Patta -Land - over an extent of 2.05.50 Hectares-Kuppam- Pugalur Taluk – Karur District, Tamil Nadu State in belongs to **Mrs.S.Lakshmi**





Cell: 9885799345
E-mail -ellammangranites@gmail.com



M/s ELLAMMAN GRANITES

PLOT NO 1, ROOM NO 10, BANKERS COLONY, SRIKAKULAM ANDHRA PRADESH-532001

Ref. No.- EG/EC/2022/02

Date - 02.11.2022

EXPERIENCE CERTIFICATE

This is to certify that Mr.P.Vellaiyan Geologist worked in M/s Ellamman Granites as Mines Manager in Sy.No.71, Mukhalingapuram Village, Tekkali Mandal, Srikakulam District, Andhra Pradesh State from 20.07.2017 to 31.10.2022. During his working period he carried out Boundary demarcation survey using DGPS, Reserve Estimation, direct and co-ordinate the production activities, Ensure Mine Safety and Surface plan prepared. We found him a sincere, honest, hardworking, dedicated employee with a professional attitude and very good job knowledge. He is amiable in nature and character is well.

We wish him every success in life.

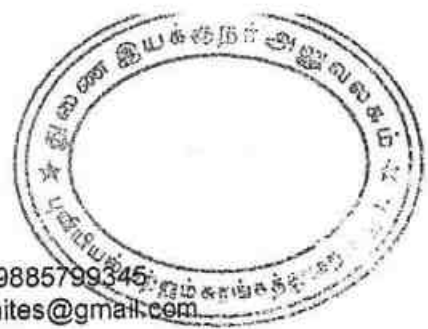
For ELLAMMAN GRANITES

R. Polu Reddy

Proprietor

(Signature with date and official Seal)

(Signature of Employee)



Cell: 9885799345
E-mail -ellammangranites@gmail.com

M/s ELLAMMAN GRANITES

PLOT NO 1, ROOM NO 10, BANKERS COLONY, SRIKAKULAM ANDHRA PRADESH-532001

S.No	Nature of Practical Experience	Place of Work	Period of Experience		Total Working Experience		
			From	To	Year	Month	Days
1	Worked as Geologist and it Boundary demarcation survey using DGPS, Reserve Estimation, direct and co-ordinate the production activities, Ensure Mine Safety and Surface plan prepared.	Open Cast Mines and Office	20.07.2017	31.10.2022	5	3	11

For ELLAMMAN GRANITES

R. P. S. S. S.

Proprietor

(Signature with date and official Seal)

(Signature of Employee)



பெரியார் பல்கலைக்கழகம்
PERIYAR UNIVERSITY



அறிவியல் புலம்
FACULTY OF SCIENCE



பெரியார் பல்கலைக்கழகம்

ஜூலை 2017

ஆம் ஆண்டு நடத்திய

பயன்பாட்டுப்புவியமைப்பியல்

தேர்வில்

P வெள்ளையன்

முதல் வகுப்பில் உயர் தகமையுடன் O தரத்தில்

தேர்ச்சி பெற்றுத் தகுதியடைந்திருப்பதாக

உரிய தேர்வாளர்கள் சான்றித்ததை ஏற்று

ஆய்வியல் நிறைஞர்

என்னும்

மட்டத்தினை அவருக்குப் பல்கலைக்கழக இலாச்சியையுடன்

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு

வழங்குகின்றது.

The Syndicate of the **PERIYAR UNIVERSITY** hereby makes known that
VELLAIYAN P has been
admitted to the Degree of **MASTER OF PHILOSOPHY**
having been certified by duly appointed Examiners to be qualified to receive the same in
APPLIED GEOLOGY
and was placed in **FIRST CLASS EXEMPLARY WITH O GRADE**
at the Examination held in **JULY 2017** by Periyar University.



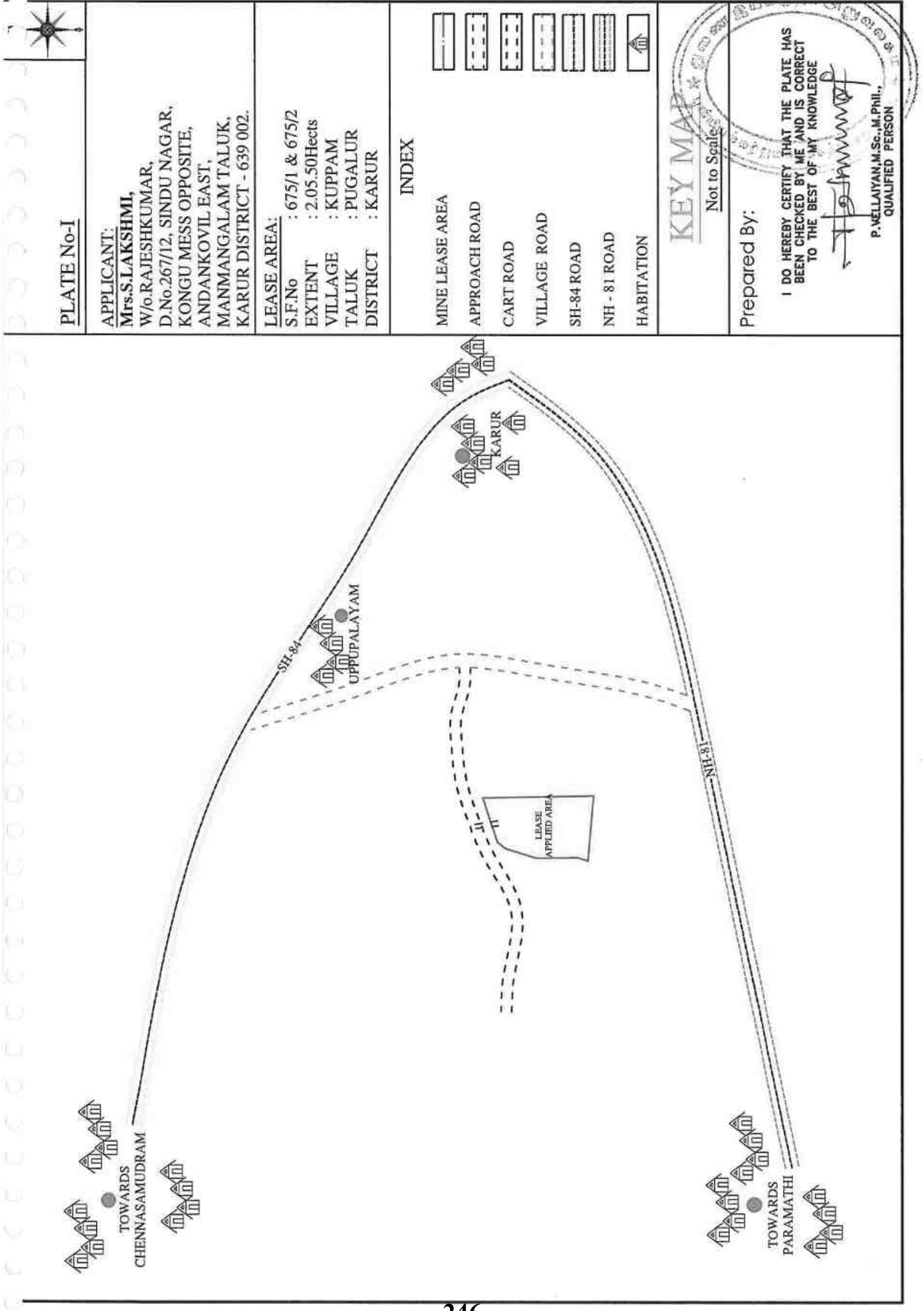
Given under the Seal of the University

Dated: 20-03-2018
Salem - 636011,
Tamil Nadu, India.

Controller of Examinations /c

Registrar

Vice-Chancellor



10°59'3.7896"N



77°56'17.2793"E

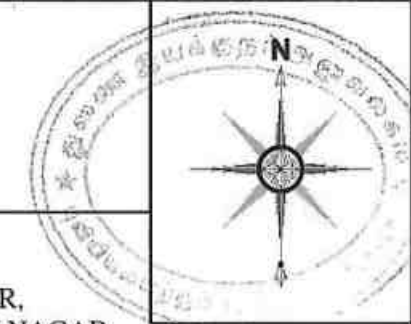


PLATE No- IC

APPLICANT:
Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hects
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE AREA



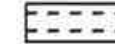
APPROACH ROAD



CART ROAD



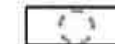
VILLAGE ROAD



100m RADIUS



200m RADIUS



300m RADIUS



400m RADIUS



500m RADIUS



EXISTING PIT



HABITATIONS



SHRUBS & TREES



TOPO SHEET NO : 58-F/13

LATITUDE : 10°58'56.9967"N to 10°59'3.7896"N

LONGITUDE : 77°56'17.2793"E to 77°56'21.3158"E

SATELLITE IMAGERY MAP

SCALE- 1:5000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

P.VELLAIYAN,M.Sc.,M.Phil.,
QUALIFIED PERSON

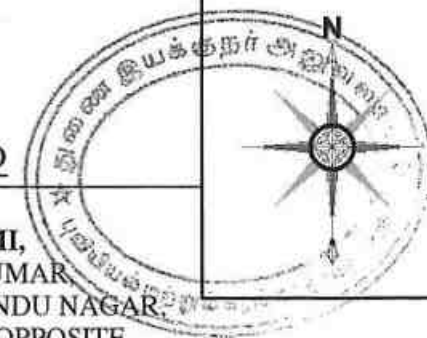


PLATE No- ID

APPLICANT:
Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hects
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE AREA



APPROACH ROAD



CART ROAD



VILLAGE ROAD



100m RADIUS



200m RADIUS



300m RADIUS



400m RADIUS



500m RADIUS



EXISTING PIT



HABITATIONS



SHRUBS & TREES



WIND DIRECTION



TOPO SHEET NO : 58-F/13

LATITUDE : 10°58'56.9967"N to 10°59'3.7896"N

LONGITUDE : 77°56'17.2793"E to 77°56'21.3158"E

ENVIRONMETNAL PLAN

SCALE- 1:5000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON

10°59'3.7896"N

OCTOBER TO DECEMBER



77°56'17.2793"E



JULY TO SEPTEMBER

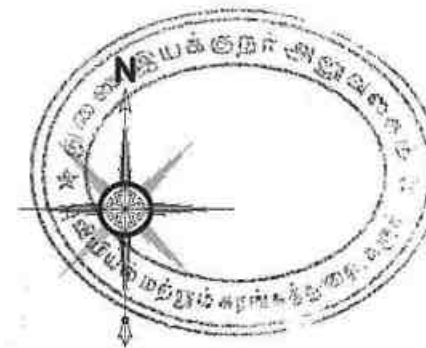
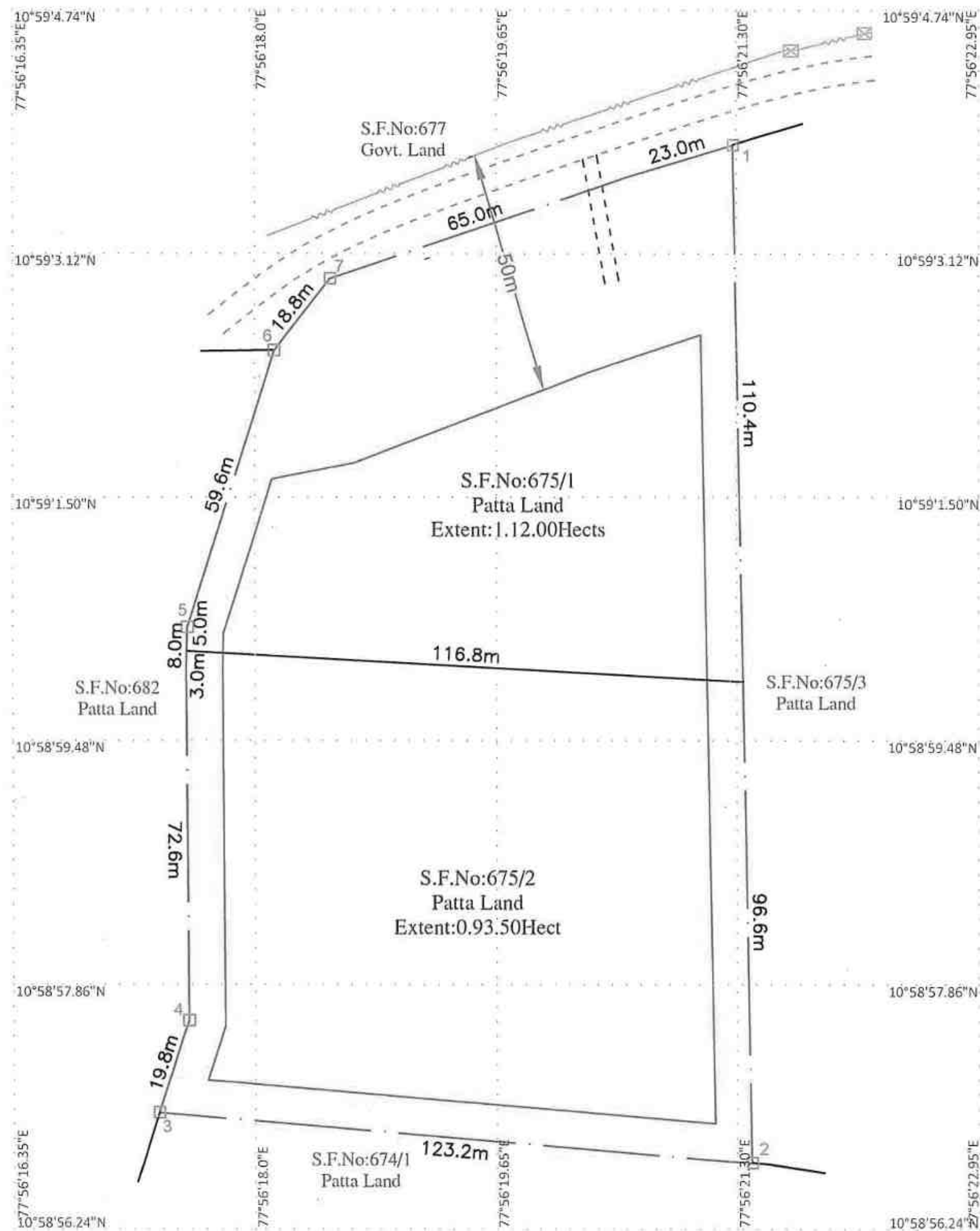


PLATE No- II

APPLICANT:

Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hects
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

DGPS - BOUNDARY CO-ORDINATES		
PILLAR NO	LATITUDE	LONGITUDE
1	10° 59' 3.7896" N	77° 56' 21.2567" E
2	10° 58' 56.9967" N	77° 56' 21.3158" E
3	10° 58' 57.3737" N	77° 56' 17.2793" E
4	10° 58' 57.9840" N	77° 56' 17.4869" E
5	10° 59' 0.6048" N	77° 56' 17.5013" E
6	10° 59' 2.4474" N	77° 56' 18.1091" E
7	10° 59' 2.9239" N	77° 56' 18.4966" E

INDEX

MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & CART ROAD	
BOUNDARY PILLAR STONES	
EB LINE & TRANSFORMER	

MINE LEASE PLAN SCALE 1 : 1000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON

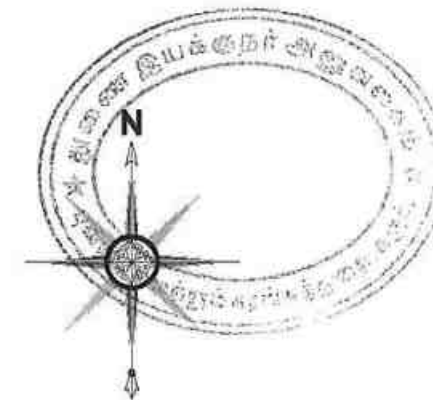
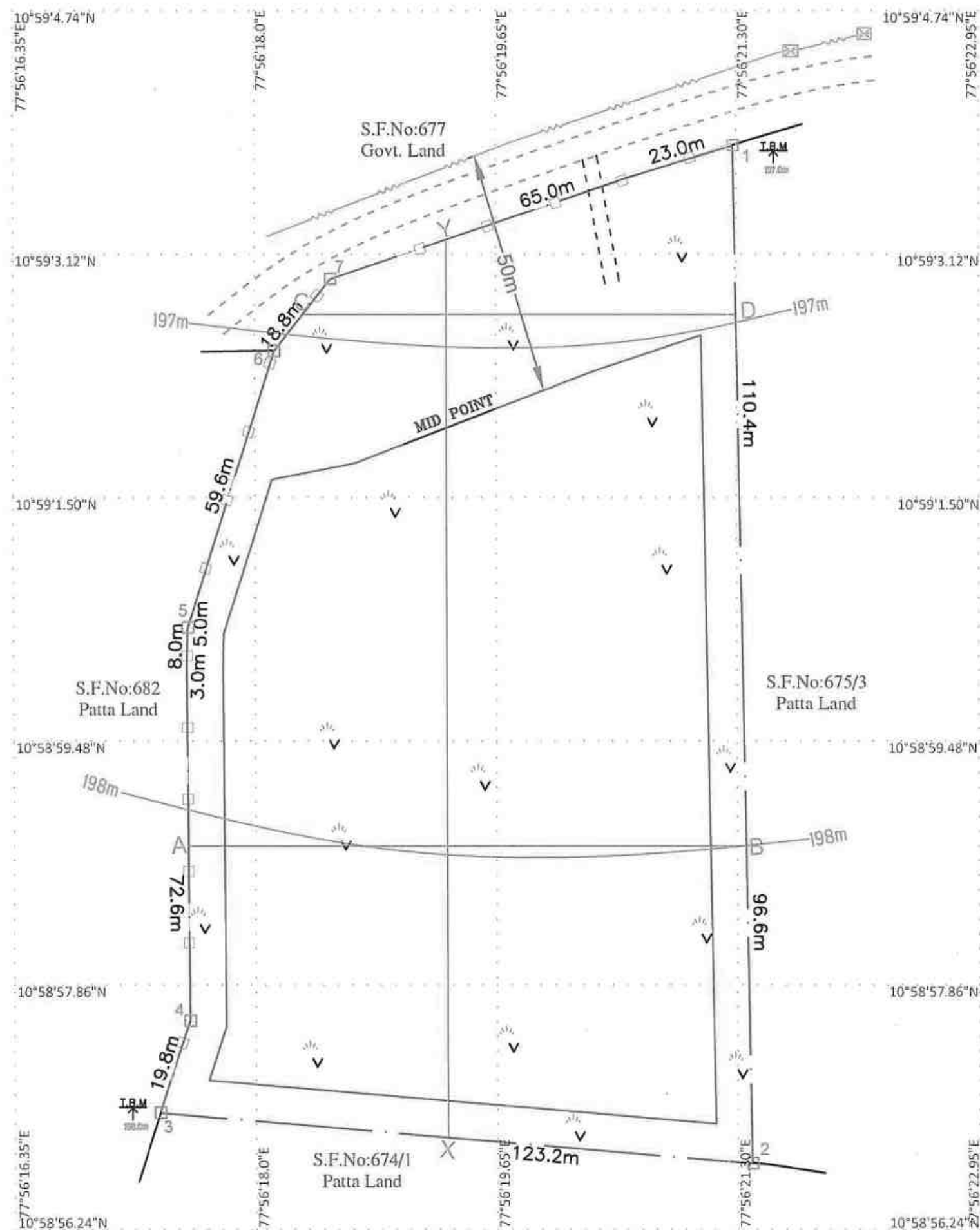


PLATE No- III

APPLICANT:
Mrs.S.LAKSHMI,
 W/o.RAJESHKUMAR,
 D.No.267/12, SINDU NAGAR,
 KONGU MESS OPPOSITE,
 ANDANKOVIL EAST,
 MANMANGALAM TALUK,
 KARUR DISTRICT - 639 002.

LEASE AREA:
 S.F.No : 675/1 & 675/2
 EXTENT : 2.05.50Hects
 VILLAGE : KUPPAM
 TALUK : PUGALUR
 DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & CART ROAD	
BOUNDARY PILLAR STONES	
EB LINE & TRANSFORMER	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	

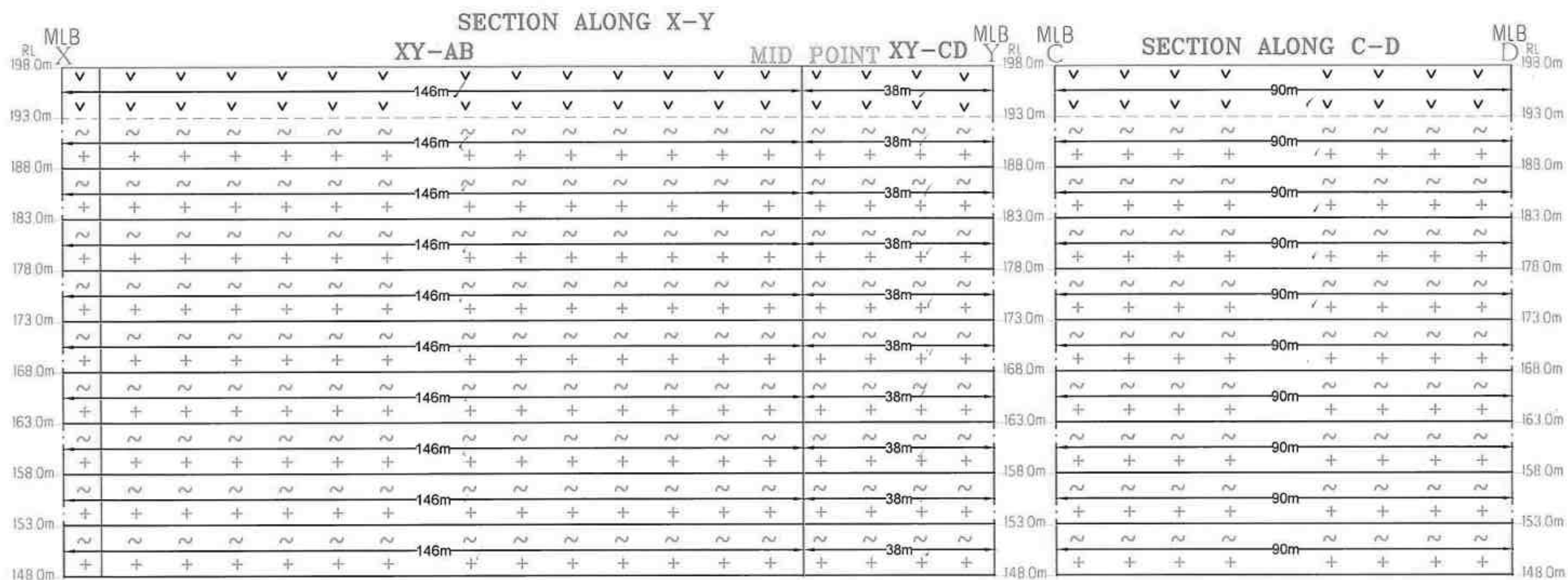
SURFACE & GEOLOGICAL PLAN

PLAN SCALE 1: 1000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
 QUALIFIED PERSON

[illegible]

GEOLOGICAL RESOURCES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
XY-AB	I	146	117	5	85410	.....	85410	2	.....	170820
	II	146	117	5	85410	85410	.....	2.75	234877.5	.....
	III	146	117	5	85410	85410	.....	2.75	234877.5	.....
	IV	146	117	5	85410	85410	.....	2.75	234877.5	.....
	V	146	117	5	85410	85410	.....	2.75	234877.5	.....
	VI	146	117	5	85410	85410	.....	2.75	234877.5	.....
	VII	146	117	5	85410	85410	.....	2.75	234877.5	.....
	VIII	146	117	5	85410	85410	.....	2.75	234877.5	.....
	IX	146	117	5	85410	85410	.....	2.75	234877.5	.....
	X	146	117	5	85410	85410	.....	2.75	234877.5	.....
TOTAL					854100	768690	85410	.....	2113898	170820
XY-CD	I	38	90	5	17100	.....	17100	2	.....	34200
	II	38	90	5	17100	17100	.....	2.75	47025	.....
	III	38	90	5	17100	17100	.....	2.75	47025	.....
	IV	38	90	5	17100	17100	.....	2.75	47025	.....
	V	38	90	5	17100	17100	.....	2.75	47025	.....
	VI	38	90	5	17100	17100	.....	2.75	47025	.....
	VII	38	90	5	17100	17100	.....	2.75	47025	.....
	VIII	38	90	5	17100	17100	.....	2.75	47025	.....
	IX	38	90	5	17100	17100	.....	2.75	47025	.....
	X	38	90	5	17100	17100	.....	2.75	47025	.....
TOTAL					171000	153900	17100	.....	423225	34200
GRAND TOTAL					1025100	922590	102510	.....	2537123	205020

APPLICANT:
Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:
S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hects
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY

SAFETY DISTANCE

GRAVEL

ROUGH STONE

GEOLOGICAL SECTIONS
SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE


P. VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON

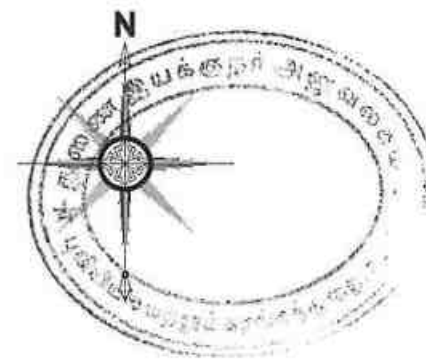
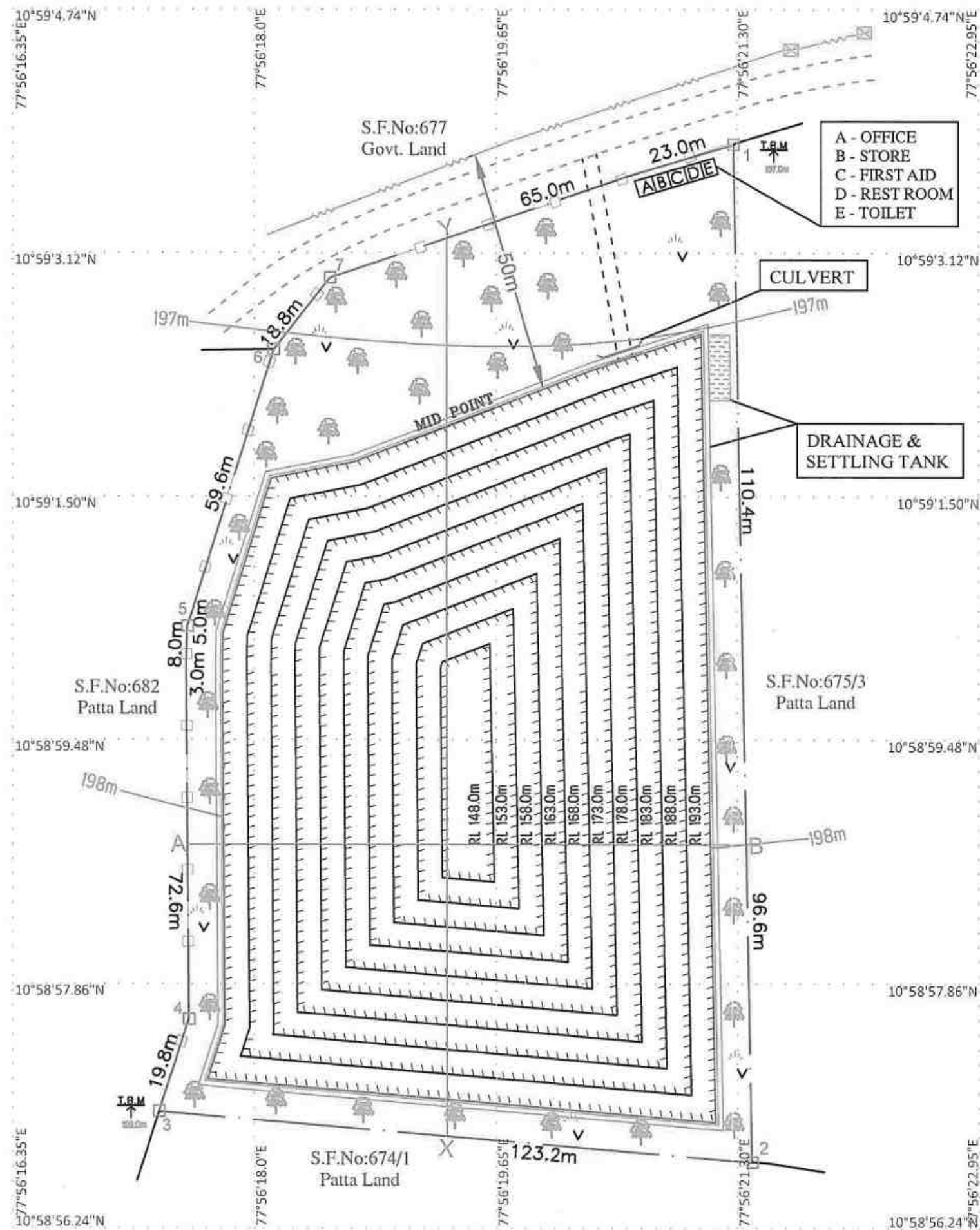


PLATE No- IV

APPLICANT:
Mrs.S.LAKSHMI,
 W/o.RAJESHKUMAR,
 D.No.267/12, SINDU NAGAR,
 KONGU MESS OPPOSITE,
 ANDANKOVIL EAST,
 MANMANGALAM TALUK,
 KARUR DISTRICT - 639 002.

LEASE AREA:
 S.F.No : 675/1 & 675/2
 EXTENT : 2.05.50Hects
 VILLAGE : KUPPAM
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 DISTRICT : KARUR

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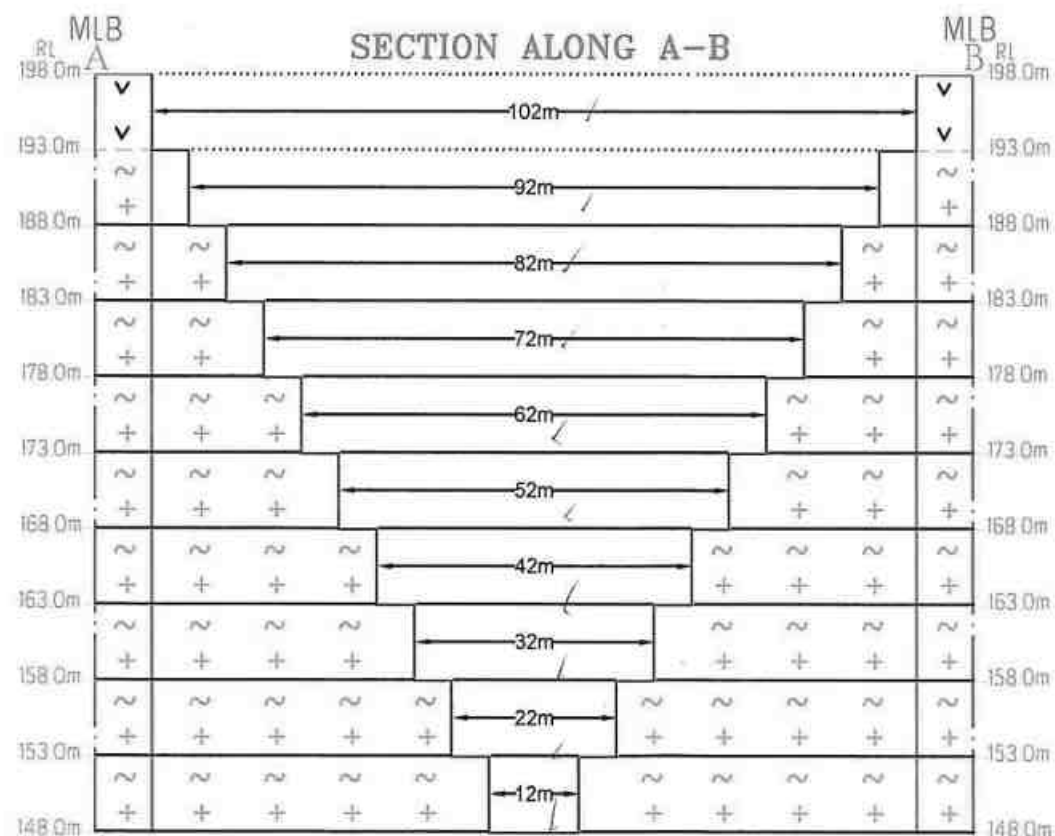
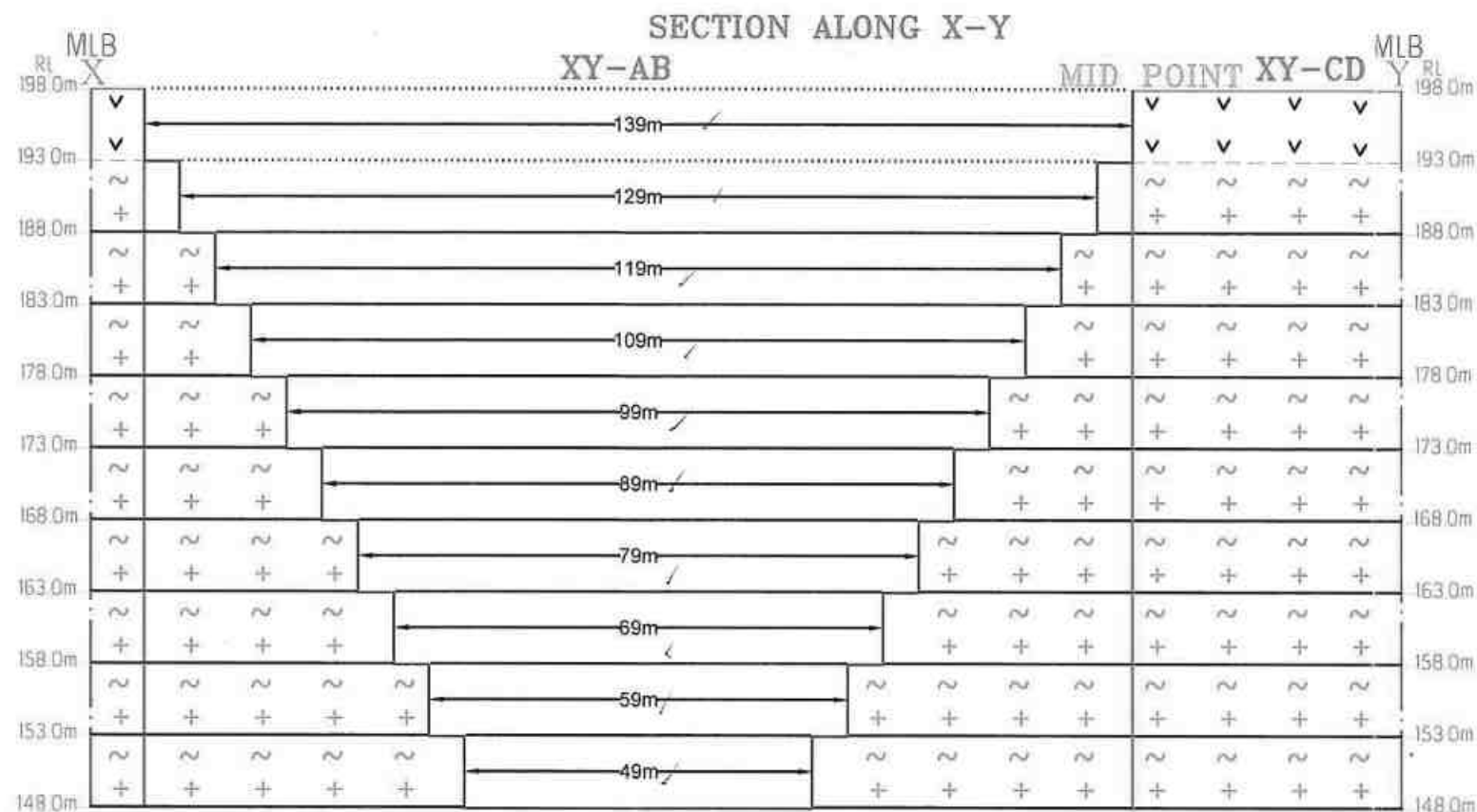
MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & CART ROAD	
BOUNDARY PILLAR STONES	
EB LINE & TRANSFORMER	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	
BENCH	

CONCEPTUAL PLAN PLAN SCALE 1:1000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
 QUALIFIED PERSON



MINEABLE RESERVES										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
XY-AB	I	139	102	5	70890	.....	70890	2	.....	141780
	II	129	92	5	59340	59340	.....	2.75	163185	.....
	III	119	82	5	48790	48790	.....	2.75	134173	.....
	IV	109	72	5	39240	39240	.....	2.75	107910	.....
	V	99	62	5	30690	30690	.....	2.75	84398	.....
	VI	89	52	5	23140	23140	.....	2.75	63635	.....
	VII	79	42	5	16590	16590	.....	2.75	45622	.....
	VIII	69	32	5	11040	11040	.....	2.75	30360	.....
	IX	59	22	5	6490	6490	.....	2.75	17847	.....
	X	49	12	5	2940	2940	.....	2.75	8085	.....
TOTAL					309150	238260	70890	.....	655215	141780

PLATE No- IVA

APPLICANT:
Mrs.S.LAKSHMI,
 W/o.RAJESHKUMAR,
 D.No.267/12, SINDU NAGAR,
 KONGU MESS OPPOSITE,
 ANDANKOVIL EAST,
 MANMANGALAM TALUK,
 KARUR DISTRICT - 639 002.

LEASE AREA:
 S.F.No : 675/1 & 675/2
 EXTENT : 2.05.50Hects
 VILLAGE : KUPPAM
 TALUK : PUGALUR
 DISTRICT : KARUR

INDEX

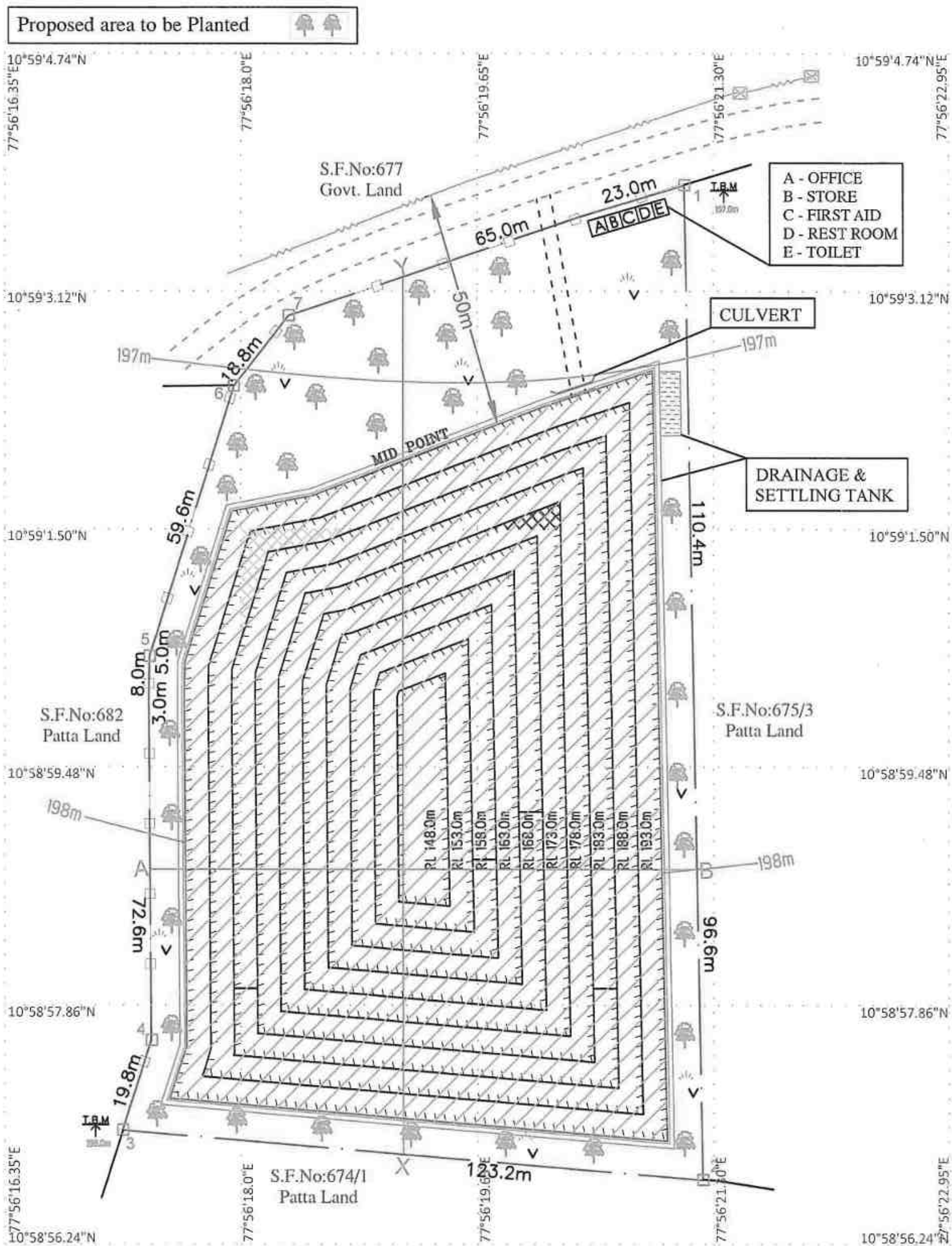
MINE LEASE BOUNDARY	
SAFETY DISTANCE	
GRAVEL	
ROUGH STONE	
BENCH	

CONCEPTUAL SECTIONS SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

P.VENKAIYAN, M.Sc., M.Phil.,
 QUALIFIED PERSON



MINE LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	NIL	1.39.55	
INFRASTRUCTURE	NIL	0.02.0	
ROADS	NIL	0.05.0	
UN-UTILIZED AREA	2.05.50	NIL	
GREEN BELT	NIL	0.51.95	
DRAINAGE & SETTLING TANK	NIL	0.07.00	
GRAND TOTAL	2.05.50	2.05.50	

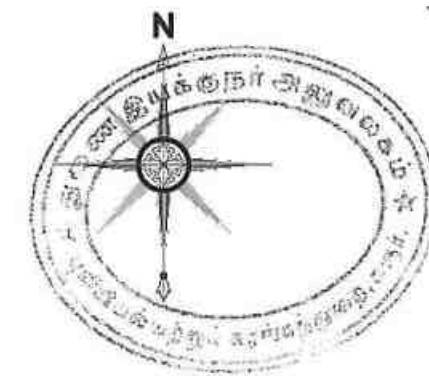


PLATE No- V

APPLICANT:

Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hect
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

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MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & CART ROAD	
BOUNDARY PILLAR STONES	
EB LINE & TRANSFORMER	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	
BENCH	

MINE LAYOUT PLAN AND LAND USE PATTERN

PLAN SCALE 1 : 1000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON

Proposed area to be Planted



FIRST FIVE YEARWISE DEVELOPMENT & PRODUCTION RESERVES

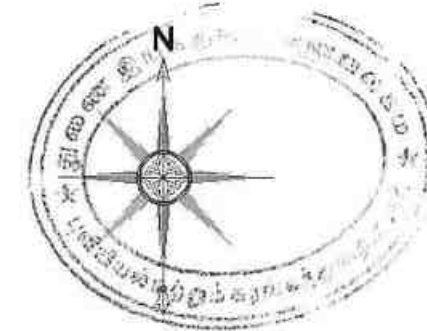


PLATE No- VI

APPLICANT:
Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:
S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hect
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

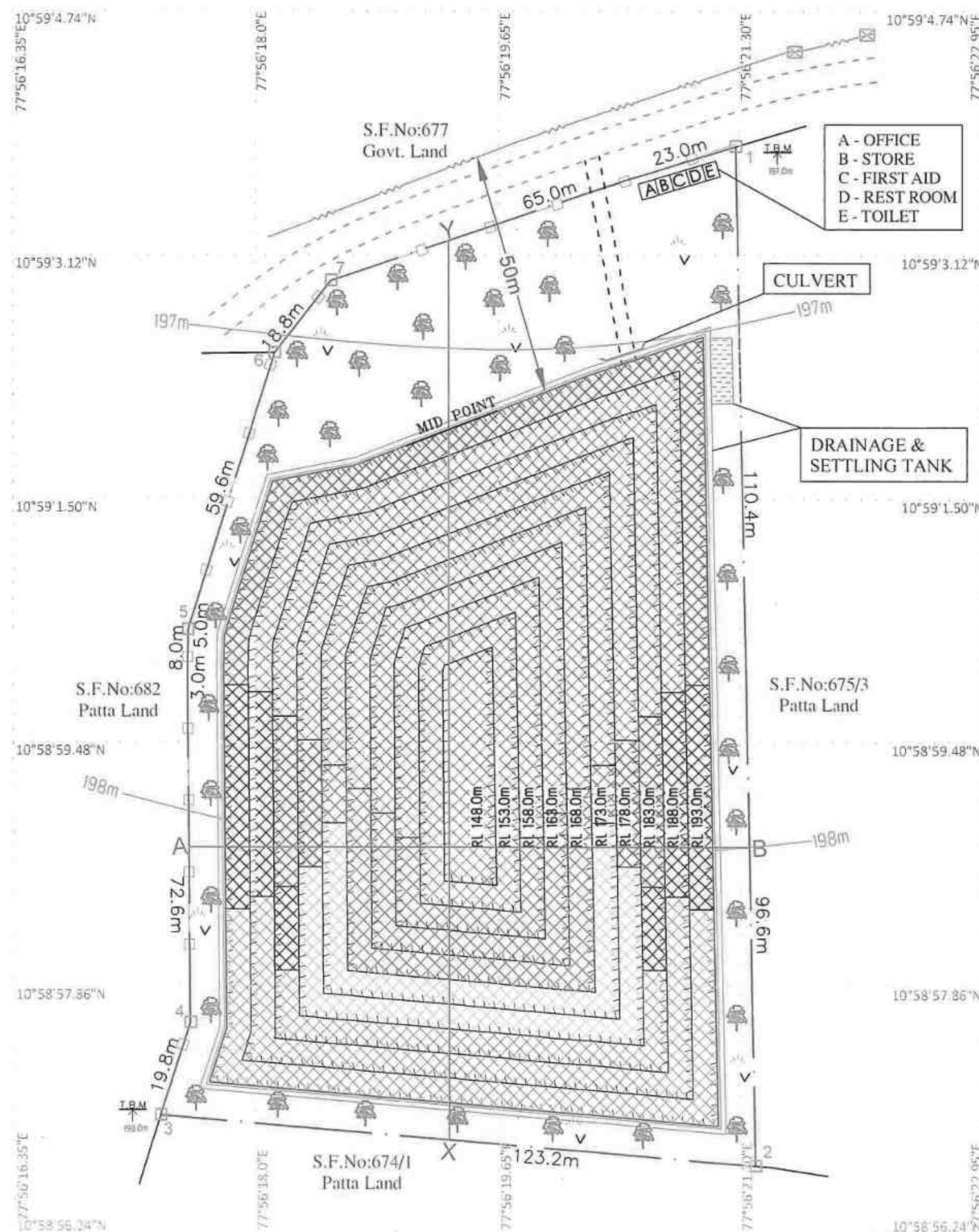
MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & CART ROAD	
BOUNDARY PILLAR STONES	
EB LINE & TRANSFORMER	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	
BENCH	

YEARWISE DEVELOPMENT & PRODUCTION PLAN PLAN SCALE 1:1000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON



I - Year Proposed area to be Quarried	
II - Year Proposed area to be Quarried	
III - Year Proposed area to be Quarried	
IV - Year Proposed area to be Quarried	
V - Year Proposed area to be Quarried	
Second Five Year area to be Quarried	

FIRST FIVE YEARWISE DEVELOPMENT & PRODUCTION RESERVES

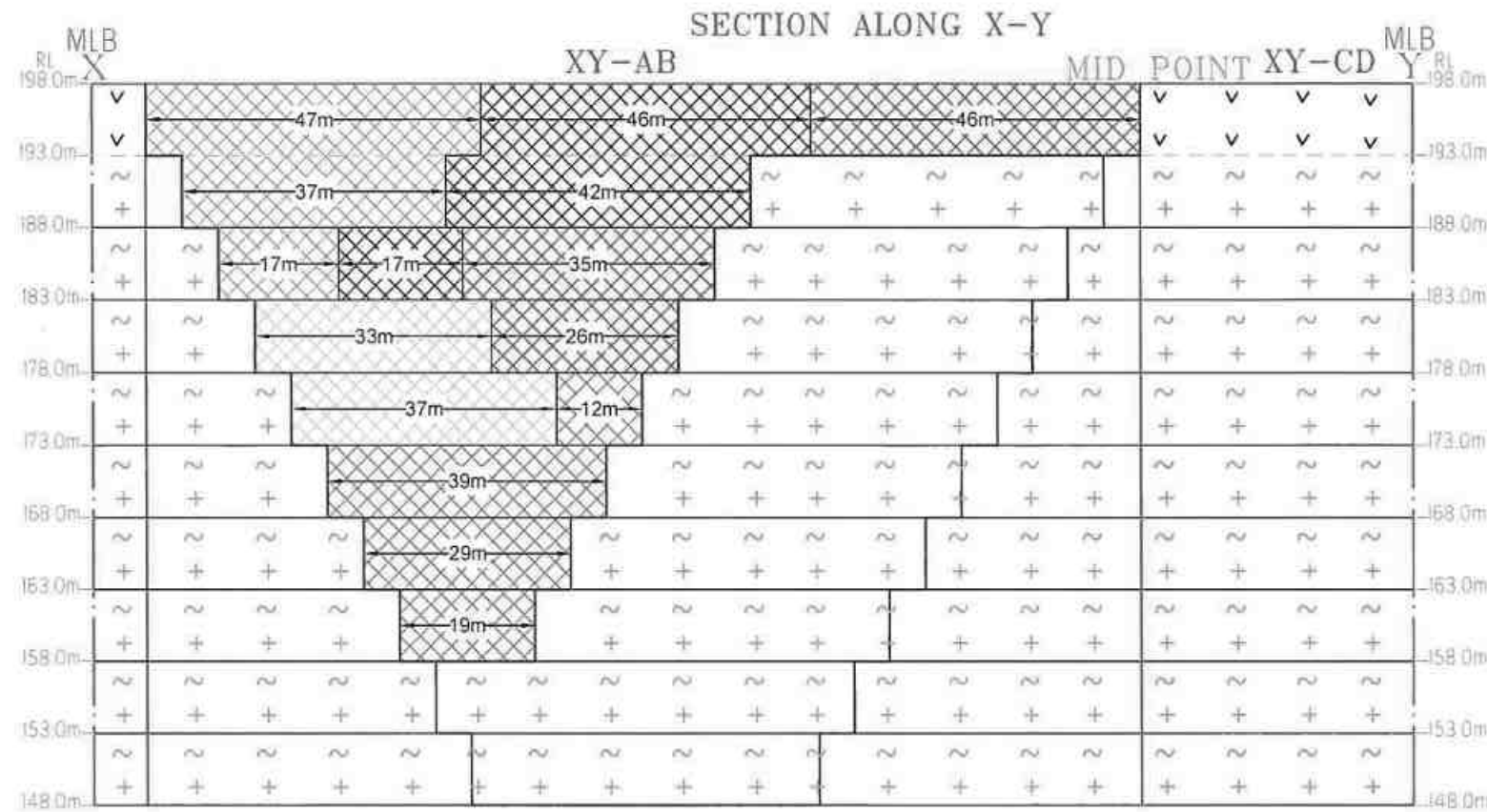


PLATE No- VIA

APPLICANT:

Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hect
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY

SAFETY DISTANCE

GRAVEL

ROUGH STONE

PROPOSED BENCH

ULTIMATE BENCH

FIRST FIVE YEARWISE DEVELOPMENT & PRODUCTION SECTIONS

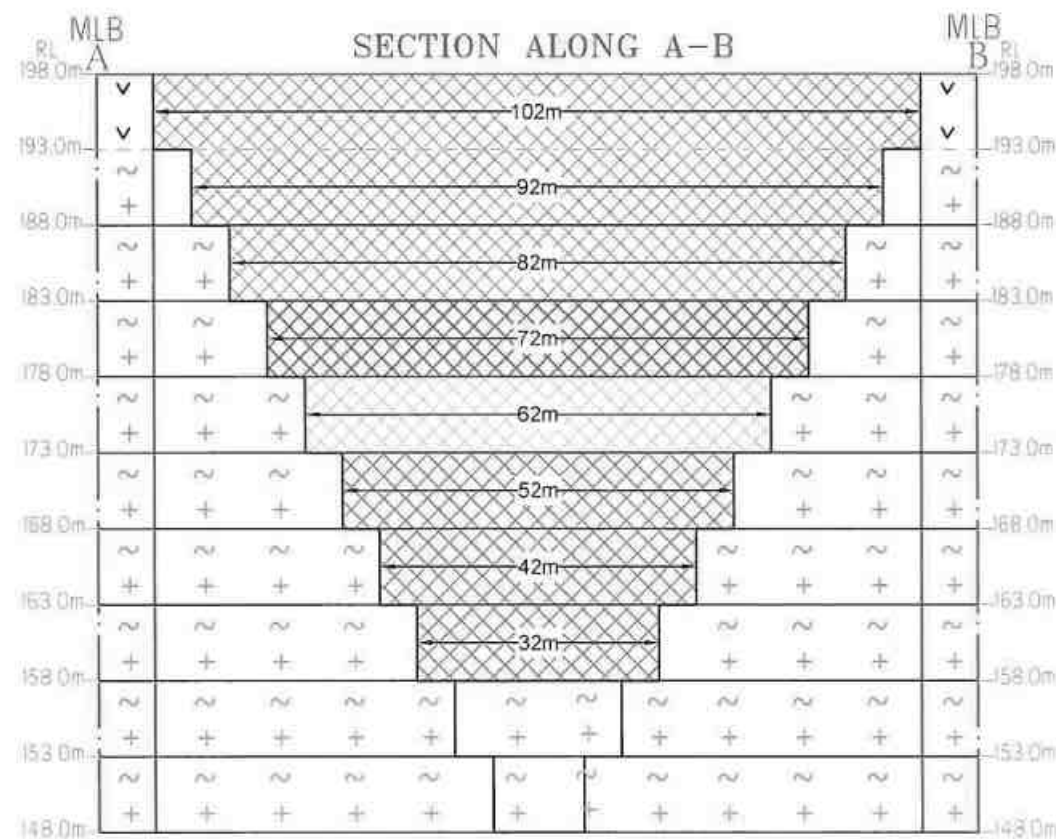
SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

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BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON



FIRST FIVE YEARS - PRODUCTION RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
I-YEAR	XY-AB	I	47	102	5	23970	.....	23970	2	.....	47940
		II	37	92	5	17020	17020	.....	2.75	46805	.....
		III	17	82	5	6970	6970	.....	2.75	19168	.....
TOTAL						47960	23990	23970	.....	65973	47940
II-YEAR	XY-AB	I	46	102	5	23460	.....	23460	2	.....	46920
		II	42	92	5	19320	19320	.....	2.75	53130	.....
		III	17	82	5	6970	6970	.....	2.75	19167	.....
TOTAL						49750	26290	23460	.....	72297	46920
III-YEAR	XY-AB	I	46	102	5	23460	.....	23460	2	.....	46920
		III	35	82	5	14350	14350	.....	2.75	39463	.....
		IV	26	72	5	9360	9360	.....	2.75	25740	.....
TOTAL						47170	23710	23460	.....	65203	46920
IV-YEAR	XY-AB	IV	33	72	5	11880	11880	.....	2.75	32670	.....
		V	37	62	5	11470	11470	.....	2.75	31543	.....
		TOTAL						23350	23350	0	.....	64213	0
V-YEAR	XY-AB	V	12	62	5	3720	3720	.....	2.75	10230	.....
		VI	39	52	5	10140	10140	.....	2.75	27885	.....
		VII	29	42	5	6090	6090	.....	2.75	16747	.....
		VIII	19	32	5	3040	3040	.....	2.75	8360	.....
TOTAL						22990	22990	0	.....	63222	0
GRAND TOTAL						191220	120330	70890	.....	330908	141780

SECOND FIVE YEARWISE DEVELOPMENT & PRODUCTION RESERVES

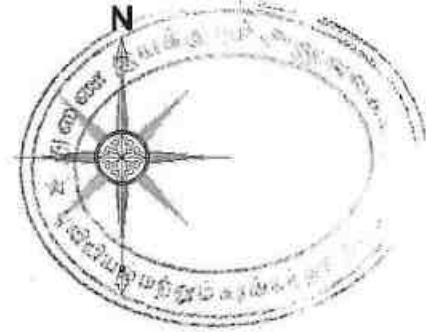


PLATE No- VIB

APPLICANT:
Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:
S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hect
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

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MINE LEASE BOUNDARY	
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EB LINE & TRANSFORMER	
TEMPORARY BENCH MARK	
CONTOUR LINES	
SHRUBS	
GRAVEL	
BENCH	

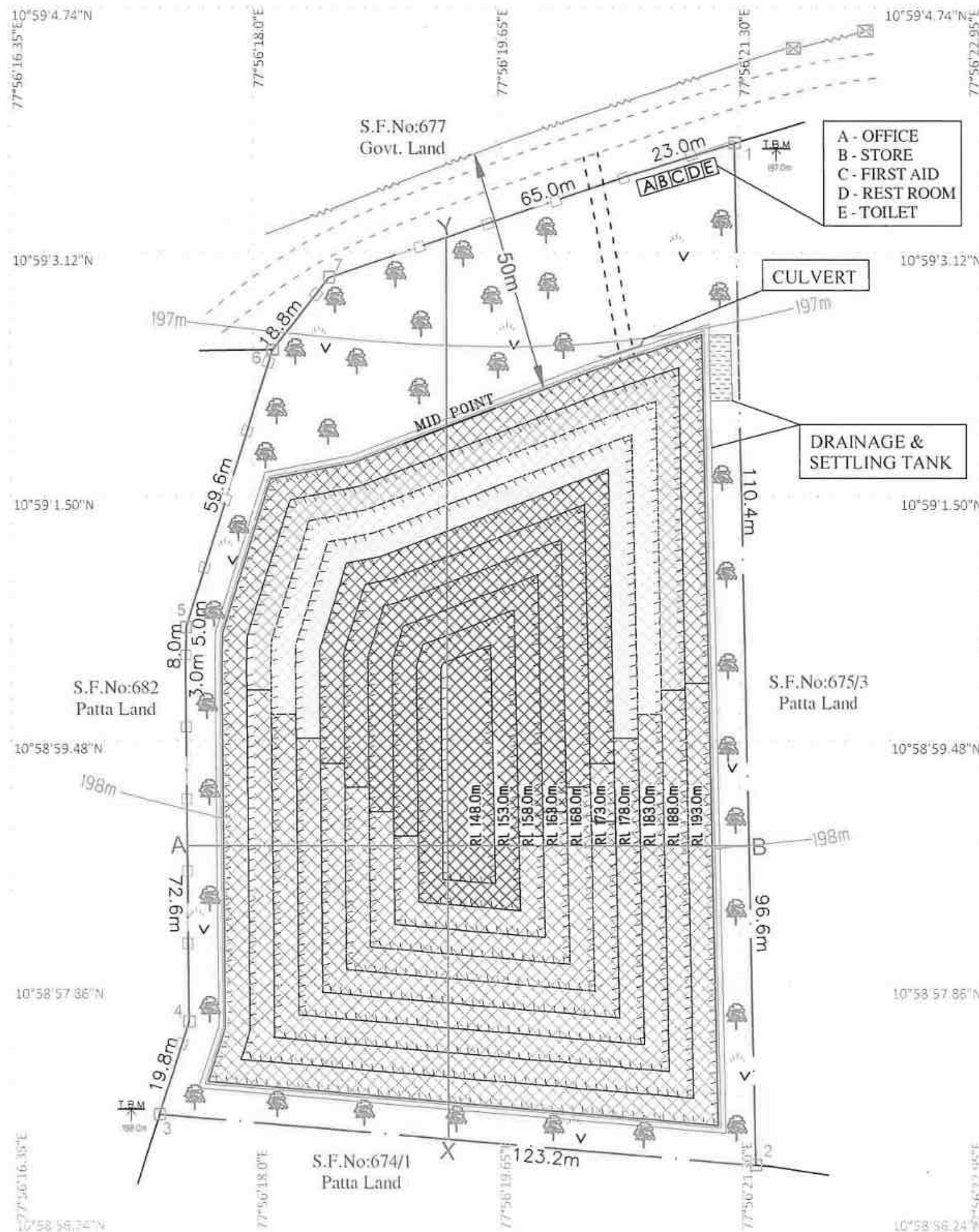
YEARWISE DEVELOPMENT & PRODUCTION PLAN

PLAN SCALE 1:1000

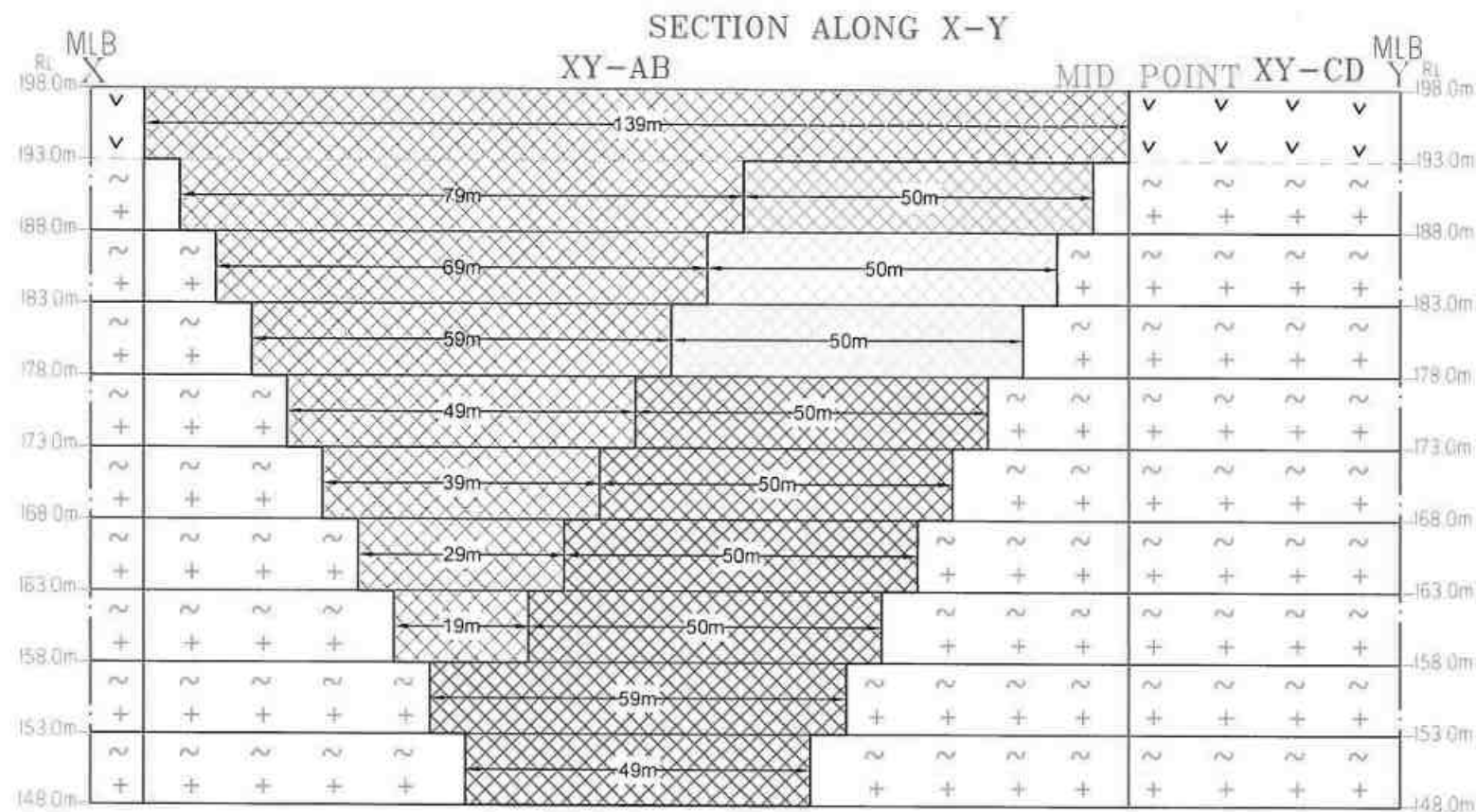
Prepared By:

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TO THE BEST OF MY KNOWLEDGE

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON



SECOND FIVE YEARWISE DEVELOPMENT & PRODUCTION RESERVES



- First Five Year area to be Quarried
- VI - Year Proposed area to be Quarried
- VII - Year Proposed area to be Quarried
- VIII - Year Proposed area to be Quarried
- IX - Year Proposed area to be Quarried
- X - Year Proposed area to be Quarried

PLATE No- VIC

APPLICANT:

Mrs.S.LAKSHMI,
W/o.RAJESHKUMAR,
D.No.267/12, SINDU NAGAR,
KONGU MESS OPPOSITE,
ANDANKOVIL EAST,
MANMANGALAM TALUK,
KARUR DISTRICT - 639 002.

LEASE AREA:

S.F.No : 675/1 & 675/2
EXTENT : 2.05.50Hect
VILLAGE : KUPPAM
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY

SAFETY DISTANCE

GRAVEL

ROUGH STONE

PROPOSED BENCH

ULTIMATE BENCH

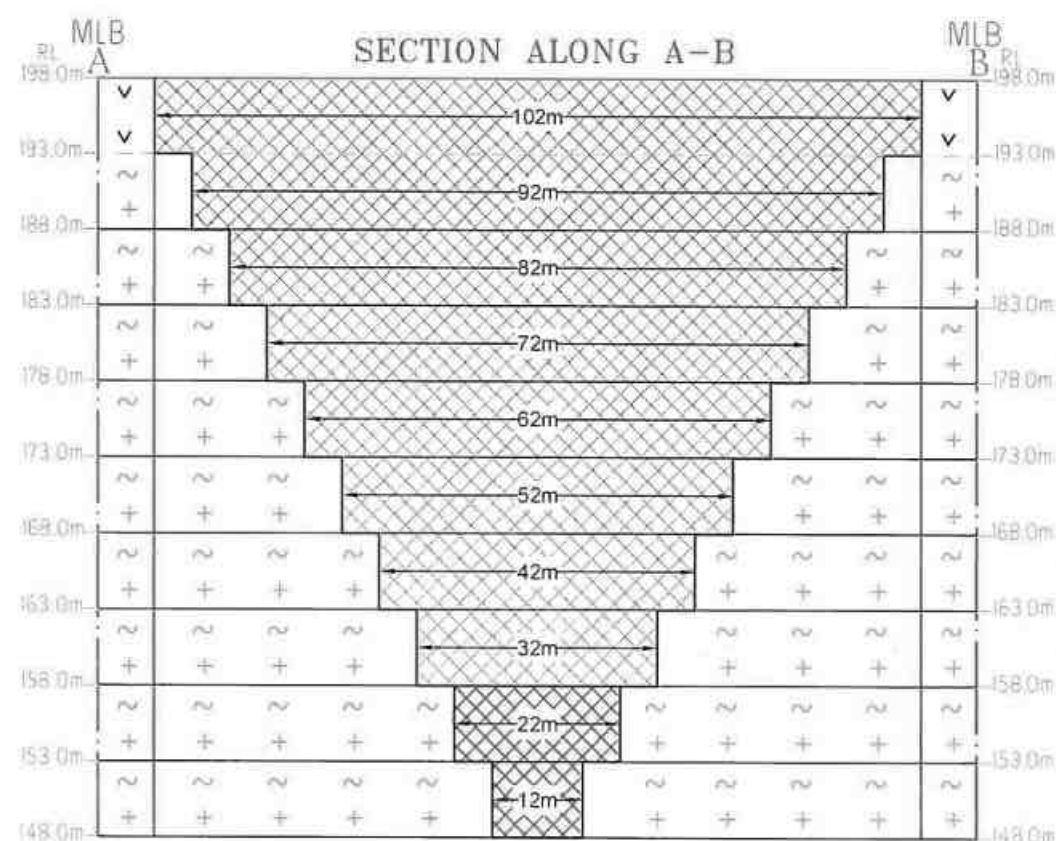
SECOND FIVE YEARWISE DEVELOPMENT &
PRODUCTION SECTIONS
SECTION HOR 1 : 1000 & VER 1 : 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

P. Vellaiyan

P.VELLAIYAN, M.Sc., M.Phil.,
QUALIFIED PERSON



SECOND FIVE YEAR - PRODUCTION RESERVES											
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In m ³	Rough Stone in m ³	Gravel in m ³	Bulk Density	Rough Stone in (Ts)	Gravel in (Ts)
VI-YEAR	XY-AB	II	50	92	5	23000	23000	.....	2.75	63250	.....
TOTAL						23000	23000	0	.....	63250	0
VII-YEAR	XY-AB	III	50	82	5	20500	20500	.....	2.75	56375	.....
TOTAL						20500	20500	0	.....	56375	0
VIII-YEAR	XY-AB	IV	50	72	5	18000	18000	.....	2.75	49500	.....
TOTAL						18000	18000	0	.....	49500	0
IX-YEAR	XY-AB	V	50	62	5	15500	15500	.....	2.75	42625	.....
		VI	50	52	5	13000	13000	.....	2.75	35750	.....
TOTAL						28500	28500	0	.....	78375	0
X-YEAR	XY-AB	VII	50	42	5	10500	10500	.....	2.75	28875	.....
		VIII	50	32	5	8000	8000	.....	2.75	22000	.....
		IX	59	22	5	6490	6490	.....	2.75	17847	.....
		X	49	12	5	2940	2940	.....	2.75	8085	.....
TOTAL						27930	27930	0	.....	76807	0
GRAND TOTAL						117930	117930	0	.....	324307	0

ပြင်သစ်

Sl. No.	Brand	Wt. (gms)	Yield (gms)	Conc. (Heat)	Wt. (Heat)	Conc.
1.	18,	4609	675-1	1.12.0	1.12.00	2.05.00
2.	Billie		675-2	0.92.00	0.92.00	766/24

2.05.00 - 2.05.00 -

I.410 பரண் : 675/1-இ(8) பரண்(8) சான்றெழுத்து :

1) 400 વાન : 675/2-400 Brix ના ગ્રાનુલો :

திருமதி ஜி. லக்ஷ்மி
18, திபப் பிளாட்,
புதுச்சேரி.



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



National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Technical Mining Solutions, Dharmapuri

5/1485-3, Salem Main Road, Elakkiyampatty, Dharmapuri, Tamil Nadu

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

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

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated January 24, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3142 dated Feb 19, 2024. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions, Dharmapuri following due process of assessment.

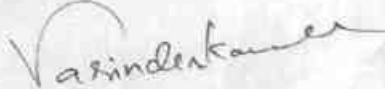
Issue Date
Feb 19, 2024

Valid up to
Dec 31, 2026




Mr. Ajay Kumar Jha
Sr. Director, NABET

Certificate No.
NABET/EIA/23-26/RA 0319


Prof (Dr) Varinder S Kanwar
(CEO NABET)

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



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Page 1 of 2



TEST REPORT

SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000034-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-1-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Core		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	1.4
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	18.2
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	1.8
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	15250
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	2.63
9	Nitrogen (as N)	IS 5194 :1969	%	1.05
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	0.62
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	7.4
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	2.3
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.36
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	172
15	Total Carbon	The Fertilizer Control Order : 1985	%	2.2
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.16
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	16

Statement of Conformity:-

<- End of Report ->

Report Verified by

Technical Personnel



For EXCELLENCE LABORATORY

Authorized Signatory

R.REVATHI
Technical Manager

R.S.DINAKARAN
Quality Manager

Disclaimer : 1.This test report shall not be reproduce in full or part without the written approval of the laboratory.

2.The test results relate only to the test item tested and results apply to the sample "as received conditions".

3.This test results does not account the MU value in the statement of the conformity unless or otherwise specified in the report.

4.The laboratory is not responsible for information provided by customer and it does not come under the scope of accreditation.

5.This test item will not be retained more than 10 days from date of issue of test reports, unless or otherwise requested by customer.

6.Total liability of our laboratory is limited to the invoice amount and any dispute arising out of this report is subject to Madurai Jurisdiction only.

7.This report cannot be used as evidence in the court of law and should not be used in any advertising media without our special permission in writing.

8.Sample is not drawn by laboratory unless stated in the report, if the sample drawn by the customer, the laboratory is not responsible for sampling stage.

9.(BDL) - Below Detectable Limit; (DL) - Detectable Limit; (MU) - Measurement Uncertainty; (NA) - Not Applicable; (CFU) - Colony Forming Unit.

10.No additions, deviations or exclusions from the above test methods mentioned unless or otherwise specified in the report.

11.(#) Mark indicates the tests are subcontracted to other accredited laboratory.



F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010;

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

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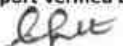
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000034-P		11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-1-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	
Sample Mark :	Core		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.67
2	Calcium (as Ca)*	Titration Technique	mg/Kg	272
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	169
4	Magnesium	Titration Technique	mg/Kg	172
5	Texture*	Manual for Soil Analysis	--	Silt lom
6	Sand	Manual for Soil Analysis	%	19
7	Clay	Manual for Soil Analysis	%	55.4
8	Silt	Manual for Soil Analysis	%	25.6

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI
 Technical Manager

R.S.DINAKARAN
 Quality Manager

Disclaimer : 1.This test report shall not be reproduce in full or part without the written approval of the laboratory.

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10.No additions, deviations or exclusions from the above test methods mentioned unless or otherwise specified in the report.

11.(#) Mark indicates the tests are subcontracted to other accredited laboratory.



Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O: No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.



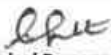
TEST REPORT

SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000035-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-2-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Munnur		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	2.3
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	20.7
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	1.5
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	18254
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	2.45
9	Nitrogen (as N)	IS 5194 :1969	%	1.03
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	2.01
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	6.8
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	2.2
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.14
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	196
15	Total Carbon	The Fertilizer Control Order : 1985	%	2.5
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.2
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	21.2

Statement of Conformity:-

Report Verified by  Technical Personnel	← End of Report → 	For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI
Technical Manager

R.S.DINAKARAN
Quality Manager

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010;

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

Page 2 of 2

SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000035-P		11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-2-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	
Sample Mark :	Munnur		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.58
2	Calcium (as Ca)*	Titration Technique	mg/Kg	288
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	298
4	Magnesium	Titration Technique	mg/Kg	145
5	Texture*	Manual for Soil Analysis	--	Silt lom
6	Sand	Manual for Soil Analysis	%	18.9
7	Clay	Manual for Soil Analysis	%	26.5
8	Silt	Manual for Soil Analysis	%	54.6

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI
 Technical Manager

R.S.DINAKARAN
 Quality Manager

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TEST REPORT

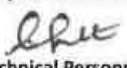
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000036-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-3-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Kuppam		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	1.6
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	25.6
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	2.5
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	16319
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	2.2
9	Nitrogen (as N)	IS 5194 :1969	%	1.02
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	1.2
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	6.7
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	1.4
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.18
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	155
15	Total Carbon	The Fertilizer Control Order : 1985	%	2.3
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.17
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	17

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI
Technical Manager

R.S.DINAKARAN
Quality Manager

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010;

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

Page 2 of 2

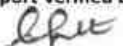
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000036-P	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841	
Sample Description :	Soil	Sample Reference No : EL-NL-SL-3-01-2024
Sample Drawn By :	Customer	Sample Collected Date : 28.12.2023
Sampling Time :	--	Sample Received on : 03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on : 03.01.2024
Sample Condition on Receipt :	Good	Test Completed on : 10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :
Sample Mark :	Kuppam	
Instruments Used for Sampling :	--	

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.81
2	Calcium (as Ca)*	Titration Technique	mg/Kg	245
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	320
4	Magnesium	Titration Technique	mg/Kg	115
5	Texture*	Manual for Soil Analysis	--	Silty Clay Loam
6	Sand	Manual for Soil Analysis	%	17.5
7	Clay	Manual for Soil Analysis	%	37.5
8	Silt	Manual for Soil Analysis	%	45

Statement of Conformity:-

<-- End of Report -->

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R.REVATHI
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R.S.DINAKARAN
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TEST REPORT

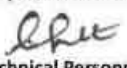
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000037-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-4-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Uppupalayam		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	2.2
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	18.52
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	2.3
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	24646
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	1.8
9	Nitrogen (as N)	IS 5194 :1969	%	1.05
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	1.15
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	6.9
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	2.12
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.22
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	156.98
15	Total Carbon	The Fertilizer Control Order : 1985	%	3.4
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.21
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	22.3

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI
Technical Manager

R.S.DINAKARAN
Quality Manager

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010,

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

Page 2 of 2

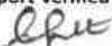
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000037-P		11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-4-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	
Sample Mark :	Uppupalayam		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.42
2	Calcium (as Ca)*	Titration Technique	mg/Kg	326
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	245.18
4	Magnesium	Titration Technique	mg/Kg	126
5	Texture*	Manual for Soil Analysis	--	Clay Loam
6	Sand	Manual for Soil Analysis	%	21.2
7	Clay	Manual for Soil Analysis	%	36.5
8	Silt	Manual for Soil Analysis	%	42.3

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI
 Technical Manager

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TEST REPORT

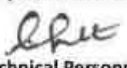
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000038-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-5-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Vairapuram		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	2.9
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	24.5
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	2.2
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	36397
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	1.7
9	Nitrogen (as N)	IS 5194 :1969	%	1.02
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	1.2
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	7.3
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	1.6
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.22
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	232
15	Total Carbon	The Fertilizer Control Order : 1985	%	2.9
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.25
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	26

Statement of Conformity:-

<-- End of Report -->

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Technical Manager

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010;

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

Page 2 of 2

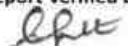
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000038-P	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841	
Sample Description :	Soil	Sample Reference No : EL-NL-SL-5-01-2024
Sample Drawn By :	Customer	Sample Collected Date : 28.12.2023
Sampling Time :	--	Sample Received on : 03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on : 03.01.2024
Sample Condition on Receipt :	Good	Test Completed on : 10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :
Sample Mark :	Vairapuram	
Instruments Used for Sampling :	--	

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.75
2	Calcium (as Ca)*	Titration Technique	mg/Kg	303
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	260.89
4	Magnesium	Titration Technique	mg/Kg	125
5	Texture*	Manual for Soil Analysis	--	Silty clay loam
6	Sand	Manual for Soil Analysis	%	18.2
7	Clay	Manual for Soil Analysis	%	27.4
8	Silt	Manual for Soil Analysis	%	54.4

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI
 Technical Manager

R.S.DINAKARAN
 Quality Manager

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TEST REPORT

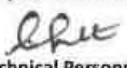
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000039-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-6-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Nedungur		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	1.8
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	15.3
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	2.8
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	15978
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	1.62
9	Nitrogen (as N)	IS 5194 :1969	%	1.08
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	1.8
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	7.7
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	2.4
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.23
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	172
15	Total Carbon	The Fertilizer Control Order : 1985	%	2.9
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.18
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	23.5

Statement of Conformity:-

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Technical Manager

R.S.DINAKARAN
Quality Manager

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F. No.: EL-GL-02

TEST REPORT

Page 2 of 2

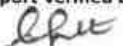
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000039-P		11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-6-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	
Sample Mark :	Nedungur		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.32
2	Calcium (as Ca)*	Titration Technique	mg/Kg	293
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	236
4	Magnesium	Titration Technique	mg/Kg	187
5	Texture*	Manual for Soil Analysis	--	Clay Loam
6	Sand	Manual for Soil Analysis	%	26.5
7	Clay	Manual for Soil Analysis	%	29.6
8	Silt	Manual for Soil Analysis	%	43.9

Statement of Conformity:-

<-- End of Report -->

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

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R.S.DINAKARAN
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TEST REPORT

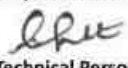
SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000040-P	Report Date :	11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-7-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	K.Paramathy		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Bulk Density	The Fertilizer Control Order : 1985	g/cm ³	3.2
2	Cadmium (as Cd)	EPA 7000B:February: 2007	mg/kg	<1.0
3	Cation Exchange Capacity	Clause No.3.2 of IS 2720 (Part XXIV) :1976	meq%	22.4
4	Chromium (as Cr)	EPA 7000B : February : 2007	mg/Kg	<1.0
5	Copper (as Cu)	EPA 7000B : February : 2007	mg/Kg	2.4
6	Iron (as Fe)	EPA 7000B : February : 2007	mg/Kg	17253
7	Lead (as Pb)	EPA 7000B : February : 2007	mg/Kg	<1.0
8	Manganese (as Mn)	EPA 7000B : February : 2007	mg/Kg	2.1
9	Nitrogen (as N)	IS 5194 :1969	%	1.04
10	Organic Matter @ 155°C	Clause No.9 of IS 2720 (Part XXII) : 1972	%	2.3
11	pH value @ 25°C	Clause No.2 of IS 2720 (Part 26) : 1987	No.	7.2
12	Phosphate (as P)	Clause No.10 of IS 10158 : 1982	%	1.5
13	Potassium (as K)	EPA 7000B : February : 2007	%	0.27
14	Specific Electric Conductivity @ 25°C	IS 14767 : 2000	uS/Cm	185
15	Total Carbon	The Fertilizer Control Order : 1985	%	3.9
16	Sulphates (as SO ₄)	Clause No.2 of IS 2720 (Part XXII) : 1977	%	0.24
17	Zinc (as Zn)	EPA 7000B : February : 2007	mg/Kg	31

Statement of Conformity:-

-- End of Report --

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI
Technical Manager

R.S.DINAKARAN
Quality Manager

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F. No.: EL-GL-02

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B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

TEST REPORT

Page 2 of 2

SOIL ANALYSIS

Report / ULR No :	TC6932-24-0-00000040-P		11.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk), Karur - 639 136 Ph : 9443937841		
Sample Description :	Soil	Sample Reference No :	EL-NL-SL-7-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	03.01.2024
Qty of Sample Received :	1 Kg (Approximately)	Test Commenced on :	03.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	10.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	
Sample Mark :	K.Paramathy		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results
Chemical Testing				
1	Boron (as B)*	Spectrophotometric Method	mg/Kg	0.78
2	Calcium (as Ca)*	Titration Technique	mg/Kg	305
3	Chlorides (as Cl)*	Titration Technique	mg/Kg	285
4	Magnesium	Titration Technique	mg/Kg	132.01
5	Texture*	Manual for Soil Analysis	--	Silt Clay Loam
6	Sand	Manual for Soil Analysis	%	19.5
7	Clay	Manual for Soil Analysis	%	27.5
8	Silt	Manual for Soil Analysis	%	53

Statement of Conformity:-

<-- End of Report -->

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R.REVATHI
 Technical Manager

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TEST REPORT

Page 1 of 2

GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000027-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-1-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Bore Well Water - 1		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	80.03	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	297	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.31	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	34	100

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F. No.: EL-GL-02



TEST REPORT

Page 2 of 2

Report / ULR No : TC6932-24-0-00000027-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	16	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	7.2	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	1301	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	134	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	325	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	890	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	169.65	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	3.2	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R.R.
Technical Personnel

For EXCELLENCE LABORATORY

T.K.
Authorized Signatory

R.REVATHI
Technical Manager



T. KARTHIKEYAN
Head - Laboratory

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sular, Coimbatore - 641 402. B.O: No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.



TEST REPORT

Page 1 of 2

GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000028-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-2-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Bore Well Water - 2		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	90.42	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	290.55	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.61	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	41	100

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F. No.: EL-GL-02



TEST REPORT

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Report / ULR No : TC6932-24-0-00000028-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	17	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	7.3	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	1252	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	79	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	216	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	700	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	101	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	1.8	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R.R.

Technical Personnel

For EXCELLENCE LABORATORY

T.K.

Authorized Signatory

R.REVATHI
Technical Manager



T. KARTHIKEYAN
Head - Laboratory

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sular, Coimbatore - 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.



TEST REPORT

Page 1 of 2

GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000029-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-3-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Bore Well Water - 3		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	92.05	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	275	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.38	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	52	100

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TEST REPORT

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Report / ULR No : TC6932-24-0-00000029-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	19	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	7.6	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	1255	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	120.55	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	285	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	807.1	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	255.15	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	2.15	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R. Revathi

Technical Personnel

For EXCELLENCE LABORATORY

T. Karthikeyan

Authorized Signatory

R.REVATHI
Technical Manager



T. KARTHIKEYAN
Head - Laboratory

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F. No.: EL-GL-02



TEST REPORT

Page 1 of 2

GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000030-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-4-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Bore Well Water - 4		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	97	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	251	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.69	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	62	100

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TEST REPORT

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Report / ULR No : TC6932-24-0-00000030-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	25	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	6.9	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	756	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	129.1	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	181	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	459	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	93	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	2.12	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R. Revathi

Technical Personnel

For EXCELLENCE LABORATORY

T. Karthikeyan

Authorized Signatory

R.REVATHI
Technical Manager



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F. No.: EL-GL-02



TEST REPORT

Page 1 of 2

GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000031-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-5-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Bore Well Water - 5		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	79	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	283	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.92	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	81	100

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F. No.: EL-GL-02



TEST REPORT

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Report / ULR No : TC6932-24-0-00000031-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	16.75	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	7.53	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	1452	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	104.95	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	213.27	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	842.4	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	116.95	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	4.5	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R. Revathi

Technical Personnel

For EXCELLENCE LABORATORY

T. Karthikeyan

Authorized Signatory

R.REVATHI
Technical Manager



T. KARTHIKEYAN
Head - Laboratory

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F. No.: EL-GL-02

Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sular, Coimbatore - 641 402. B.O: No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.



TEST REPORT

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GROUND WATER ANALYSIS

Report / ULR No :	TC6932-24-0-00000032-P	Report Date :	12.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ground Water	Sample Reference No :	EL-NL-GW-6-01-2024
Sample Drawn By :	Customer	Sample Collected Date :	28.12.2023
Sampling Time :	--	Sample Received on :	02.01.2024
Qty of Sample Received :	2 Liter (Approximately)	Test Commenced on :	02.01.2024
Sample Condition on Receipt :	Good	Test Completed on :	11.01.2024
Sampling Environment Condition :	-	Sampling Method / Plan :	-
Sample Mark :	Open Well Water - 1		
Instruments Used for Sampling :	--		

S.No	Name of the Test	Test Method	Units	Results	Max. Permissible Limits of IS:10500:2012
Biological Testing					
1	Coliforms Bacteria	IS 15185 : 2016	Present/ Absent/100mL	Present	Absent
2	Escherichia coli	IS 15185 : 2016	Present/ Absent/100mL	Absent	Absent
Chemical Testing					
3	Barium (as Ba)	Annex F of IS 13428 :2005	mg /L	<0.1	0.7
4	Boron (as B)	Clause No.6 of IS 3025 (Part 57) :2005	mg /L	<0.1	1.0
5	Calcium (as Ca)	Clause No.5 of IS 3025 (Part 40) :1991	mg /L	85	200
6	Chloride (as Cl)	Clause No.2 of IS 3025 (Part 32) :1988	mg /L	252	1000
7	Colour	Clause No.4 of IS 3025 (Part 04) :2021	CU	<1.0	15
8	Copper (as Cu)	Clause No.6 of IS 3025 (Part 42) :1992	mg /L	<0.02	1.5
9	Fluoride (as F)	APHA 23 rd Edition (4500 F D) : 2017	mg /L	0.75	1.5
10	Free Residual Chlorine (RFC)	APHA 23 rd Edition (4500 -Cl G) : 2017	mg/L	<0.1	Min 1.0
11	Iron (as Fe)	Clause No.7 of IS 3025 (Part 53) :2003	mg/L	<0.05	1.0
12	Lead (as Pb)	Clause No.8 of IS 3025 (Part 47) :1994	mg/L	<0.01	0.01
13	Magnesium (Mg)	Clause No.6 of IS 3025 (Part 46) :1994	mg/L	68	100

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F. No.: EL-GL-02



TEST REPORT

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Report / ULR No : TC6932-24-0-00000032-P

14	Mercury (as Hg)	Clause No.5 of IS 3025 (Part 48) :1994	mg/L	<0.001	0.001
15	Nitrate (as NO ₃)	Clause No.3.3 of IS 3025 (Part 34) :1988	mg/L	24	45
16	Odour	IS 3025 (Part 05) : 2018	-	Agreeable	Agreeable
17	pH value @ 25°C	Clause No.2 of IS 3025 (Part 11) :1983	No.	7.1	6.5-8.5
18	Phenolic Compounds (as C ₆ H ₅ OH)	Clause No.6 of IS 3025 (Part 43) :1992	mg/L	<0.001	0.002
19	EC @ 25°C (Specific Conductance) @ 25°C	IS 3025 (Part 14) : 2013	µS/cm	825	NA
20	Sulphates (as SO ₄)	Clause No.2 of IS 3025 (Part 24) :1986	mg/L	81.15	400
21	Total Alkalinity (as CaCO ₃)	IS 3025 (Part 23) : 1986	mg/L	345	600
22	Arsenic (as As)	Clause No.2 of IS 3025 (Part 37) :1988	mg/L	<0.005	0.01
23	Chromium (as Cr)	Clause No.7 of IS 3025 (Part 52) :2003	mg/L	<0.05	0.05
24	Total Dissolved Solids	IS 3025 (Part 16) : 1984	mg/L	461	2000
25	Total Hardness (as CaCO ₃)	Clause No.5 of IS 3025 (Part 21) :2009	mg/L	204	600
26	Total Silica (as SiO ₂)	Clause No.3.0 of IS 3025 (Part 35) :1988	mg/L	4.1	NA
27	Turbidity	IS 3025 (Part 10) : 1984	NTU	<0.1	5.0
28	Zinc (as Zn)	Clause No.6 of IS 3025 (Part 49) :1994	mg/L	<0.05	15

<-- End of Report -->

Report Verified by

R. Revathi

Technical Personnel

For EXCELLENCE LABORATORY

T. Karthikeyan

Authorized Signatory

R.REVATHI
Technical Manager



T. KARTHIKEYAN
Head - Laboratory

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TEST REPORT

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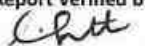
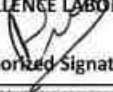
AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000001-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-1-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 32.4°C, RH:55 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Core		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	16.9	40.4	5.4	11.6	<5	<5	<1.0
06.10.2023	15.5	41.0	5.6	13.7	<5	<5	<1.0
12.10.2023	17.2	41.5	6.8	12.8	<5	<5	<1.0
13.10.2023	16.6	42.3	6.7	11.7	<5	<5	<1.0
19.10.2023	16.3	39.4	6.5	14.5	<5	<5	<1.0
20.10.2023	17.1	38.8	6.5	13.4	<5	<5	<1.0
26.10.2023	16.0	43.5	5.8	12.2	<5	<5	<1.0
27.10.2023	16.4	40.2	6.9	13.4	<5	<5	<1.0
01.11.2023	17.1	41.4	5.4	13.4	<5	<5	<1.0
02.11.2023	17.5	42.8	6.8	14.2	<5	<5	<1.0
08.11.2023	15.8	40.2	6.3	11.4	<5	<5	<1.0
09.11.2023	16.4	40.8	6.8	13.3	<5	<5	<1.0
15.11.2023	17.6	43.6	5.4	12.4	<5	<5	<1.0
16.11.2023	16.1	44.0	6.9	14.3	<5	<5	<1.0
22.11.2023	17.5	40.6	6.6	13.4	<5	<5	<1.0
23.11.2023	16.9	42.4	5.7	14.2	<5	<5	<1.0
01.12.2023	17.1	41.8	6.6	11.1	<5	<5	<1.0
02.12.2023	17.4	40.2	5.8	12.3	<5	<5	<1.0
07.12.2023	16.1	43.0	5.9	13.2	<5	<5	<1.0
10.12.2023	17.4	43.6	6.7	11.1	<5	<5	<1.0
14.12.2023	15.5	40.7	5.2	10.9	<5	<5	<1.0
17.12.2023	16.5	42.5	6.8	13.4	<5	<5	<1.0
21.12.2023	17.4	43.4	5.8	14.3	<5	<5	<1.0
24.12.2023	16.7	43.9	5.6	14.2	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI

R.S.DINAKARAN

Quality Manager

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TEST REPORT

Page 1 of 1

AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000002-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-2-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 32.5°C, RH:52.1 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Salipalayam		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	14.5	36.2	6.3	14.2	<5	<5	<1.0
06.10.2023	13.2	35.7	6.5	16.4	<5	<5	<1.0
12.10.2023	14.5	36.5	6.4	15.4	<5	<5	<1.0
13.10.2023	13.3	32.4	6.8	13.4	<5	<5	<1.0
19.10.2023	15.6	33.8	6.7	14.4	<5	<5	<1.0
20.10.2023	15.5	34.7	6.6	13.3	<5	<5	<1.0
26.10.2023	14.4	38.2	7.1	15.8	<5	<5	<1.0
27.10.2023	14.6	37.2	7.3	16.4	<5	<5	<1.0
01.11.2023	13.7	36.7	6.3	15.5	<5	<5	<1.0
02.11.2023	13.8	35.7	7.5	14.6	<5	<5	<1.0
08.11.2023	14.6	38.4	6.2	13.4	<5	<5	<1.0
09.11.2023	14.5	38.4	7.6	13.8	<5	<5	<1.0
15.11.2023	13.8	38.9	6.5	15.6	<5	<5	<1.0
16.11.2023	13.0	34.4	6.9	15.8	<5	<5	<1.0
22.11.2023	14.7	35.5	7.7	13.7	<5	<5	<1.0
23.11.2023	14.8	36.8	6.2	13.5	<5	<5	<1.0
01.12.2023	14.5	34.7	6.5	15.7	<5	<5	<1.0
02.12.2023	14.9	36.9	7.2	13.4	<5	<5	<1.0
07.12.2023	14.5	37.4	7.1	14.2	<5	<5	<1.0
10.12.2023	15.6	38.2	6.3	13.3	<5	<5	<1.0
14.12.2023	14.7	37.6	6.9	15.8	<5	<5	<1.0
17.12.2023	15.4	33.9	6.8	14.5	<5	<5	<1.0
21.12.2023	14.5	34.4	7.0	13.8	<5	<5	<1.0
24.12.2023	14.8	35.8	6.3	14.4	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

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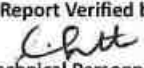
AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000003-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-3-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 31.5°C, RH:52.5 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Paramathi		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	16.8	41.3	8.2	20.6	<5	<5	<1.0
06.10.2023	17.6	41.5	8.5	20.6	<5	<5	<1.0
12.10.2023	16.7	41.6	9.6	22.9	<5	<5	<1.0
13.10.2023	16.5	44.1	9.7	22.9	<5	<5	<1.0
19.10.2023	17.5	44.1	9.8	22.9	<5	<5	<1.0
20.10.2023	16.5	41.9	10.1	20.7	<5	<5	<1.0
26.10.2023	17.1	41.5	10.5	22.9	<5	<5	<1.0
27.10.2023	17.5	41.6	10.4	20.5	<5	<5	<1.0
01.11.2023	16.8	44.1	9.5	20.8	<5	<5	<1.0
02.11.2023	16.6	42.6	8.6	22.6	<5	<5	<1.0
08.11.2023	16.7	42.7	8.4	22.9	<5	<5	<1.0
09.11.2023	17.1	41.8	9.6	21.8	<5	<5	<1.0
15.11.2023	17.6	42.8	10.8	22.4	<5	<5	<1.0
16.11.2023	16.6	44.1	9.4	22.6	<5	<5	<1.0
22.11.2023	16.5	41.6	8.6	20.7	<5	<5	<1.0
23.11.2023	17.5	42.8	10.5	22.9	<5	<5	<1.0
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02.12.2023	17.5	41.6	10.9	22.7	<5	<5	<1.0
07.12.2023	17.6	42.5	7.9	16.6	<5	<5	<1.0
10.12.2023	17.5	42.9	8.6	22.9	<5	<5	<1.0
14.12.2023	16.7	41.8	9.8	20.5	<5	<5	<1.0
17.12.2023	16.6	41.6	10.5	22.9	<5	<5	<1.0
21.12.2023	16.5	42.6	10.8	20.6	<5	<5	<1.0
24.12.2023	16.6	44.1	7.9	16.6	<5	<5	<1.0

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R.S.DINAKARAN

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6. Total liability of our laboratory is limited to the invoice amount and any dispute arising out of this report is subject to Madurai Jurisdiction only.

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Lab: No. 23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O: No. 15, Metha Layout, Masakalipalayam Road, Peelamedu, Coimbatore - 641 004, B.O: No. 22/33A Second Street, Ram Nagar, Tiruppur - 641 602.





TEST REPORT

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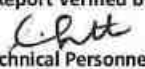
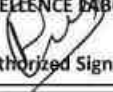
AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000004-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-4-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 31.1°C, RH:52.2 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Puthurpatti		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	14.8	34.5	5.2	13.8	<5	<5	<1.0
06.10.2023	13.7	36.1	6.0	14.6	<5	<5	<1.0
12.10.2023	14.8	36.0	7.1	12.5	<5	<5	<1.0
13.10.2023	15.8	34.3	6.9	13.8	<5	<5	<1.0
19.10.2023	13.8	36.3	5.5	12.4	<5	<5	<1.0
20.10.2023	14.7	38.1	5.7	13.2	<5	<5	<1.0
26.10.2023	14.6	38.8	5.9	14.5	<5	<5	<1.0
27.10.2023	15.8	36.4	7.1	14.2	<5	<5	<1.0
01.11.2023	13.9	38.9	5.3	13.9	<5	<5	<1.0
02.11.2023	14.8	39.5	5.2	14.3	<5	<5	<1.0
08.11.2023	15.6	36.4	7.2	13.6	<5	<5	<1.0
09.11.2023	14.8	35.4	5.7	14.5	<5	<5	<1.0
15.11.2023	14.7	35.8	7.1	10.9	<5	<5	<1.0
16.11.2023	15.6	35.5	6.5	14.8	<5	<5	<1.0
22.11.2023	14.8	38.3	6.2	13.8	<5	<5	<1.0
23.11.2023	14.6	38.8	7.0	14.3	<5	<5	<1.0
01.12.2023	15.6	39.1	7.0	14.5	<5	<5	<1.0
02.12.2023	14.5	37.1	6.1	13.5	<5	<5	<1.0
07.12.2023	14.1	36.7	5.6	14.9	<5	<5	<1.0
10.12.2023	14.8	37.4	5.3	12.2	<5	<5	<1.0
14.12.2023	15.4	36.3	5.4	14.8	<5	<5	<1.0
17.12.2023	13.9	36.2	5.8	13.8	<5	<5	<1.0
21.12.2023	14.4	39.1	6.0	14.5	<5	<5	<1.0
24.12.2023	15.3	37.5	5.3	12.6	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI

R.S.DINAKARAN

Quality Manager

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TEST REPORT

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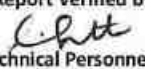
AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000005-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-5-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 30.4°C, RH:51.5 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Kuppam		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	14.5	36.2	6.3	13.0	<5	<5	<1.0
06.10.2023	15.2	36.9	7.5	16.8	<5	<5	<1.0
12.10.2023	15.9	38.2	6.4	15.9	<5	<5	<1.0
13.10.2023	16.8	43.8	6.9	15.2	<5	<5	<1.0
19.10.2023	16.7	36.2	7.2	16.9	<5	<5	<1.0
20.10.2023	14.6	39.4	7.9	16.2	<5	<5	<1.0
26.10.2023	14.9	41.9	6.2	15.6	<5	<5	<1.0
27.10.2023	17.5	42.5	7.5	15.8	<5	<5	<1.0
01.11.2023	14.8	43.6	7.1	16.9	<5	<5	<1.0
02.11.2023	16.4	37.6	7.8	16.8	<5	<5	<1.0
08.11.2023	14.5	37.0	7.6	16.3	<5	<5	<1.0
09.11.2023	14.7	36.0	7.4	17.0	<5	<5	<1.0
15.11.2023	17.4	36.4	7.7	16.9	<5	<5	<1.0
16.11.2023	14.4	37.5	8.1	16.5	<5	<5	<1.0
22.11.2023	14.5	39.4	7.1	17.0	<5	<5	<1.0
23.11.2023	16.8	40.5	7.3	16.8	<5	<5	<1.0
01.12.2023	15.3	41.6	6.5	15.9	<5	<5	<1.0
02.12.2023	15.1	37.5	8.0	16.5	<5	<5	<1.0
07.12.2023	15.7	40.6	6.6	16.1	<5	<5	<1.0
10.12.2023	14.6	40.9	6.3	14.8	<5	<5	<1.0
14.12.2023	17.3	41.2	7.5	16.3	<5	<5	<1.0
17.12.2023	15.1	42.9	6.5	16.2	<5	<5	<1.0
21.12.2023	15.9	37.5	6.2	14.5	<5	<5	<1.0
24.12.2023	17.3	37.9	6.5	16.2	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI

R.S.DINAKARAN

Quality Manager

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TEST REPORT

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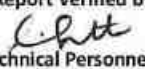
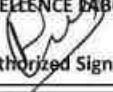
AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000006-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-6-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 30.5°C, RH:50.5 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Malapalayampudur		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	12.2	30.8	4.9	8.6	<5	<5	<1.0
06.10.2023	14.3	32.5	4.1	10.2	<5	<5	<1.0
12.10.2023	15.6	30.1	5.3	10.3	<5	<5	<1.0
13.10.2023	12.2	37.9	4.6	10.9	<5	<5	<1.0
19.10.2023	11.9	35.5	4.3	10.9	<5	<5	<1.0
20.10.2023	12.2	36.6	5.4	11.5	<5	<5	<1.0
26.10.2023	13.3	29.7	4.3	10.2	<5	<5	<1.0
27.10.2023	13.2	37.1	4.4	10.3	<5	<5	<1.0
01.11.2023	14.7	34.6	4.6	11.1	<5	<5	<1.0
02.11.2023	14.9	34.5	5.3	11.4	<5	<5	<1.0
08.11.2023	13.8	38.9	5.1	9.8	<5	<5	<1.0
09.11.2023	12.2	37.2	4.7	10.7	<5	<5	<1.0
15.11.2023	12.1	36.6	4.2	10.3	<5	<5	<1.0
16.11.2023	13.2	37.5	4.8	11.5	<5	<5	<1.0
22.11.2023	15.6	35.7	5.1	10.1	<5	<5	<1.0
23.11.2023	14.8	30.5	5.5	11.4	<5	<5	<1.0
01.12.2023	14.5	34.6	4.4	10.3	<5	<5	<1.0
02.12.2023	12.8	30.9	4.6	9.6	<5	<5	<1.0
07.12.2023	13.7	37.9	5.1	9.5	<5	<5	<1.0
10.12.2023	15.1	33.3	4.5	11.6	<5	<5	<1.0
14.12.2023	12.1	34.4	4.1	11.3	<5	<5	<1.0
17.12.2023	15.3	29.9	4.7	10.5	<5	<5	<1.0
21.12.2023	14.4	32.5	4.9	10.2	<5	<5	<1.0
24.12.2023	15.0	33.9	4.2	11.3	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by  Technical Personnel		For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI

R.S.DINAKARAN

Quality Manager

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TEST REPORT

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AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000007-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-7-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 31.2°C, RH:50.0 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Kurumpapatti		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	14.7	39.2	2.9	6.5	<5	<5	<1.0
06.10.2023	15.2	40.5	3.4	7.2	<5	<5	<1.0
12.10.2023	15.5	40.1	2.6	9.1	<5	<5	<1.0
13.10.2023	15.3	37.3	4.2	9.5	<5	<5	<1.0
19.10.2023	15.9	37.9	3.8	9.4	<5	<5	<1.0
20.10.2023	15.3	36.6	4.1	9.1	<5	<5	<1.0
26.10.2023	15.6	38.2	2.8	10.7	<5	<5	<1.0
27.10.2023	15.2	39.2	3.2	10.1	<5	<5	<1.0
01.11.2023	15.6	36.5	3.5	9.3	<5	<5	<1.0
02.11.2023	16.1	39.6	2.8	10.8	<5	<5	<1.0
08.11.2023	15.1	38.2	3.7	9.4	<5	<5	<1.0
09.11.2023	14.6	40.3	3.3	6.6	<5	<5	<1.0
15.11.2023	15.8	36.6	4.1	7.2	<5	<5	<1.0
16.11.2023	15.6	40.5	4.3	10.2	<5	<5	<1.0
22.11.2023	15.5	39.5	3.9	8.9	<5	<5	<1.0
23.11.2023	15.0	40.2	3.5	7.0	<5	<5	<1.0
01.12.2023	16.2	38.2	3.6	7.2	<5	<5	<1.0
02.12.2023	15.2	40.5	2.9	9.9	<5	<5	<1.0
07.12.2023	16.1	40.3	3.3	7.3	<5	<5	<1.0
10.12.2023	15.0	38.6	2.7	9.5	<5	<5	<1.0
14.12.2023	15.6	40.6	4.2	8.3	<5	<5	<1.0
17.12.2023	15.3	38.1	3.9	8.5	<5	<5	<1.0
21.12.2023	15.6	37.5	3.5	9.3	<5	<5	<1.0
24.12.2023	16.1	37.1	3.1	7.5	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI

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TEST REPORT

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AMBIENT AIR MONITORING

Report / ULR No :	TC6932-24-0-0000008-F	Report Date :	08.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Air	Sample Reference No :	EL-NL-AA-8-01-2024
Sample Drawn By :	Laboratory	Sample Collected Date :	05.10.2023 - 24.12.2023
Sampling Time :	24 Hours	Sample Received on :	25.12.2023
Qty of Sample Received :	Filter Paper(2 nos) & Approx 25 ml Solution(4 nos)	Test Commenced on :	26.12.2023
Sample Condition on Receipt :	Good	Test Completed on :	02.01.2024
Sampling Environment Condition :	Temperature: 31.5°C, RH:50.4 %	Sampling Method / Plan :	IS 5182
Sample Mark :	Munnur		
Instruments Used for Sampling :	Combined Sampler (ID No: EL-IT-F40) with calibration validity due on 10.05.2024		

Monitoring	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$				
Date	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)
NAAQ Norms*	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)
05.10.2023	15.3	39.1	5.3	14.1	<5	<5	<1.0
06.10.2023	16.0	37.2	5.2	15.0	<5	<5	<1.0
12.10.2023	16.7	41.5	5.7	15.7	<5	<5	<1.0
13.10.2023	15.7	37.0	5.3	16.5	<5	<5	<1.0
19.10.2023	15.2	39.5	6.0	14.3	<5	<5	<1.0
20.10.2023	15.8	41.4	5.2	14.2	<5	<5	<1.0
26.10.2023	16.8	38.2	5.9	15.4	<5	<5	<1.0
27.10.2023	17.2	38.6	6.5	14.4	<5	<5	<1.0
01.11.2023	16.6	38.2	5.4	14.7	<5	<5	<1.0
02.11.2023	15.5	42.0	5.2	15.1	<5	<5	<1.0
08.11.2023	16.1	40.1	5.5	14.5	<5	<5	<1.0
09.11.2023	16.1	39.9	6.5	16.2	<5	<5	<1.0
15.11.2023	16.5	40.7	5.4	15.3	<5	<5	<1.0
16.11.2023	17.3	38.9	5.2	15.9	<5	<5	<1.0
22.11.2023	16.6	37.5	5.5	15.6	<5	<5	<1.0
23.11.2023	17.2	42.2	5.7	14.9	<5	<5	<1.0
01.12.2023	15.4	40.5	5.2	15.1	<5	<5	<1.0
02.12.2023	16.2	41.2	5.4	15.5	<5	<5	<1.0
07.12.2023	16.8	39.2	5.8	14.7	<5	<5	<1.0
10.12.2023	16.4	40.1	5.6	17.4	<5	<5	<1.0
14.12.2023	15.4	39.0	5.7	14.8	<5	<5	<1.0
17.12.2023	16.4	38.2	6.1	17.0	<5	<5	<1.0
21.12.2023	15.9	41.9	6.1	16.7	<5	<5	<1.0
24.12.2023	17.2	39.7	6.2	13.9	<5	<5	<1.0

Statement of Conformity: The concentrations of the parameters tested in the above location are within the prescribed annual average limits of NAAQs tolerance limits.

-----End of Report-----

Report Verified by Technical Personnel		For EXCELLENCE LABORATORY Authorized Signatory

R.REVATHI

R.S.DINAKARAN

Quality Manager

Disclaimer: 1. This test report should not be reproduced in full or part without the written approval of the laboratory.

2. The test results relate only to the test item tested and results apply to the sample "as received conditions".

3. This test results does not account the MU value in the statement of conformity unless or otherwise specified in the report.

4. The laboratory is not responsible for information provided by customer and it does not come under the scope of accreditation.

5. This test item will not be retained more than 10 days from date of issue of test report, unless or otherwise requested by customer.

6. Total liability of our laboratory is limited to the invoice amount and any dispute arising out of this report is subject to Madurai Jurisdiction only.

7. This report cannot be used as evidence in the court of law and should not be used in any advertising media without our special permission in writing.

8. Sample is not drawn by laboratory unless stated in the report, if the sample drawn by the customer, the laboratory is not responsible for sampling stage.

9. (BDL) - Below Detectable Limit; (DL) - Detectable Limit; (MU) - Measurement Uncertainty; (NA) - Not Applicable; (CFU) - Colony Forming Unit.

10. No additions, deviations or exclusions from the above test methods mentioned unless or otherwise specified in the report.

11. (#) Mark indicates the tests does not comes under scope of accreditation and (H) Mark indicate the tests are subcontracted to other certified laboratory.

Lab: No. 23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O: No. 15, Metha Layout, Masakalipalayam Road, Peelamedu, Coimbatore-696004, B.O: No. 22/33A Second Street, Ram Nagar, Tiruppur - 641 602.





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TEST REPORT

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AMBIENT NOISE LEVEL MONITORING

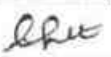
Report / ULR No :	TC6932-24-0-00000002-F	Report Date :	10.01.2024
Customer Name & Address :	M/S T.Manoj Prabakar Roughstone & Gravel Quarry Kuppam Village, Pugalur (Tk). Karur - 639 136 Ph : 9443937841		
Sample Description :	Ambient Noise	Sample Reference No :	EL-NL-AN-1-01-2024
Monitoring By :	Laboratory	Monitoring Date :	01.12.2023 - 02.12.2023
Sampling Time :	24 hours	Date Received on :	07.12.2023
Sampling Environment Condition :	Temperature: 32 °C, RH: 55 %		
Sampling Method / Plan :	IS 9989 : 1981		
Instruments Used for Sampling :	5 in 1 EL-IT-F28 with calibration validity due on 02.06.2024		

S.No	Name of the Locations	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
1	Core	Industrial area	47.2	35.4	75	70
2	Salipalayam	Residential area	42.2	32.6	55	45
3	K. Paramathi	Residential area	52.4	42.2	55	45
4	Puthurpatti	Residential area	44.6	34.4	55	45
5	Kuppam	Residential area	46.8	39.8	55	45
6	Malapalayampudur	Residential area	39.8	30.6	55	45
7	Kurumpapatti	Residential area	38.6	32.2	55	45
8	Munnur	Residential area	47.2	39.4	55	45

Permissible Limit for Residential Noise as per the TNPCB Norms, 2020 (Night Time) Maximum 45.0

Statement of Conformity: The sound levels tested in the above locations are within the prescribed limits of TNPCB tolerance limits of 2020.

<-- End of Report -->

Report Verified by  Technical Personnel	For EXCELLENCE LABORATORY  Authorized Signatory

R.REVATHI
Technical Manager



R.S.DINAKARAN
Quality Manager

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Lab: No.23/93, Fifth Street, Ram Nagar, S.S. Colony, Madurai - 625 010.

B.O. No.4/6-26, Amar Jothi Jai Nagar, Kannampalayam, Sulur, Coim 641 402. B.O. No.22/33A Second Street, Ram Nagar, Tiruppur - 641 602.

வருவாய் மற்றும் பேரிடர் மேலாண்மைத் துறை

நக.எண்.ஆ/1101/2024
நாள் :27.05.2024.

வட்டாட்சியர் அலுவலகம்,
புகழூர்.

ஏ1 விளம்பர அறிவிப்பு

கருநர் மாவட்டம், புகழூர் வட்டம், குப்பம் கிராம மக்களுக்கு இந்த அறிவிப்பு மூலம் தெரிவிப்பது யாதெனில், குப்பம் கிராமம் பட்டா புல எண்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் புல எண். 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் ஹெக்டேர் 2.05.50 ஏர்ஸ் பரப்பில் திருமதி.எஸ்.லட்சுமி க/பெ. ராஜேஸ்குமார் என்பவர் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குத்தகை உரிமம் கோரி கருநர் வருவாய் கோட்டாட்சியர் அவர்களிடம் விண்ணப்பித்துள்ளார். மேற்காணும் புலத்தில் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குத்தகை உரிமம் வழங்க குப்பம் கிராம பொதுமக்களுக்கு ஆட்சேபணைகள் ஏதுமிருப்பின் அத்தகைய ஆட்சேபணையை எழுத்து மூலமாகவோ, நேரிலோ அல்லது தபால் மூலமாகவோ இந்த அறிவிக்கை பிரசுரித்தம் செய்யப்பட்ட 7 நாட்களுக்குள் அபிப்பிராயப்பொப்பமிட்டவருக்குத் தெரிவித்துக் கொள்ள வேண்டியது. குறிப்பிட்ட காலத்திற்குள் எவ்வித ஆட்சேபணையும் வரப்பெறவில்லையென்றால், ஆட்சேபணைகள் ஏதுமில்லை எனக் கருதி மேல் நடவடிக்கை எடுக்கப்படும் என அறிவிக்கப்படுகிறது.


வட்டாட்சியர்,
புகழூர்.

நாள்
27/05/2024

கிராம நிர்வாக அலுவலர், குப்பம் கிராமம் மேற்கண்ட விளம்பரத்தை நன்கு விளம்பரம் செய்து அதற்கான அத்தாட்சியை சமர்ப்பிக்க அறிவுறுத்தப்படுகிறார்.

குப்பம் கிராமக் குடிகளாகிய நாங்கள் இந்த விளம்பர அறிவிக்கையை கிராம நிர்வாக அலுவலகம் தகவல் பலகையில் அறிவிப்பு செப்ததன் மூலம் பிரசுரித்தம் செய்ததைத் தெரிந்து கொண்டோம்.

கிராமக் குடிகள் கையொப்பம்:-

1. K. poly S/o Kuppasamy Gounder, Kalpalayam.
2. K. poly S/o K. Periasamy, Kalpalayam. [9787960733]
3. T. b. S/o V. S. S/o 9443323661
4. K. poly S/o Kalappa Gounder 9944554188
5. K. poly S/o Karagoraj 9944432788.

நாள்: 29.05.2025.

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் கரூர் மாவட்டம் - புகளூர் வட்டம் - குப்பம் கிராமம் - பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் - சாதாரணகற்கள் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வேண்டி திருமதி.எஸ்.லட்சுமி, என்பவர் விண்ணப்பம் செய்தது - வருவாய் கோட்டாட்சியர் நிலயிருப்பு அறிக்கை வரப்பெற்றது - உதவி புவியியலாளர் புலத்தணிக்கை அறிக்கை வரப்பெற்றது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. திருமதி.எஸ்.லட்சுமி, க/பெ.ராஜேஸ்குமார், கதவு எண்.267/1,2, சிந்துநகர், கொங்கு மெஸ் எதிரில், ஆண்டாங்கோவில் கீழ்பாகம் கிராமம், மண்மங்கலம் வட்டம், கரூர் மாவட்டம் என்பவர் குவாரி குத்தகை உரிமம் வழங்கக் கோரும் விண்ணப்பம் நாள்: 08.04.2024.
 3. வருவாய் கோட்டாட்சியர், கரூர் அவர்களின் கடிதம் ந.க.எண். அ1/2497/2025, நாள்:08.10.2024
 3. உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை கரூர் என்பவரது புலத்தணிக்கை அறிக்கை நாள்: 23.05.2025.
 4. அரசாணை (பல்வகை) எண். 169, தொழில் (எம்எம்.சி-1) துறை நாள்: 04.08.2020 இணைத்து வரப்பெற்றுள்ளது. (தமிழ்நாடு அரசிதழ் சிறப்பு வெளியீடு எண். 315 நாள்: 04.08.2020).

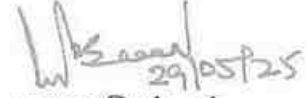
கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் பரப்பு நிலத்திலிருந்து பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க கதவு எண்.267/1,2, சிந்துநகர், கொங்கு மெஸ் எதிரில், ஆண்டாங்கோவில் கீழ்பாகம் கிராமம், மண்மங்கலம் வட்டம், கரூர் மாவட்டம் என்ற முகவரியில் வசித்துவரும் திருமதி.எஸ்.லட்சுமி, க/பெ.ராஜேஸ்குமார், என்பவர் பார்வை 1-இல் கண்டுள்ளவாறு விண்ணப்பம் செய்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, வருவாய் கோட்டாட்சியர், கரூர் மற்றும் உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் மட்டும் தமிழ்நாடு சிறு கனிமச்சலுகை விதிகளில் விதி எண்கள்.19-(1), 20 மற்றும் 33-இன் கீழ் திருமதி.எஸ்.லட்சுமி, க/பெராஜேஸ்குமார், என்பவருக்கு 10 ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
2. விண்ணப்ப புலத்திற்கு வடகிழக்கு திசையில் அமைந்துள்ள மின்கோபுரம் மற்றும் வடக்கு திசையில் கிழமேலாக செல்லும் தாழ்வழுத்த மின்பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்தில் நடுவே அமைந்துள்ள தாழ்வழுத்த மின்பாதைகளை குத்தகை உரிமம் நிறைவேற்றுவதற்கு முன்பு விண்ணப்பதாரர் அப்புறப்படுத்திக் கொள்ள வேண்டும்.
4. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ சேதம் ஏற்படாத வண்ணம் குவாரிப்பணி செய்ய வேண்டும்.
5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferrous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
6. குவாரி குத்தகை வழங்க ஏதுவாக துணை இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினையும், மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) அனுமதி பெற்று மாவட்ட நிர்வாகத்திற்கு விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.

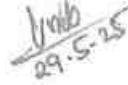
எனவே, வருவாய் கோட்டாட்சியர், கரூர் மற்றும் உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர் ஆகியோரின் பரிந்துரைகள் மற்றும் நிபந்தனைகளின் அடிப்படையில் கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம் பட்டா புல எண்கள்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2(0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர்ஸ் பரப்பில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண். 19(1), 20 மற்றும் 33-இன்படியும் மேலும் மேற்கண்ட நிபந்தனைகளுக்கு உட்பட்டு பத்து வருட காலத்திற்கு திருமதி.எஸ்.லட்சுமி, என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

எனவே, அதற்கிணங்க, தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண்.41-இன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு திருமதி.எஸ்.லட்சுமி, என்பவர் கேட்டுக்கொள்ளப்படுகிறார். மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-இன்படி சுற்றுச்சூழல் தாக்கல் மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

 29/05/25

துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
கரூர்.

பெறுநர்
திருமதி.எஸ்.லட்சுமி,
க/பெ.ராஜேஸ்குமார்,
கதவு எண்.267/1,2, சிந்துநகர்,
கொங்கு மெஸ் எதிரில்,
ஆண்டாங்கோவில் கீழ்பாகம் கிராமம்,
மண்மங்கலம் வட்டம், கரூர் மாவட்டம்

 29-5-25

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்கல் மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.

Green Belt Photos



வருவாய் மற்றும் பேரிடர் மேலாண்மைத்துறை

அனுப்புநர்

கி.தனசேகரன்,

வருவாய் வட்டாட்சியர்,

புகழூர்.

பெறுநர்

வருவாய் கோட்டாட்சியர்,

கரூர்.

ந.க.ஆ/1101/2024, நாள்: 07.2024.

அய்யா,

பொருள்: கனிமம் மற்றும் கரங்கம் - சிறு கனிமங்கள் - கரூர் மாவட்டம் - புகழூர் வட்டம் - குப்பம் கிராமம் - மட்டா புல எண்.675/1 (1.12.00 ஹெக்டேர் மற்றும் 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் பரப்பில் திருமதி.எஸ். லட்சுமி க/பெ. ராஜேஸ்குமார் என்பவர் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குத்தகை உரிமம் கோரியது - அறிக்கை அனுப்புதல் - தொடர்பாக.

- பார்வை: 1. கரூர் வருவாய் கோட்டாட்சியர் அவர்களின் கடிதம் ந.க.அ/2497/2024, நாள்.21.05.2024.
2. க.பாமத்தி குறுவட்ட வருவாய் ஆய்வாளரின் அறிக்கை அ.தி.மு./224/2024, நாள்.02.07.2024.

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கரூர் மாவட்டம், புகழூர் வட்டம், குப்பம் கிராமம் புல எண்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் பரப்பில் திருமதி.எஸ்.லட்சுமி க/பெ.ராஜேஸ்குமார் என்பவர் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குத்தகை உரிமம் கோரி அளித்த மனுவின் மீது பார்வை 1-ல் காணும் கரூர் வருவாய் கோட்டாட்சியர் அவர்களின் கடிதத்தில் தெரிவித்துள்ளவாறு புலத்தணிக்கை மற்றும் விசாரணை மேற்கொண்டு எனதறிக்கையினை பின்வருமாறு சமர்ப்பிக்கிறேன்.

கரூர் மாவட்டம், புகழூர் வட்டம், குப்பம் கிராமம், ~~கிராமம்~~ மட்டா எண்.4609-ல் 675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் ஏர்ஸ் நிலமானது கணேசன் மகன் செல்வக்குமார் என்பவரிடமிருந்து திருமதி.எஸ்.லட்சுமி க/பெ.ராஜேஸ்குமார் என்பவர் 2 நீர் இணை சார்பதிவாளர் அலுவலகம் கரூர் ஆவண எண்.766/2024, நாள்.20.03.2024-ன் படி கிரையம் பெற்று சொந்தமாக அனுபோகம் செய்து வருகிறார். மேற்படி கிராம புல எண். 675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் ஏர்ஸ் பரப்பில் மட்டும் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க திருமதி.எஸ்.லட்சுமி க/பெ.ராஜேஸ்குமார் என்பவர் குவாரி குத்தகை உரிமம் கோரியுள்ளார்.

மேற்படி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணுக்கான நான்கெல்லைகள் விவரம் கீழ்க்கண்டவாறு உள்ளது.

புல எண். 675/1 ஹெக்டேர் 1.12.00 ஏர்ஸ்-க்கு நான்கெல்லை விவரம்

தெற்கு	புலஎண்.677 நடைபாதை புறம்போக்கு நிலம்
மேற்கு	புல எண்கள்.675/3 ராமகிரி (வ) பூமி
வடக்கு	புலஎண்.675/2 லட்குமி பூமி
கிழக்கு	புல எண்.682 அன்னை புளூ மெட்டல்ஸ் நிலம்

புல எண். 675/2 ஹெக்டேர் 0.93.50 ஏர்ஸ்-க்கு நான்கெல்லை விவரம்

தெற்கு	புலஎண்.675/1 லட்குமி பூமி
மேற்கு	புல எண்கள்.675/3 ராமகிரி (வ) பூமி
வடக்கு	புலஎண்.674/1 பெரியசாமி பூமி
கிழக்கு	புல எண்.682 அன்னை புளூ மெட்டல்ஸ் நிலம்

“அ1” அறிவிப்பு:

குவாரி குத்தகை உரிமம் கோருவது தொடர்பாக குப்பம் கிராமத்தில் 27.05.2024-ஆம் தேதியில் “அ1” விளம்பரம் பிரசுரம் செய்யப்பட்டதில் நாளது தேதிவரை பொதுமக்களிடமிருந்து ஆட்சேபணை ஏதும் வரப்பெறவில்லை.

குடியிருப்பு மனைகள் மற்றும் கட்டுமானங்கள் :

மேற்கண்ட குத்தகை உரிமம் கோரும் புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் கிராம நத்தம், அங்கீகரிக்கப்பட்ட குடியிருப்புகள், வீட்டு மனைகள், கோவில்கள், மசூதிகள், சர்ச்சுகள், புராதான சின்னங்கள், நீர்நிலைகள் மற்றும் உயர்மின் அழுத்த கோபுரங்கள் ஏதும் செல்லவில்லை.

குத்தகை உரிமைக் கட்டணம்:

மனுதாரர் குவாரி குத்தகை உரிமைக் கட்டணம் ரூ.1500/-க்கான சலான் எண். 20240403014297 நாள்.03.04.2024-ன் படி செலுத்தி சலான் நகல் இணைக்கப்பட்டுள்ளது. பரிந்துரை :

கரூர் மாவட்டம், புகழூர் வட்டம், குப்பம் கிராமம் புல எண்.675/1 (1.12.00 ஹெக்டேர்) மற்றும் 675/2 (0.93.50 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.05.50 ஹெக்டேர் பரப்பில் திருமதி.எஸ்.லட்குமி க/பெராஜேஸ்குமார் என்பவர் பத்து ஆண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குத்தகை உரிமம் வழங்கலாம் என்பதையும், மேலும் மேற்கண்ட புல எண்ணிற்கான கிராம கணக்கு, புல வரைபட நகல்கள், க.பரமத்தி குறுவட்ட வருவாய் ஆய்வாளர் மற்றும் குப்பம் கிராம நிர்வாக அலுவலர் ஆகியோர்களின் அறிக்கைகள் ஆகியவற்றை இத்துடன் இணைத்து அனுப்பியுள்ளேன் என்பதையும் பணிபுடன் தெரிவித்துக் கொள்கிறேன்.

இணைப்பு-மேற்கண்டவாறு.

(அ/ந)

வட்டலட்சியர்,
புகழூர்.

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03/04/2024