

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 = 12.14.0 hectares

At

Magaral-B Village, Uthiramerur Taluk,
Kancheepuram District, Tamil Nadu State

TOR Identification No. TO24B0108TN5967835N, Dated: 14/05/2024, File No.10707

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.
Mr.S.Rathnavelu S/o.R.Sivaswamy, Old No.5, New No.2/33, Bhuvaneswari Nagar, 1 st Street, Gowrivakkam, Chennai District- 600 073	0.89.50ha 700/1(Part)

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



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

Valid till: Dec, 31.12.2026



ENVIRONMENTAL LAB

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Baseline Study Period – March through May 2023



GEO TECHNICAL MINING SOLUTIONS

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No.10707

TOR Identification No. TO24B0108TN5967835N, dated.14/05/2024

S.Rathnavelu, Rough Stone and Gravel Quarry

Specific terms of Reference for (Mining of Minerals)

1. Seiaa Standard Conditions:

S.No	Terms of Reference		
1.1	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.
	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 committee formed 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	All the information has been discussed in Section 2.6 under Chapter II in the EIA report page 20-27, and the usage of haul road connectivity to the lease area is shown in figure 2.3 in the EIA report page 11.

	individual quarry in the form of route map and network.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
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.
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
10	The committee shall furnish an action plan to achieve sustainable	A proper action plan with reference to water, sanitation & safety will be

		development goals with reference to water, sanitation & safety.	devised and submitted by the committee to the respective authority.
	11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The committee will submit the fire safety and evacuation plan as discussed in Section 7.3 under Chapter VII in the EIA report page 124-126.
	Impact study of mining		
	12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following.	
	a)	Soil health & soil biological, physical land chemical features.	Soil health and biodiversity have been discussed in Sections 3.1 and 3.5 respectively under Chapter III in the EIA report page 30-39 and 65-82.
	b)	Climate change leading to Droughts, Floods etc.	Climatic condition of the proposed project area has been discussed in Section 3.3.1.1 under Chapter III in the EIA report page 50-52.
	c)	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local People.	The information about CO ₂ emission has been added to Section 4.6 under Chapter IV in the EIA report page 108-112.
	d)	Possibilities of water contamination and impact on aquatic ecosystem health.	Possibilities of both surface and ground water contamination have been discussed in Section 4.3 under Chapter IV in the EIA report page 95-96. The impact on aquatic species has been discussed in Section 4.6 under Chapter IV in the EIA report page 108-112.
	e)	Agriculture, Forestry, & Traditional practices.	Sorgum, millet, groundnut, and coconut are the primary crops that are cultivated in the study area.

	f)	Hydrothermal/Geothermal effect due to destruction in the Environment.	The average geothermal gradient of earth is 25 ⁰ C/km. As the proposed depth of mining is 50m below the local ground level, the temperature will increase by 1.25 ⁰ C at the depth of mining.
	g)	Bio-geochemical processes and its foot prints including environmental stress.	Data is not included.
	h)	Sediment geochemistry in the surface streams.	The details of sediment geochemistry are discussed in the Table 3.4 under Chapter III in the EIA report page 39.
Agriculture & Agro-Biodiversity			
13		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 under Chapter IV in the EIA report page 108-112.
14		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 65-82. 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.

15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area shall be given 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 3.5 under Chapter III in the EIA report page 65-82. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 108-112.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.5 under Chapter III in the EIA report page 65-82 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 108-112.
17	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 93-115.
18	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 93- 94.
Forests		
19	The project proponent shall study on impact of mining on Reserve forests 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.
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 108-112.

		and endangered indigenous flora and fauna.	
	21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	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 108-112.
	22	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 3.38 under Chapter III in the EIA report page 90.
Water Environment			
	23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydrogeological study is discussed in the Section 3.2.3 under Chapter III in the EIA report page 41-50.
	24	Erosion control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV in the EIA report page 95 – 96.

25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, waterbodies/rivers & any ecological fragile areas.	The matter has been discussed under Chapter IV in the EIA report page 93-115.
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.5 under Chapter III in the EIA report page 65-82.
27	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 93-115.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sits possible land form changes visual and aesthetic impacts.	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV in the EIA report page 108-112.
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 94-95.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV in the EIA report page 95-96.
Energy		
31	The measures taken to control Noise, Air, water, Dust control and steps	The measures taken to control noise, air, water, and dust have been given

	adopted to efficiently utilise the Energy shall be furnished.	under Chapter IV in the EIA report page 93-115.
Climate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	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 108-112.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The matter has been discussed in Chapter IV in the EIA report page 93-115.
Mine Closure Plan		
34	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 2.9 under Chapter II in the EIA report page 23.
EMP		
35	Detailed Environment Management plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	A detailed Environment Management plan has been given under Chapter X in the EIA report page 136-142.
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt	A detailed Environment Management plan has been given in Tables 10.1 &

	development and mine closure plan including disaster management plan.	10.2 under Chapter X in the EIA report page 137-142.
Risk Assessment		
37	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 122-124.
Disaster Management Plan		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable 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 124-126.
Others		
39.	The project proponent shall furnish VAO certificate with reference to 300 m radius regard to approved habitations, schools, Archaeological sites, structures, railway lines, roads, water bodies such as streams, odis, vaari, canal, river, lake pond, tank etc.	The VAO certificate will be submitted in the EIA report.
40	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	The concerns raised during the public consultation is submitted in final EIA report.

		and all the activities proposed shall be part of the Environment Management plan.	
	41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 130-131.
1.2	SEIAA SECIFIC CONDITIONS After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) for the quantity of 2,32,619m³ of rough stone and 18,009 m³ of Gravel up to the ultimate depth of 50m below the ground level and the annual peak production should not exceed 52,759m³ of rough stone, along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC.		

2. Seac Conditions-Site Specific

S.No	Terms of Reference		
2.1	1	The Proponent shall furnish a comprehensive EIA study involving the environmental impacts including air pollution, water pollution, etc., carried out by the Centre for Climate Change, Anna University Chennai for all the existing quarries situated within 1 Km radius from the proposed site along with the	The study involving the environmental impacts carried out by the Centre for Climate Change, Anna University Chennai will be submitted in the final EIA report.

		mitigation measures, during the EIA appraisal.	
	2	The PP shall carry out a comprehensive study indicating the Travelling route used for quarry operation, Crusher activity as proposed pertaining to the traffic surveys and Axle load surveys and demand forecasting for the next 10 years in the cluster area including the Traffic Volume, Identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation, identification of sources of construction material, etc along with mitigation measures by involving anyone of these reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, IIT (ISM)/Dhanbad, IIT-Madras, and Division of Transport Studies, Anna University Chennai-CEG Campus. Further, the study shall also consider the local and slow traffic which may need segregation from the main traffic and provision of service roads	The detailed traffic study from the reputed institute indicating the travelling route including the traffic volume, improvements for the next 10 years will be submitted in the final EIA report.

		(or) physical barrier including fencing, wherever necessary to improve efficiency and safety, particularly the trucks plying through the schools/hospitals/villages.	
	3	The Proponent shall study about the addition of proposed quarrying operation in the existing cluster over the economic growth of the area falling within 10 km from the cluster of mines.	The proponent will combine with the cluster quarry managements. A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 10km radius will combine together for the economic growth of the area.
	4	The PP shall ensure that the venue of the Public Hearing meeting to be carried out by TNPCB, is preferably in Magaral B Village, Walajabad Taluk, Kancheepuram District (or) within the limits as specified in the EIA Notifications.	The public hearing meeting will be conducted in the Magaral B village, Walajabad Taluk, Kancheepuram District during the time of public hearing.
	5	The PP shall submit the Certified Compliance Report (CCR) obtained from IRO(SZ), MoEF&CC with the status of non-compliance, and to furnish mitigation measures/remedial action plan with the budget allocation for the non-compliance stated in the CCR.	It is a fresh lease quarry, the CCR is not required.
	6	The PP shall complete the fencing, tree plantation and photographs, videos of the same shall be furnished.	The photographs and videos of fencing and tree plantation will be submitted in the final EIA report.

	7	The PP shall mark the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds, and provide the details during the EIA appraisal.	After receiving the EC, the PP will set up DGPS reference pillar points in blue and white marking the 7.5 m safety barrier.
	8	The Proponent shall complete the garland drainage around the boundary of the proposed quarry and the photographs indicating the same shall be shown during the EIA appraisal.	The photographs of the garland drainage around the boundary of the proposed quarry will submit in the final EIA report.
	9	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.	The detailed hydrology report will be submitted in the final EIA Report.
	10	The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path.	All the detailed mining activity information including the site selection, total volume excavation, production, deposit of minerals reserve estimation, place for waste dump/mined mineral storage, mine closure plans are given in Chapter II in the EIA report page 8-28.
	11	The proponent is requested to carry out a survey and enumerate on the	The details of structures such as dwelling houses, places of worship,

		structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, Schools/Colleges 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.	industries, factories, sheds, etc. within the radius of 500m from the proposed project area will be given in the final EIA report.
	12	The proponent shall furnish photographs and video showing the 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.	Photographs and videos of adequate fencing, green belt, nearby water bodies along the periphery of the project area will be included in the final EIA report.
	13	During the EIA appraisal, the PP shall furnish the affidavit stating that he will not employ any external agency for carrying out the blasting operation in the proposed quarry and he shall also install the temporary (or) permanent magazine approved by the concerned licensing authority before the execution of the lease, for storing the authorized explosives & detonators separately in accordance with the Explosive Rules, 2008.	The affidavit for the blasting will be submitted in the final EIA report.

14	During the EIA appraisal, the PP shall furnish the affidavit stating that he will appoint a First Class/Second Class Mine Manager for managing the quarrying operations before obtaining the CTO from the TNPCB. Further, the PP will also send the 'Notice of Opening' indicating the appointment of such Statutory officials and the proposed usage of HEMM shall be sent to the Director of Mines Safety, Chennai Region of the Mine under the provisions of MMR 1961 atleast 30 days before the commencement of the mining operation after the execution of lease, if the EC is granted	The affidavit for the First Class / Second Class Mine Manager will be submitted in the final EIA report.
15	Since the cluster of mines are situated within a radial distance of 500 m, the PP shall carry out the scientific studies to design the controlled blast parameters for reducing the cumulative blast induced ground/air- vibrations and eliminating the fly rock from the blasting operations carried out in the cluster of quarries located in the region, and subsequently with proper validation of the design through trial blasts in any of the existing & operating quarries to monitor the PPV produced from the	The design for the controlled blast parameters from the reputed Institution will be submitted in the final EIA report.

		blasting at 300m, 500m, after obtaining the prior permission from the DMS / Chennai Region in accordance with DGMS Circular No. 7 of 1997, by involving anyone of these reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, IIT (ISM)/Dhanbad, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. Further the report shall also include the actual data on the air dust particles produced at the time of blasting. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, as a part of EIA study during the appraisal without any deviation.	
	16	The PP shall prepare the Standard Operating Procedures (SoP) for carrying out the 'Best Mining Practices' in the areas of drilling, blasting excavation, transportation and green belt development and provide the same during the EIA appraisal.	The detailed scientific mining operation procedure and comprehensive designs are given in Chapter II in the EIA report page 8-28.
	17	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 for the entire life of mine is discussed in the Section 10.2 under Chapter X in the EIA report page 137-

		142. The sworn affidavit will be submitted in the final 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
		(ii)	Quantity achieved Vs EC Approved Quantity
		(iii)	Balance Quantity as per Mineable Reserve calculated.
		(iv)	Mined our 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	
		The VAO certificate is attached in the Annexure IV.	

		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) 50m, (ii) 100m, (iii) 200m, (iv) 300m, (v) 500m 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 details of structures such as dwelling houses, places of worship, industries, factories, sheds, etc. within the radius of 500m from the proposed project area will be given in the final EIA report.
	4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Detailed hydrological study will be submitted in the final EIA report page.
	5	The proponent shall carry out Bio diversity study through reputed institution and the same shall be included in EIA Report.	The details of Bio diversity from the reputed institution will be submitted in the final 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.	The DFO letter will be submitted in the final EIA 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.	As it is new lease area, the condition is not applicable.
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	As it is new lease area, the condition is not applicable.

		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.		The affidavit for blasting will be enclosed in the final EIA 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 blasting has been given in Section 2.6 under Chapter II in the EIA report page 20-27.
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.		The condition is not applicable as the proposed quarry project is the only project in the name of project proponent Mr.S.Rathnavelu.
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?		As it is a fresh lease area, the conditions are not applicable.

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 lease area.	
	• If EC and CTO already obtained, the copy of the same shall be submitted.	
15	• Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.4, under Chapter II in the EIA report page 13.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	The drone video will be submitted during final EIA presentation.
17	The proponent shall furnish photographs of adequate fencing,	Photographs of adequate fencing, green belt along the periphery of the project

		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.	area and the photographs showing nearby water bodies will be included in final EIA report.
	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.	The Resources and Reserves of Rough Stone were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. The plate used for reserve estimation has been presented in Figure 2.6 & 2.7 results of geological resources and reserves have been shown in Table 2.3. under Chapter II in the EIA report page 15-17.
	19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act, 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Details of manpower required for this project have been given in Table 2.14 under Chapter II in the EIA report page 28.
	20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open	The detailed hydrological study will be submitted in the final EIA report.

		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.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III in the EIA report page 29-92.
	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	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 126-130.

		surrounding habitations in the mind.	
	23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks. The detailed rain water harvesting report will be submitted in the final EIA report.
	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 under Chapter III in the EIA report page 30-39. The details of surrounding sensitive ecological features have been provided in Table 3.38 under Chapter III in the EIA report page 90. 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 23.
	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.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
	26	Proximity to Areas declared as 'Critically Polluted, (or) the project	Not Applicable.

		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.	Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
	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.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks. The detailed rain water harvesting report will be submitted in the final EIA report.
	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 87-89.
	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 300 m radius and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 65-82.
	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 are shown in Table 2.9 under Chapter II in the EIA report page 23.

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.
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 and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV in the EIA report page 108-112.
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities, botanist/Horticulture with regard to site specific choices. The proponent shall earmark the	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.

	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.	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII in the EIA report page 124-126.
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 122-124.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV in the EIA report page 113-114.
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	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

		measures should be detailed along with budgetary allocations.	Chapter VIII in the EIA report page 133-134.
	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 of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 22 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 132.
	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.	Benefits of the project details have been given under Chapter VIII in the EIA report page 132-134.
	41	If any quarrying operation 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	As it is a fresh lease area, the conditions are not applicable.

		certified by MoEF & CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	
	42	The PP Shall prepare the EMP for the entire life/lease period 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 136-142. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted in the final EIA report page.
	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.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard of terms of Reference for (Mining of Minerals)

1.

S.No	Terms of Reference	
1.1	An EIA-EMP Report shall be prepared for peak capacity (...MTPA) operation in an ML/project area of.... ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Yes, it is based on the generic structure specified in Appendix III of the EIA Notification, 2006. i.e., the peak capacity of the proposed quarry is 6,51,333 MTPA.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project	The baseline environment quality represents the background environmental scenario of various environmental components such as land, water, air, noise,

	specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modelling for.... MTPA of mineral production based on approved project/Mining Plan for.... MTPA. Baseline data collection can be for any season (three months) except monsoon.	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 March through May 2023 with CPCB guidelines. The detailed baseline environmental monitoring studies were carried out and the results are discussed in the Chapter III and the approved mining plan is attached in the Annexure III.
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided	The KML file with proper pin drop and coordinate of the mine will be uploaded during the online submission.
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of	The details of environmentally sensitive ecological features in the study area are given in the Table 3.38 under Chapter III in the final EIA report page 90.

	medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also	
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	The map showing the lease area with cluster details is shown in the Figure 1.1, Chapter I in the EIA report page 4. The details are given in the Table 3.38 under Chapter III in the EIA report page 90.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	The contour map will be submitted in the final EIA report.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted.	The catchment area map will be submitted in the final EIA report.
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life	The reserve details are discussed in the Section 2.5 under Chapter II in the EIA report page 17-19.

	should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	The details of mining method, technology, equipment, etc is discussed in the Section 2.6 under Chapter II in the final EIA report page 20-27.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	There is one natural drainage is located in 50 m north away from the mine lease area. But there is no drainage/streams or any other water bodies were not intersecting in the mine lease area, so the diversion of drainage is not necessary for this project.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed	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 23. The drainage map is shown in Figure 3.4 under Chapter III in the EIA report page 35. The traffic survey conducted based on

	area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	the transportation route of material, the Rough Stone and gravel is proposed to be transported mainly through Village Road and Kancheepuram – Uthiramerur (SH-118-A) as shown in Table 3.34 and in Figure 3.28 under Chapter III in the EIA report page 88-89.				
1.12	Original land use (agricultural land/forestland/grazing land / wasteland / water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights.					
	S.No	ML/Project Land use	Area under Surface Area Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	
	1	Agricultural land	---	---	---	
	2	Forest Land	---	---	---	
	3	Grazing Land	---	---	---	
	4	Settlements	---	---	---	
	5	Others (specify)	0.89.5	0.89.5	0.89.5	
	S.No	Details		Area (ha)		
	1	Buildings		---		
	2	Infrastructure		---		
	3	Roads		---		
	4	Others (area under quarry)		0.89.5		
	Total			0.89.5		

1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.	The details on flora and fauna have been provided in Section 3.5 under Chapter III in the EIA report page 65-82.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM₁₀, PM_{2.5}, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/	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 March through May 2023 with CPCB guidelines. Environmental baseline data were collected

	MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	by an NABL accredited and MoEF notified <i>Ekdant Enviro Services (P) limited</i> for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	The detailed study is discussed in the Chapter III in the EIA report page 29-92.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and	10km baseline study can be conducted only when total cluster area extent of the projects is above 25ha. Here, the proposed cluster

	accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided.	area of the projects is less than 25ha, (i.e,12.14.00ha) and so baseline monitoring study is done for 5 km only. The baseline study of the air quality is discussed in the Section 3.3 under Chapter III in the EIA report page 50-61.
1.17	A detailed traffic study along with presence of habitation in 100m distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	There is no need of road widening, the details of traffic study are discussed in the Section 3.7 under Chapter III in the EIA report page 87-89. Carbon released from quarrying machineries and tippers during quarrying would be 2023kg per day, 546154kg per year and 2730768kg over five years.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study also include the status of infrastructural	The socio-economic study is discussed in the Section 3.6 under Chapter III in the EIA report page 82-87.

	facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	There is no forest within 10km. The Ecology and biodiversity study is discussed in the Section 3.5 under Chapter III in the EIA report page 65-82. 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 38841kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	The occupational health and safety of the personnel and manpower for the mine is submitted in the Section 4.8 under Chapter IV in the EIA report page 113-114.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.	Hydrological studies as per GEC 2015 guidelines will be prepared and submitted in the final EIA report.

1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program. The detailed rain water harvesting will be submitted in the final EIA report.		
1.23	Study on land subsidence including modelling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	As it is a fresh lease area, the condition is not required.		
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Purpose	Quantity	Source
		Dust Suppression	1.5 KLD	The water requirement is purchased from the authorized water vendor.
		Green Belt development	1.5 KLD	
		Drinking & Domestic	2.0 KLD	
		Total	5.0 KLD	
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Quarry project proponent controls air pollution by water sprinkling method on roads and quarry sites and green belt development method is adopted.		

1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	The PP is advised to use LNG/CNG trucks in mining operation because these trucks can control air pollution and noise pollution.
1.27	PP to evaluate the greenhouse emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.	There is no greenhouse emission in the project lease area.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	The details are discussed in the Section 7.2 & 7.3 under Chapter VII in the EIA report page 122-126.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	The impact on the air quality is discussed in the Section 4.4 in Chapter IV in the EIA report page 97-103.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other	The details regarding are discussed in the Section 4.5.2 under Chapter IV in the EIA report page 105-106.

	machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	The details are given in the Section 2.6 under Chapter II in the EIA report page 20-27.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	Quarry project proponent controls air pollution by water sprinkling method on roads and quarry sites and green belt development method is adopted.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre-mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	The ultimate mining is proposed to an average depth of 50m BGL, the mined-out area will be fenced on top of working bench with SI fencing to arrest the entry of cattle's and public in to the quarry site. The details of mine closure budget are discussed in the Section 2.6.4 under Chapter II in the EIA report page 23.

1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.		The details are given in the Section 4.6 under Chapter IV in the EIA report page 108-112.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.		The detailed EMP is given in the Chapter X in the EIA report page 136-142.
1.36	Details of R&R. Detailed project specific R&R plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with schedule of the implementation of the R&R plan should be given.		Not Applicable. The proposed lease area belongs to the lessee and there is no any habitation in the lease area.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.		The CSR plan is discussed in the Section 8.6 under Chapter VIII in the EIA report page 133.
1.38	Corporate Environment Responsibility:		
1.39	a)	The Company must have a well laid down Environment Policy	

		approved by the Board of Directors.	The CER plan is discussed in the Section 8.7 under Chapter VIII in the EIA report page 133-134.
1.40	b)	The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	
1.41	c)	The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	
1.42	d)	To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.	
1.43	e)	Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report	
1.44	f)	In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	

1.45	Status of any litigations/ court cases filed/pending on the project should be provided.			No litigation is pending in any court against this project.		
1.46	PP shall submit clarification from DFO that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.			The DFO letter will be submitted in the final EIA report.		
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.			The clearance copy of approved mining plan letter is attached in the Annexure III.		
1.48	Details on the Forest Clearance should be given as per the format given:					
	Total ML Project Area	Total Forest land (ha) If more than one provides details of each FC	Date of FC	Extent of Forest Land	Balance area for which FC is yet to be obtained	Status of apply for diversion of forest land
	NA	NA	NA	NA	NA	NA
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report			Approved Mining plan of the expansion proposal is attached in the Annexure III and the mine closure plan is discussed in the Section 2.6.4 under Chapter II in the EIA report page 23.		
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in			The public hearing comments will be submitted during final EIA report.		

	suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.	
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes	The drone video survey will be submitted in the final EIA presentation.
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	The required documents for the proposed quarry are provided in the chronology order in Annexure III.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	The first page of the EIA report mentions the peak capacity production, area, project proponent details, Consultant and NABET details⁰ and authorized Laboratory (NABL / MoEF & CC certification) details.
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter's section.	ToR Compliance is cited with respective chapter section and page no in tabular form.

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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 as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided in to B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B1 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 50 ha in the case of non-coal mine lease, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance as per the order dated 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018.

In compliance with ToR obtained vide ToR File No. 10707 and ToR Identification No.TO24B0108TN5967835N, dated 14.05.2024 this EIA report has been prepared for the project proponent, Mr.S.Rathnavelu applied for rough stone and gravel quarry lease in the Patta land falling in S.F.No.700/1 (Part) over an extent of 0.89.5 ha in Magaral-B Village, Walajabad Taluk, Kancheepuram District and Tamil Nadu. This EIA report takes into account the rough stone and gravel quarry within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contains three proposed projects, known as P1, P2, P3 and two Existing Quarries E1 and E2. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016. The total extent of all the quarries is **12.14.00** ha, also known as the cluster extent. The quarries involved in the calculation of cluster extent are shown in Figure 1.1.

Table 1.1 Details of Quarries within the Cluster Area of 500 m Radius

Proposed Quarries				
Code	Name of the Owner	S.F. No/ Village	Extent (ha)	Status
P1	S.Rathnavelu	700/1(P)	0.89.50	Proposed Area
P2	S.Rathnavelu	700/1(P),700/2	2.34.50	Proposed Area
P3	D.Govindhasamy	699/2,699/3	2.90.50	Applied Area
Existing Quarries				
E1	R.Sankar	636/1C1,636/2B,636/2C, 636/2D,636/2E,641/1, 646/1B1,646/1B2	2.84.50	09.02.2023 to 08.02.2028 (5 Years)
E2	S.Karunanidhi	694/3A,694/3D,694/3G, 694/3L,694/3C,694/3K, 694/3M,683,684/1,684/2, 694/3B,694/3J	3.15.00	27.03.2023 to 26.03.2026 (3 Years)
	Total Cluster Extent		12.14.00	---

Source:

AD Letter - Rc.No.311/Q3/2023, Dated:26.11.2023.

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

1.1 PURPOSE OF THE REPORT

The purpose of the report is to study baseline environmental conditions in and around the proposed project area for the period of **March-May 2023** according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015, to analyse impacts and provide mitigation measures.

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

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No. SIA/TN/MIN/459512/2024, dated:25.01.2024) and decided that the project requires detailed environmental studies for the preparation of EIA report. Therefore, the proponent submitted application for Terms of Reference (ToR) on 19.02.2024

Scoping

The proposal was placed in the 457th meeting of SEAC on 03.04.2024. Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Terms of Reference (ToR) and the recommendation for ToR is subjected to the outcome of the Honourable NGT, Principal Bench, New Delhi (O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).

Public Consultation

In this stage, an application along with the draft of EIA and EMP report will be made to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing ensuring public participation at the project site or in its close proximity in the district. During public hearing, an opportunity will be given to the people living nearby the project site to express their opinions about the impact of the proposed project on the environment. The outcome of the public hearing meeting will be updated in the final EIA report for appraisal.

Appraisal

In this stage, an application along with final EIA report including the outcome of the public consultations will be made to the SEIAA. The application thus made will be scrutinized by the SEAC. Then, the SEAC will make recommendations to grant EC or reject the application to the SEIAA.

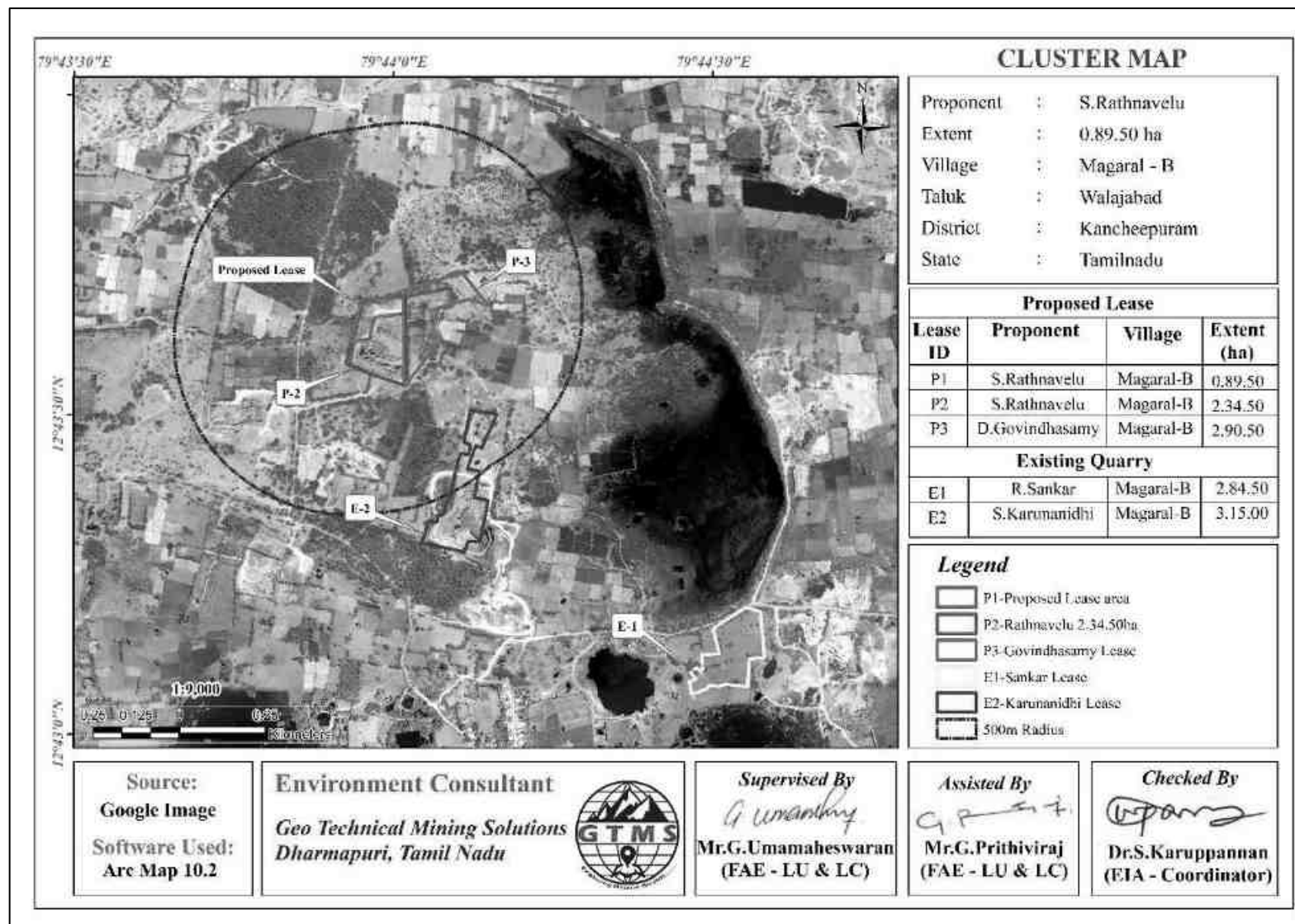


Figure 1.1 Location of the Proposed and Existing Rough Stone and Gravel Quarries in the Cluster of 500 m Radius

1.3 TERMS OF REFERENCE (ToR)

The SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued ToR to the proponent vide ToR File No. 10707 and ToR Identification No TO24B0108TN5967835N Dated :14.05.2024 for the preparation of an EIA report.

1.4 POST ENVIRONMENT CLEARANCE MONITORING

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed.

After obtaining EC, the project proponent will submit a half-yearly compliance report of stipulated environmental clearance terms and conditions to MoEF & CC Regional office & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written “no objection” by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period (EIA Guidance Manual for Mining of Minerals, 2010).

- ❖ Summary & Conclusion
- ❖ Disclosure of Consultants engaged.

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	Mr.S.Rathnavelu,
Address	S/o. Mr.R.Sivaswamy, Old No.5. New No.2/33 Bhuvaneswari Nagar, 1 st Street, Gowrivakkam, Chennai District - 600073
Status	Proprietor

1.7 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone and gravel which is primarily used in construction projects. The method adopted for rough stone and gravel excavation is open cast semi mechanized mining method involving formation of benches with 5 m height and 5 m width. The proposed project site is located in Magaral-B Village, Walajabad Taluk, Kancheepuram District, and Tamil Nadu State. Some of the important features of the proposed project have been provided in Table 1.3.

Table 1.3 Salient Features of the Proposed Project

Name of the Quarry	Mr. S. Rathnavelu Rough Stone and Gravel Quarry		
Toposheet No	57-P/10		
Latitude	12°43'32.72"N to 12°43'41.11"N		
Longitude	79°43'55.53"E to 79°44'1.13"E		
Highest Elevation	74 m AMSL		
Proposed Depth as per ToR	50m BGL		
Ultimate Pit Dimension	Length (m)	Width (m)	Depth (m)
	117	117	50
Geological Resources	Rough Stone in m ³	Gravel in m ³	
	864248m ³	25152m ³	
Mineable Reserves	Rough Stone in m ³	Gravel in m ³	
	232619m ³	18009m ³	
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³	
	232619m ³	18009m ³	
Method of Mining	Open-Cast Semi Mechanized Method		
Topography	Flat Terrain		
Machinery proposed	Jack Hammer	3	
	Compressor	2	
	Hydraulic Excavator	1	
	Tippers	7	
Proposed Manpower Deployment	22 Nos		
Project Cost	Rs.1,60,02,577/-		
CER Cost	Rs. 5,00,000/-		
Proposed Water Requirement	5.0 KLD		

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 **March-May 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 REFERENCES

The report has been prepared using the following references:

- ❖ Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010
- ❖ EIA Notification, 14th September, 2006
- ❖ Terms of Reference (ToR) issued by SEIAA.
- ❖ Approved Mining Plan of this Project.
- ❖ 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 the OM vide F.No.J-11013/41/2006-IA-II(I)(Part), the baseline monitoring data were collected during the period of **March 2023 Through May -2023** and utilized for preparation of this EIA report*

CHAPTER II

PROJECT DESCRIPTION

2.0 GENERAL INTRODUCTION

The open cast mining method, also known as open-pit mining has been proposed to extract the mineral deposit. It is the most commonly used surface mining method all over the world and is generally suitable for mining low-grade mineral deposits that are found close to the surface of the earth and distributed uniformly over a large area. Open pits are also termed quarries when the pits are used for the extraction of building materials and dimension stones.

Opencast mining starts with the development of benches, the widths of which will be determined in such a way to accommodate the use of heavy machinery. The walls of open pits will be dug at an angle that will be decided based on well-established industry standards to provide safety. In some cases where the walls are composed of weak material such as soil and highly weathered rocks, dewatering holes will be drilled horizontally to relieve the water pressure to avoid wall collapse inside the mine site.

The required mine-related infrastructures will be established close to the open pit. The mining infrastructures may include an administration building, a maintenance garage, and a warehouse. The materials mined from open pits will be brought to the surface using trucks. The waste rocks will be piled up in a suitable location, usually close to the open pit. The structure produced by the waste rock pile is known as a waste dump. The dimension of the waste dump will be determined based on industrial safety standards to prevent the rocks from falling into the surrounding area.

2.1 DESCRIPTION OF THE PROJECT

The proponent Mr.S.Rathnavelu is involved in the undertaking of establishment, construction, development, and closure of opencast mines. He, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of rough stone. Therefore, the proponent had applied for quarry lease on 16.08.2023 to extract rough stone and gravel. The precise area communication letter was issued by Department of Geology and Mining, Kancheepuram vide Rc.No.311/Q3/2023, dated: 09.11.2023. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Assistant Director (i/c) Department of Geology and Mining, Kancheepuram Rc.No.311/Q3/2023, dated:27.11.2023. The overall view of the project site is shown in Figure 2.1.



Figure 2.1 Overall View of Proposed Project Site

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Magaral-B Village, Walajabad Taluk, Kancheepuram District, as shown in Figure 2.2 & 2.3. The area lies between Latitudes from 12°43'32.72"N to 12°43'41.11"N and Longitudes from 79°43'55.53"E to 79°44'1.13"E. The maximum altitude of the project area is 74 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

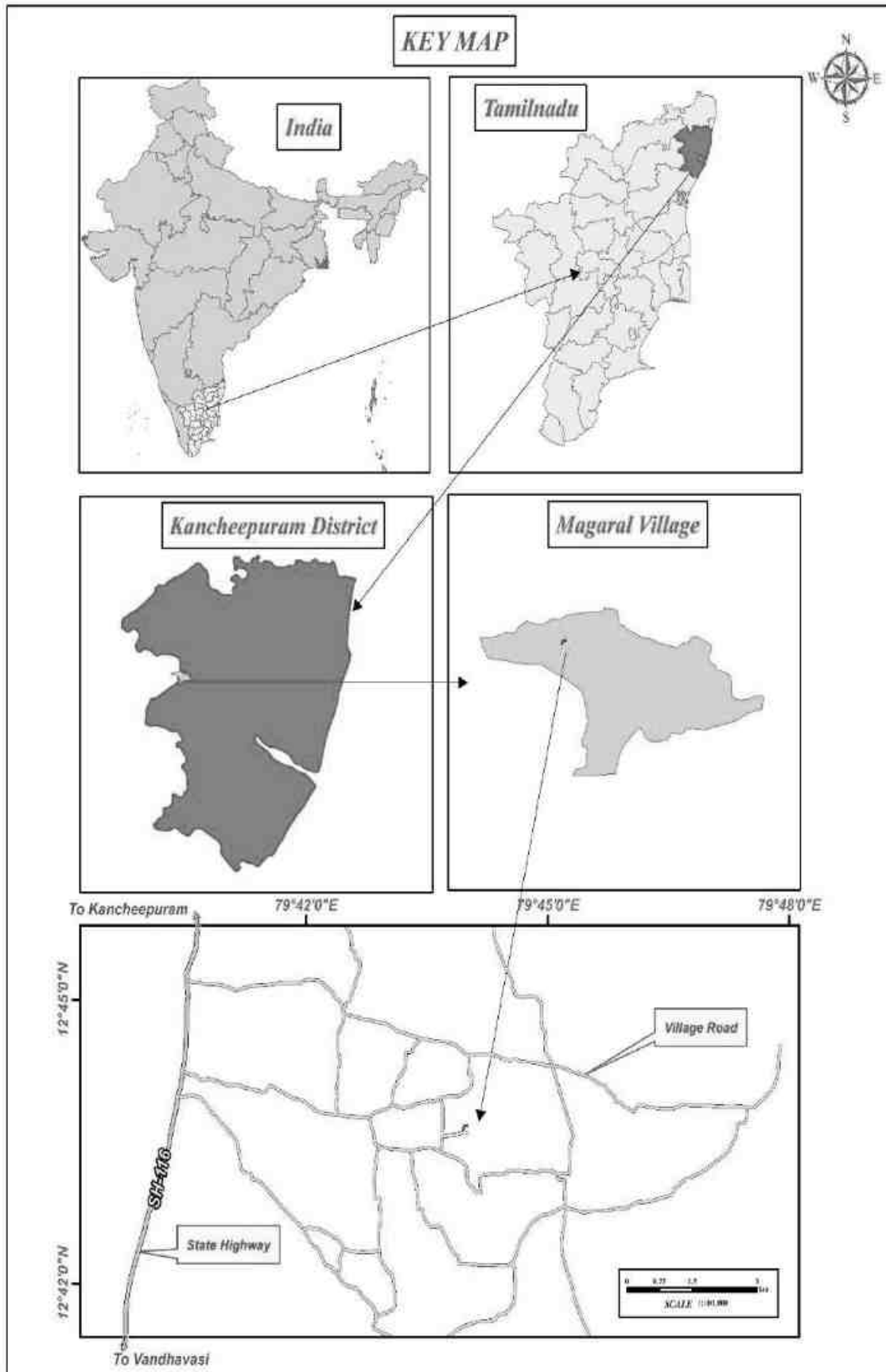


Figure 2.2 Key Map Showing Location of the Project Site

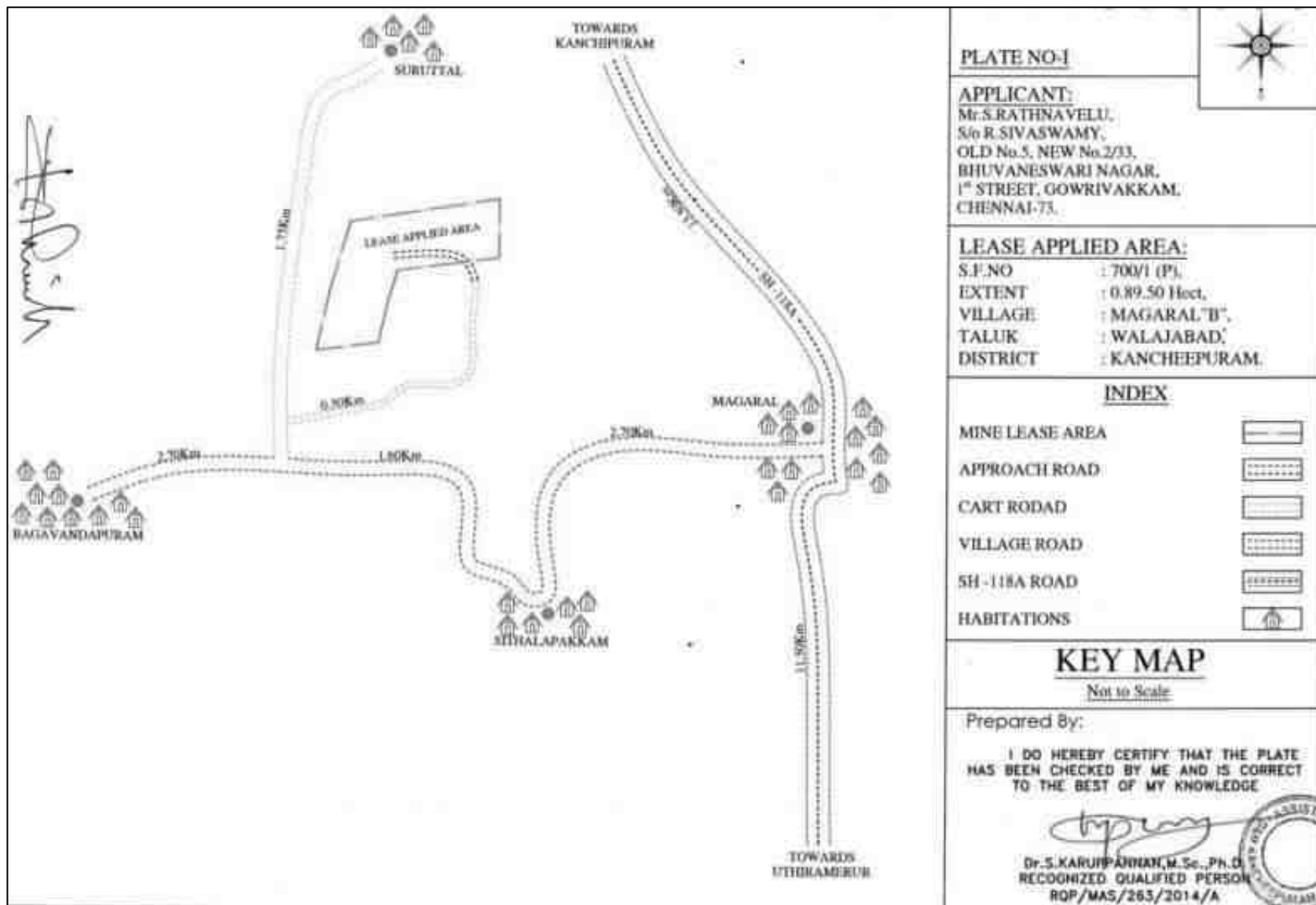


Figure 2.3 Site Connectivity to the Lease Area

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	SH-118 A Uthirameur -Kancheepuram	2.20 km E
Nearest Town	Magaral-B	2.12 km E
Nearest Railway Station	Nathapettai	10.9 km NE
Nearest Airport	Chennai	55.9 km NE
Nearest Seaport	Chennai	72.5 km NE
Nearest Village	Suruttal	1.21 km N
	Sithalapakkam	0.95km S
	Magaral	2.2 km SE
	Periya Elacheri	2.07km West

2.3 LEASEHOLD ARE

- ❖ The extent of the proposed project site is 0.89.50 ha.
- ❖ 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.

2.3.1 Corner Coordinates

The boundary corner geographic coordinates are given in Table 2.2 and the proposed project site with boundary coordinates has been shown in Figure 2.4.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	12°43'41.11"N	79°44'1.08"E
2	12°43'39.48"N	79°44'1.09"E
3	12°43'39.10"N	79°43'58.24"E
4	12°43'38.12"N	79°43'57.96"E
5	12°43'37.09"N	79°43'57.73"E
6	12°43'36.86"N	79°43'55.98"E
7	12°43'38.52"N	79°43'56.35"E
8	12°43'40.43"N	79°43'56.90"E

2.4 GEOLOGY AND GEOMORPHOLOGY

The lease area is geologically composed of Charnockite, commercially known as Rough stone. In addition, the lease area geomorphologically occurs over Pediment Pediplain Complex, as shown in Figure 3.2.

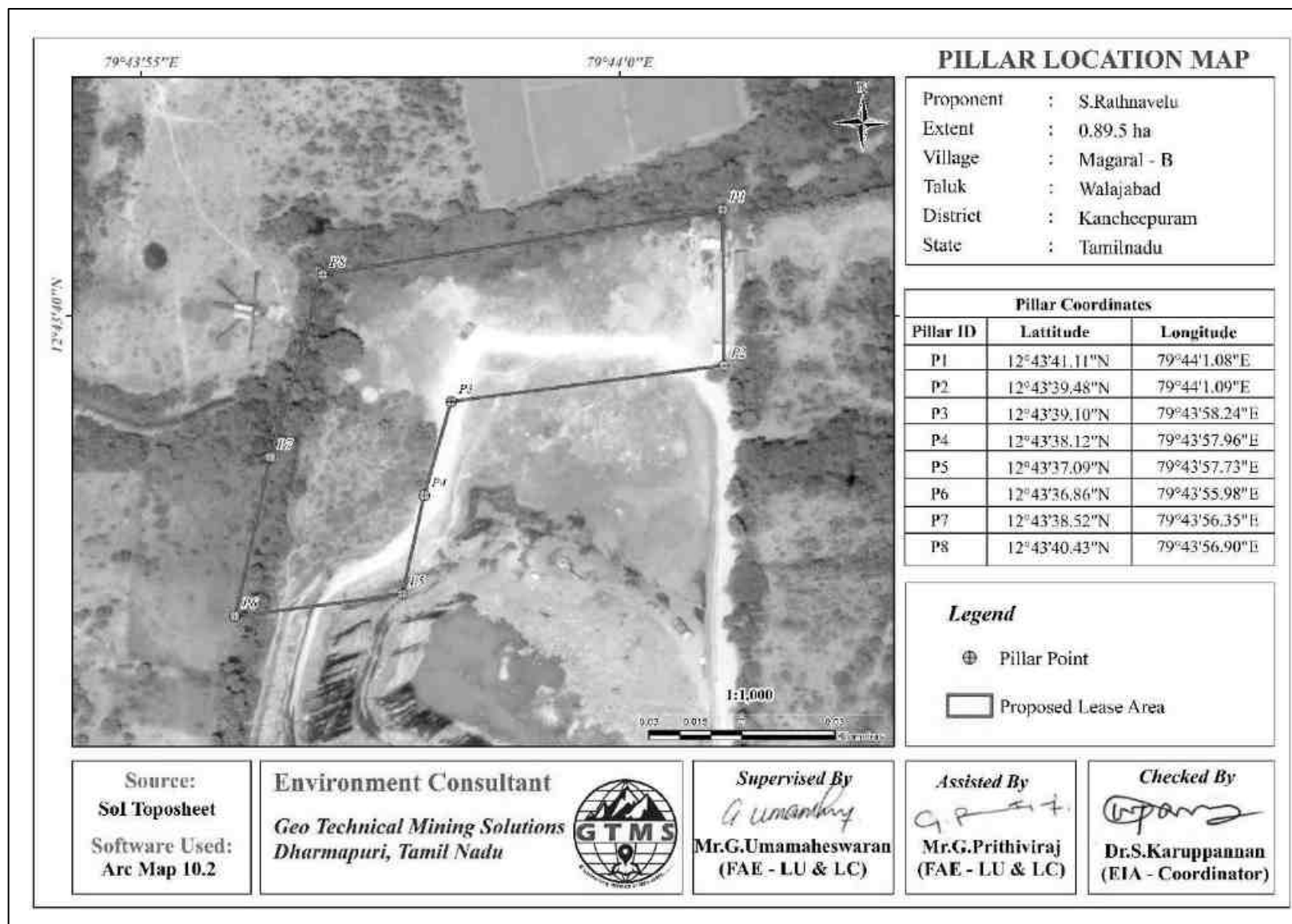


Figure 2.4 Google Earth Image Showing Lease Area with Pillar

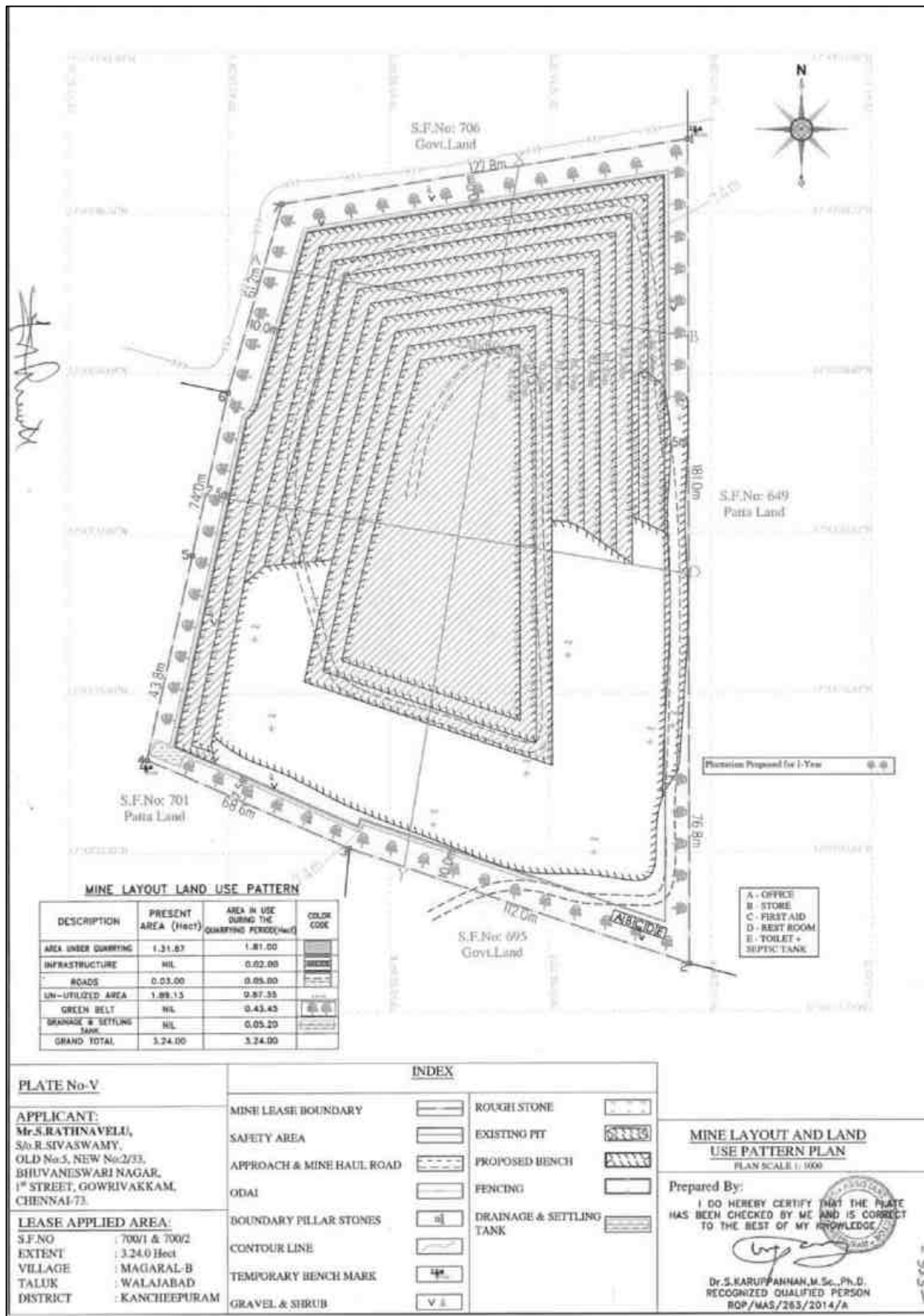


Figure 2.5 Mine Layout Plan and Land Use Pattern



Figure 2.6 Surface and Geological Plan

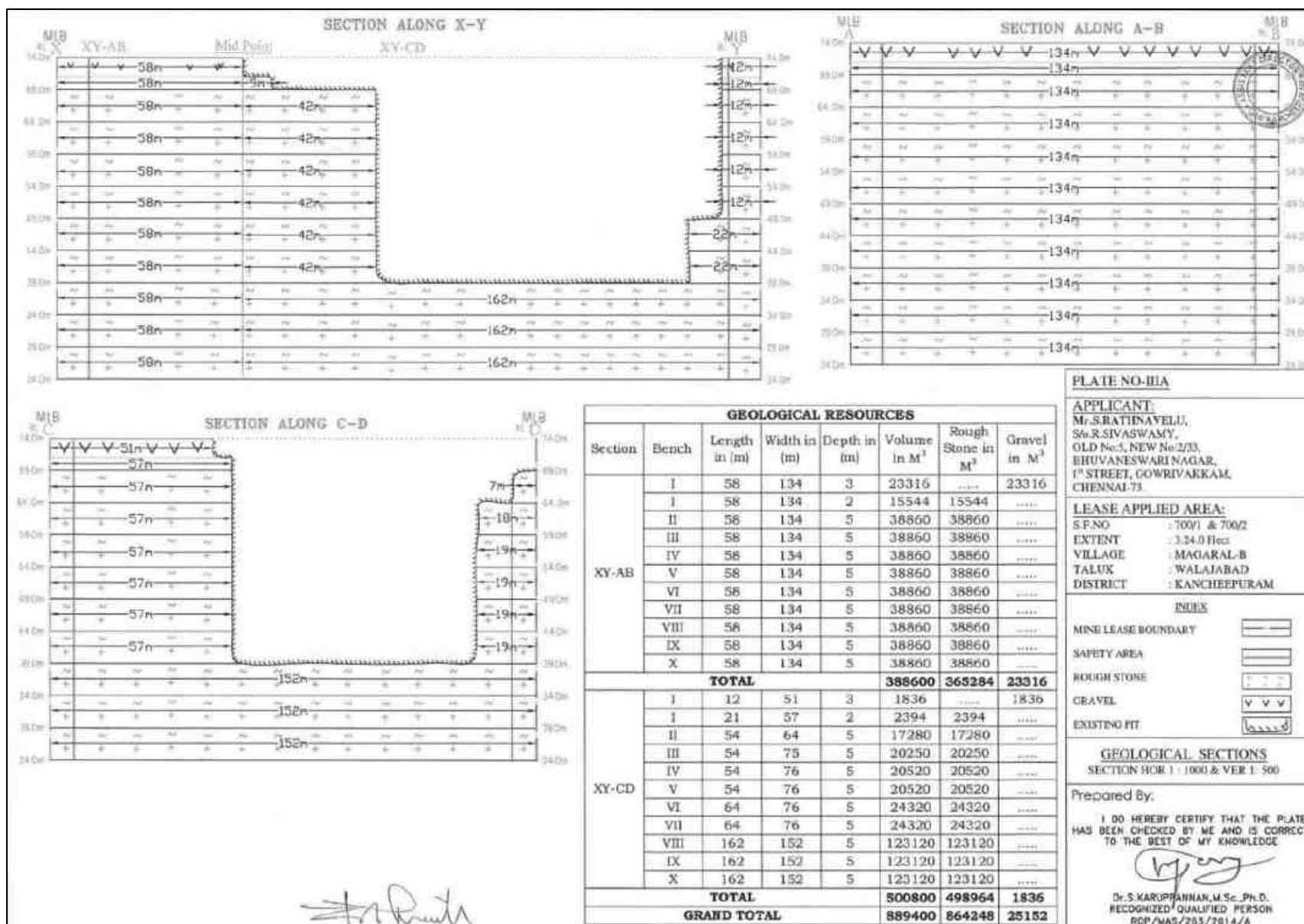


Figure 2.7 Geological Section

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone 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 10 m 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 30 m considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been shown in Figure 2.6 & 2.7 and results of geological resources and reserves have been shown in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Resource Type	Rough stone in m ³	Gravel in m ³
Geological Resource in m ³	864248m ³	25152m ³
Mineable Reserves as per ToR in m ³	232619m ³	18009m ³
Proposed production as per ToR for 5 years m ³	232619m ³	18009m ³

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.4 & Figure 2.8 and 2.8a.

Table 2.4 Year-Wise Production Details

Year	Rough stone in (m ³)	Gravel in (m ³)
I	52759	18009
II	46015	--
III	45750	--
IV	44820	--
V	43275	--
Total	232619	18009

Source: Approved Mining Plan & To

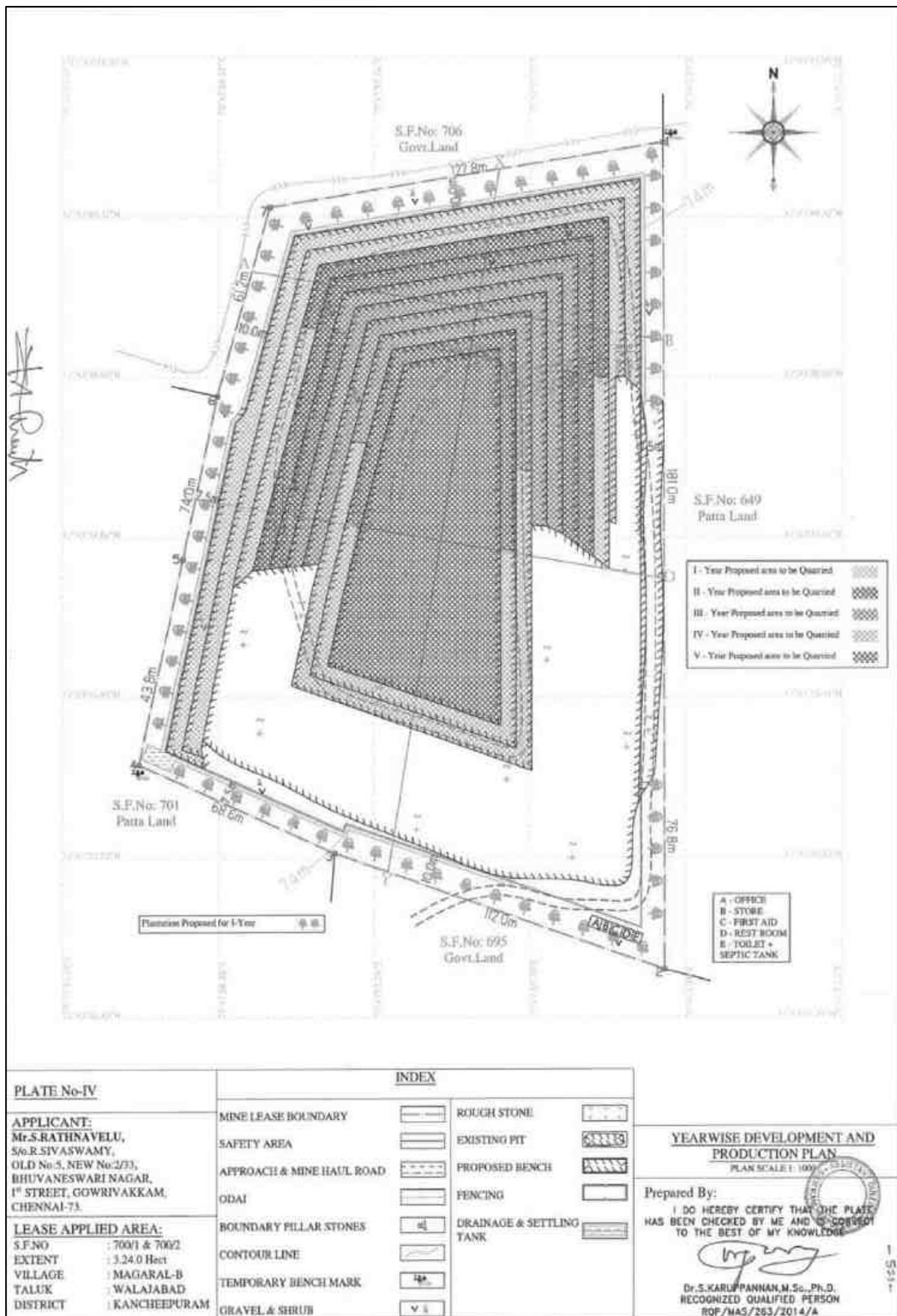


Figure 2.8 Yearwise Development & Production Plan

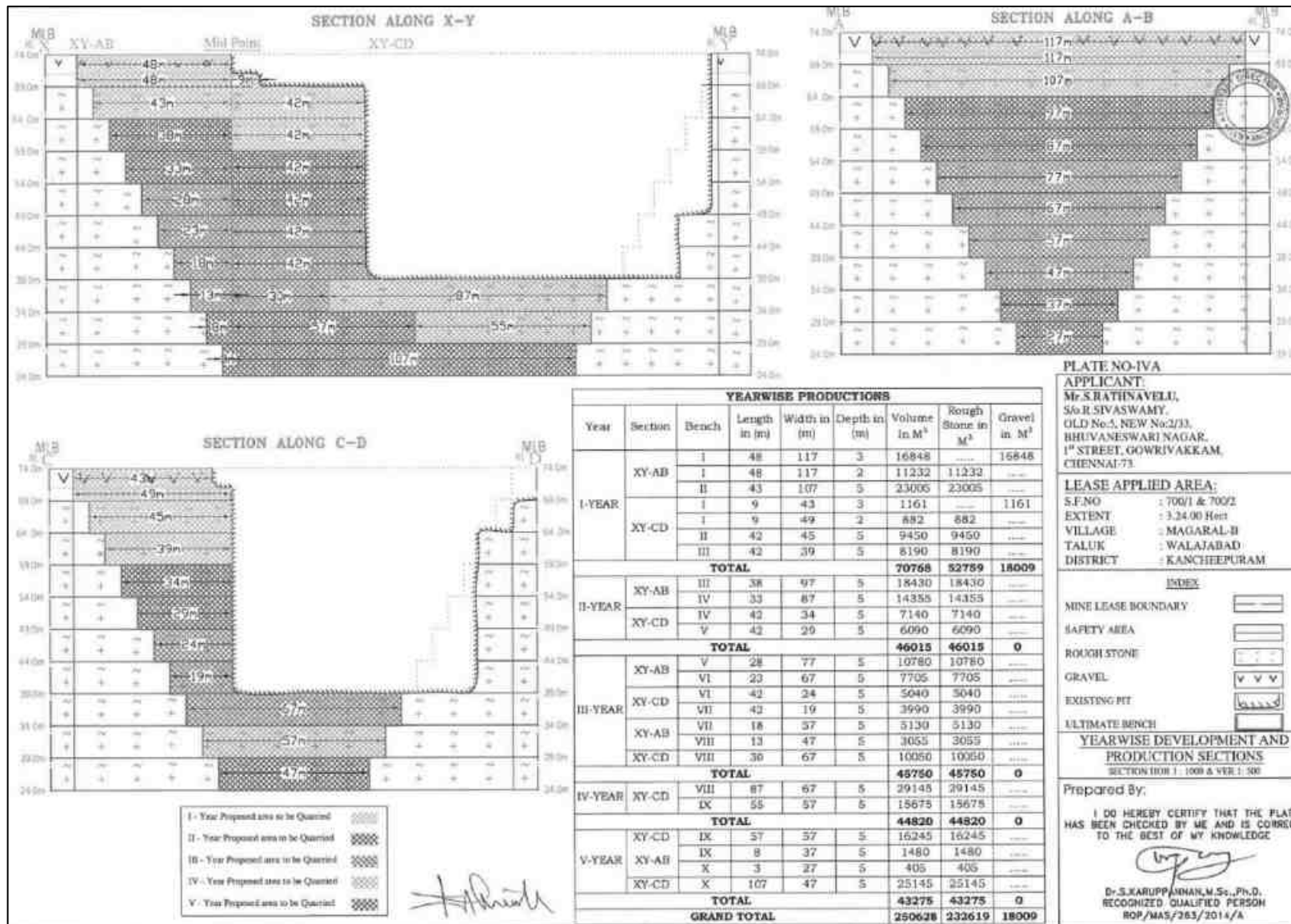


Figure 2.8a Yearwise Development & Production Section

2.6 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 5 m 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.

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 ([Chapter8 \(nps.gov\)](#)). 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 2.5.

Table 2.5 Conceptual Blasting Design

Blast hole Diameter (D) in mm	32
Burden (B) in m	1.5
Spacing (S) in m	1.30
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 m3	4.16
Production of rough stone/day in m3	172
Number of blast holes/day	41
Blast hole pattern	Staggered/Rectangular
Mass of explosive /day in kg	16.58
Powder factor in kg/m3	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

2.6.1 Magnitude of Operation

Based on the results of estimated production for the 5 years, details about the size of operation have been provided in Table 2.6.

Table 2.6 Operational Details for Proposed Project

	Rough Stone (For 5 years)	Gravel (For 1 years)
Proposed production	232619	18009
Number of Working Days /Annum	270	270
Production of /Day (m ³)	172	67
No. of Lorry Loads	29	11

2.6.2 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.7.

Table 2.7 Machinery Details

S. No.	Type	No of Unit	Capacity	Make	Motive Power
1	Jack Hammers	3	Hand held	-	Diesel Drive
2	Compressor	2	Air	-	Diesel Drive
3	Excavator	1	-	-	Diesel Drive
Haulage & Transport Equipment					
4	Tipper	7	15MT	-	Diesel Drive

2.6.3 Progressive Quarry Closure Plan

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 2.8 At Present about 3.24.0ha of land is unutilized. Whereas, at the end of the mine life, about 1.81.0ha of land is used for area under quarry, about 0.43.45 ha of land is used for green belt, 0.05.0 ha will be used for roads, 0.02.0 is used for infrastructure and about 0.05.2 ha of land is used for drainage & settling tank.

Table 2.8 Land use Data at resent, 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	1.31.87	1.81.0
Infrastructure	Nil	0.02.0
Roads	0.03.0	0.05.0
Green Belt	Nil	0.43.45
Drainage & Settling Tank	Nil	0.05.2
Unutilized area	1.89.13	0.87.35
Total	3.24.0	3.24.0

2.6.4 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 2.9.

Table 2.9 Mine Closure Budget

Activity	Capital Cost
648 plants inside the lease area	1,29,600
972 plants outside the lease area	2,91,600
Wire Fencing	6,48,000
Renovation of Garland Drain	32,400
Total	11,01,600

Source: Environment Management Plan

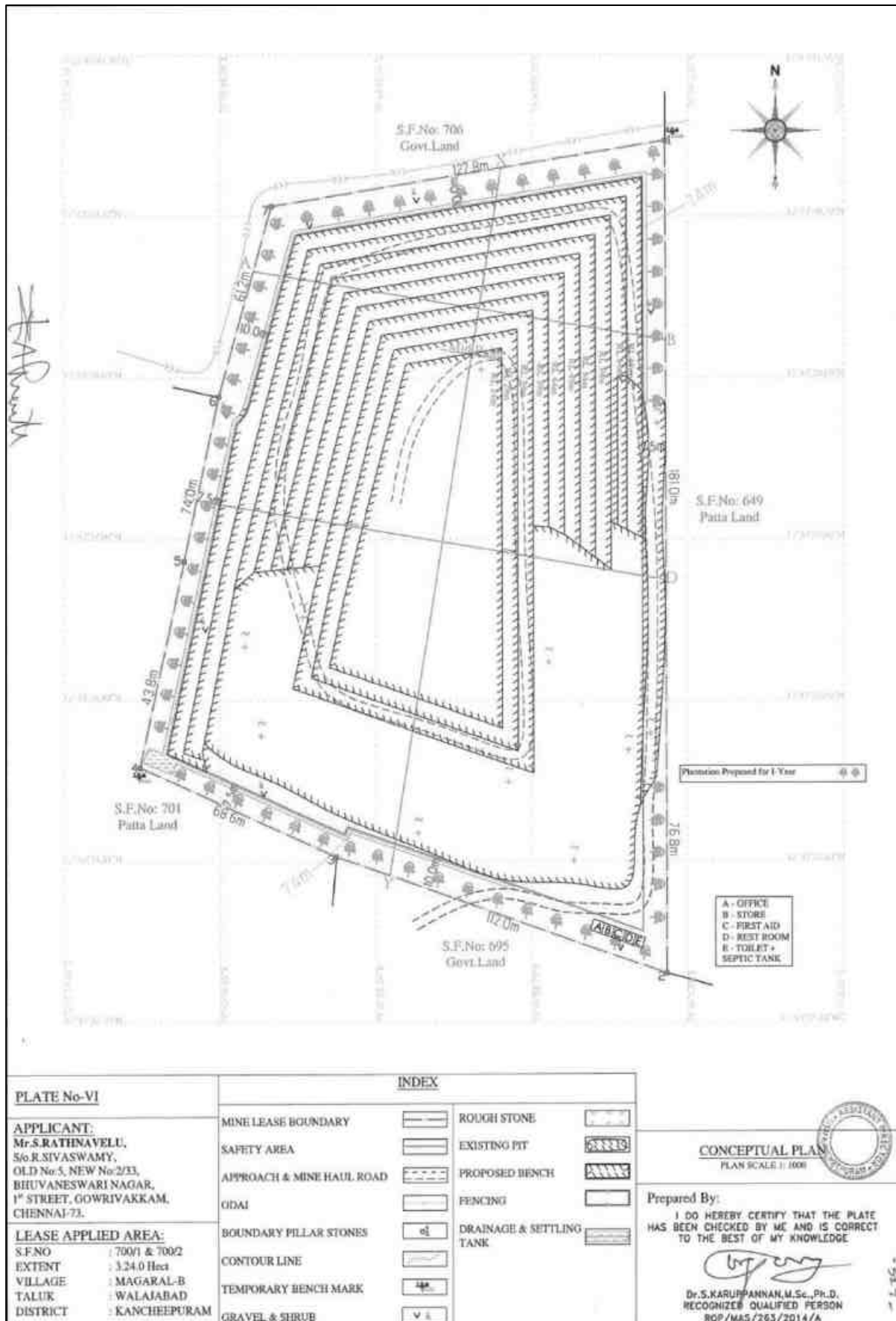


Figure 2.9 Conceptual Plan

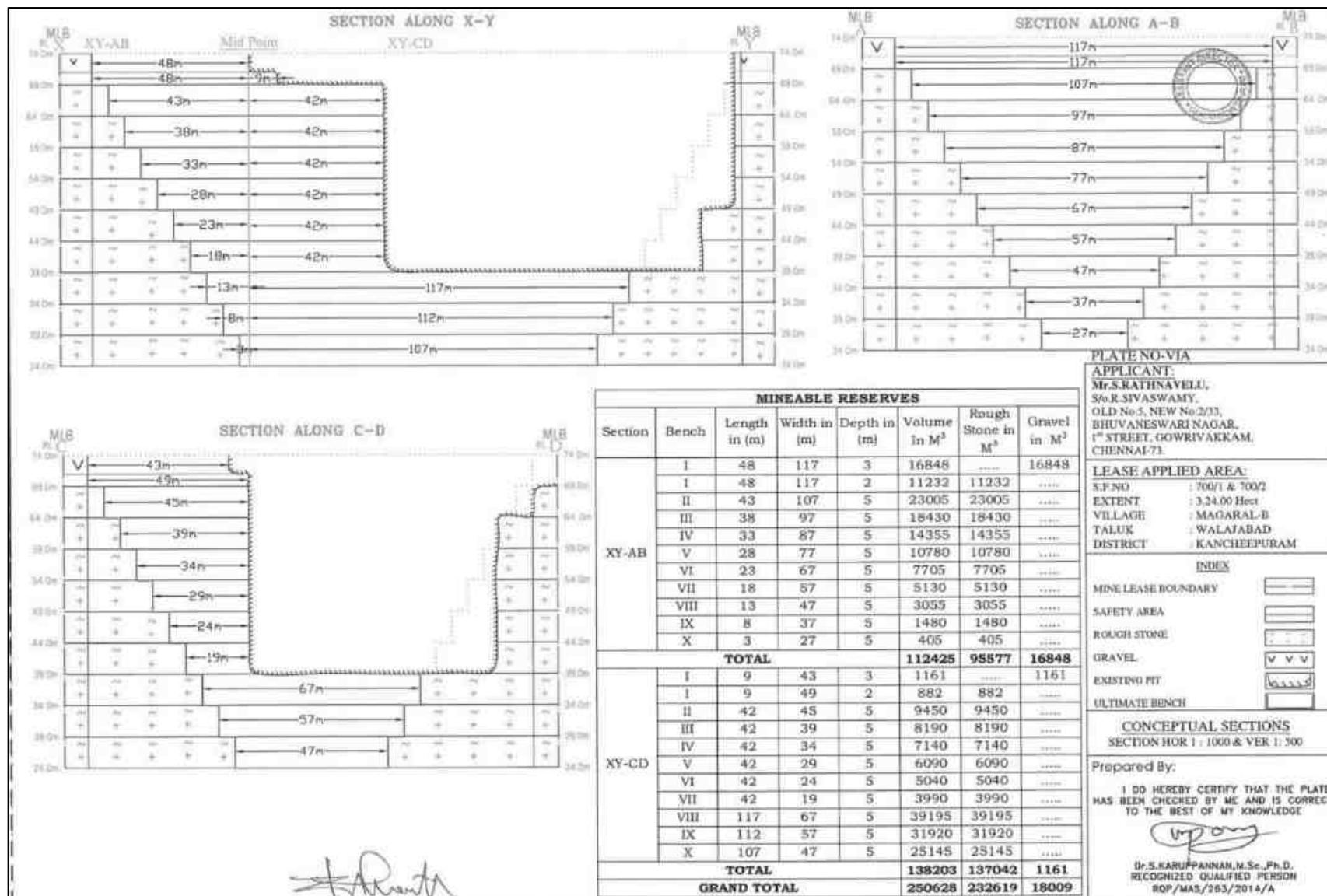


Figure 2.10 Conceptual Sections

2.6.5 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 2.10 and Figure:2.9 and 2.10.

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	117	117	50

Source: Approved Mining Plan & ToR

2.6.6 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.

2.6.6.1 Other Infrastructure Requirement

No workshops are proposed inside the project area. Hence, there will not be any process effluent generation from the proposed lease area. 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.

2.6.7 Water Requirement

Detail of water requirement in KLD is given in Table 2.11.

Table 2.11 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.5 KLD	Existing bore wells nearby the lease area
Green Belt development	1.5 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	2.0 KLD	Existing bore wells and approved water vendors
Total	5.0 KLD	

Source: Prefeasibility Report

2.6.8 Energy Requirement

High speed Diesel (HSD) will be used for quarrying machineries. As per the data shown in Table 2.12, Around 10,46,664 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 2.12 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (232619m³) 5 years	Gravel (18009m³) 1 year	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	11631	300	---
Total Diesel Consumption for 5 years (litre)	186095	3002	1,89,097
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	41	---	---
Total Diesel Consumption for 5 years (litre)	22140	---	22140
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m ³	6	6	---
Number of Trips / days	29	11	---
Number of Trips / years	38770	3002	---
Total Diesel Consumption for 5 years (litre)	775397	60030	835427
Total Diesel Consumption by Excavator, Compressor and Tipper			10,46,664

2.6.9 Capital Requirement

The project proponent will invest Rs. 1,60,02,577/- to the project. The breakup summary of the investment has been given in Table 2.13.

Table 2.13 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	99,94,577
2	Machinery cost	25,00,000
3	EMP Cost	35,08,000
Total Project Cost		1,60,02,577/-

Source: Approved Mining Plan

2.7 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 2.14.

Table 2.14 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1.	Highly Skilled	Mines Manager	1
		Mine Engineer	1
		Mine Geologist	1
		Blaster	1
2.	Unskilled	Musdoor / Labours	18
Total			22

Source: Prefeasibility Report

2.8 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 2.15.

Table 2.15 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 **March-May, 2023** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified Ekdant Enviro Services (p) limited 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 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	8 (3 Surface water & 5 Ground water)	IS 10500& CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/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 Fugitive dust	24 hours, twice a week	7 (1 core & 6 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

The main objective of this section is to provide a baseline status of the study area covering 5 km radius around the proposed mine site so that temporal changes in the LU/LC pattern due to the mining activities can be assessed in future.

3.1.1 Geology and Geomorphology

Study area is mainly composed of Argillaceous sandstone, Acid to intermediate Charnockite, as shown in Figure 3.1. Among the geomorphic units, Pediment pediplain complex covers major part of the study area, as shown in Figure 3.2.

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. Totally, 8 LULC were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 37.18 ha accounting for 0.48 %, of which cluster area of 12.14.00 ha contributes only about 0.15%. This small 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	Area (ha)	Area (%)
1	Crop land	2232.18	28.88
2	Dense Forest	291.99	3.78
3	Fallow land	297.13	3.84
4	Land with or without scrub	409.89	5.30
5	Mining / Industrial waste lands	37.18	0.48
6	Plantations	3386.35	43.81
7	Settlement	156.93	2.03
8	Water bodies	917.22	11.87
Total		7728.87	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area is located in a flat terrain with an altitude range of 74 m AMSL,

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 a portion of dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

3.1.5 Seismic Sensitivity

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

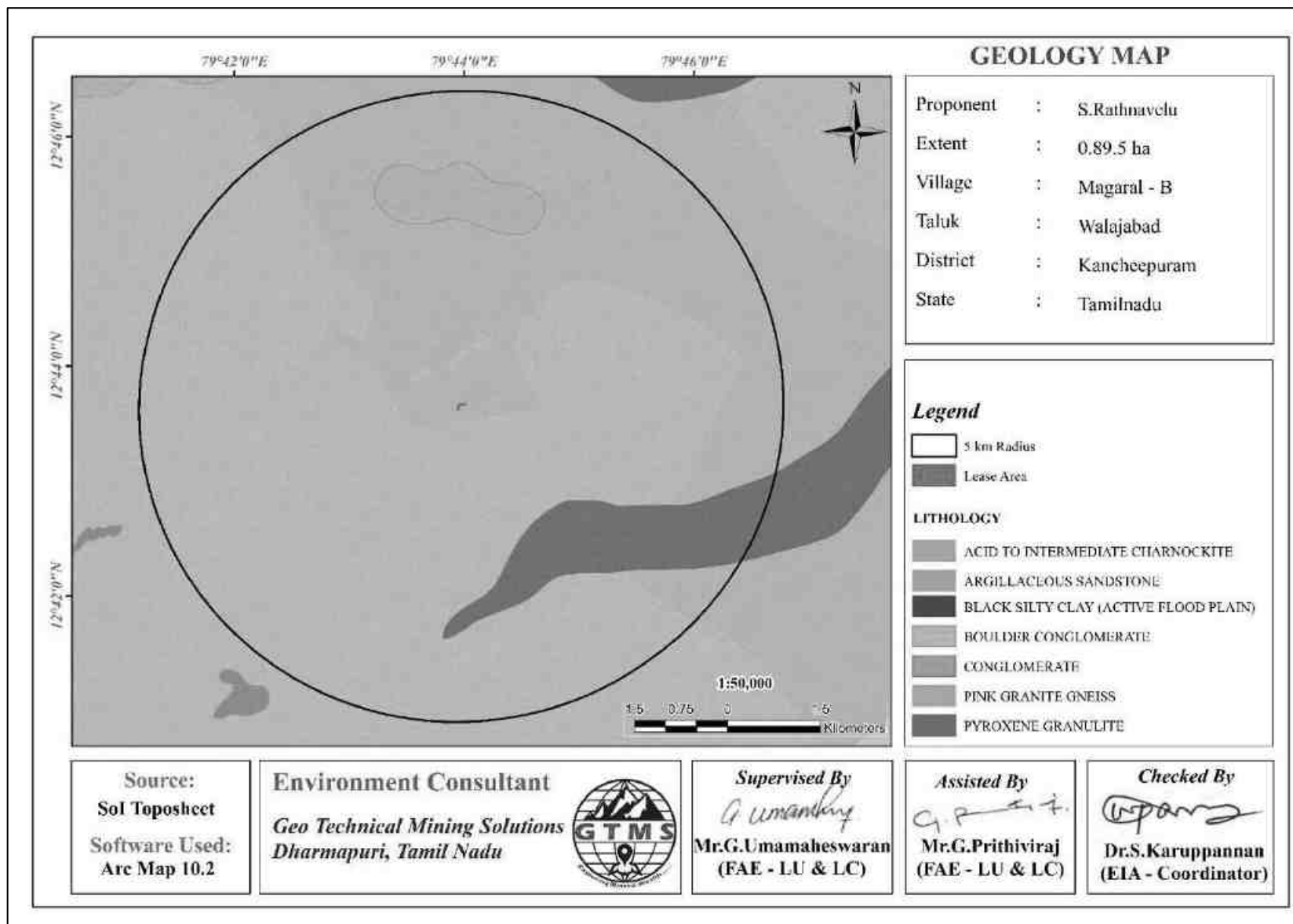


Figure 3.1 Geology Map of 5 km Radius from the Proposed Project Site

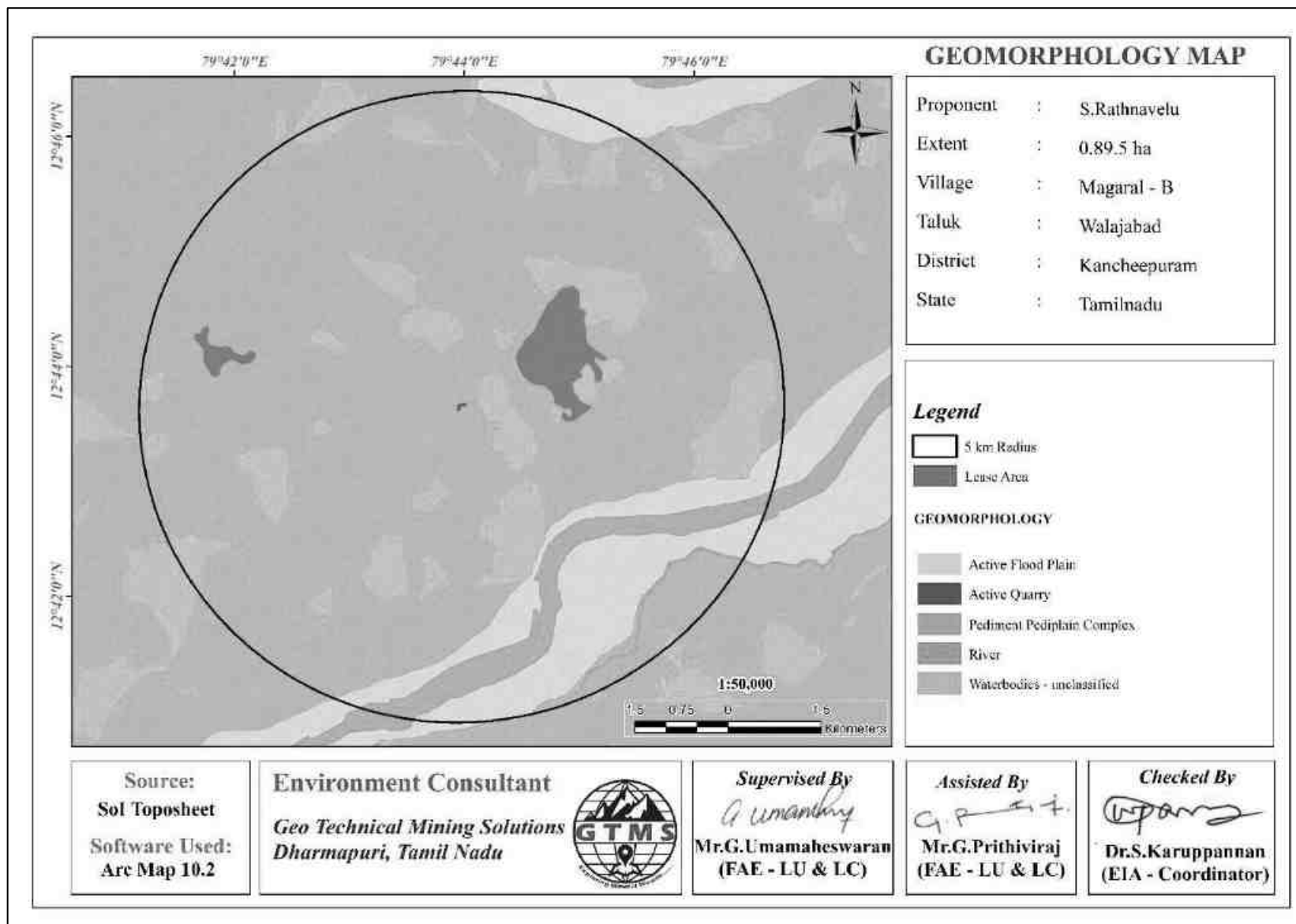


Figure 3.2 Geomorphology Map of 5 km Radius from the Proposed Project Site

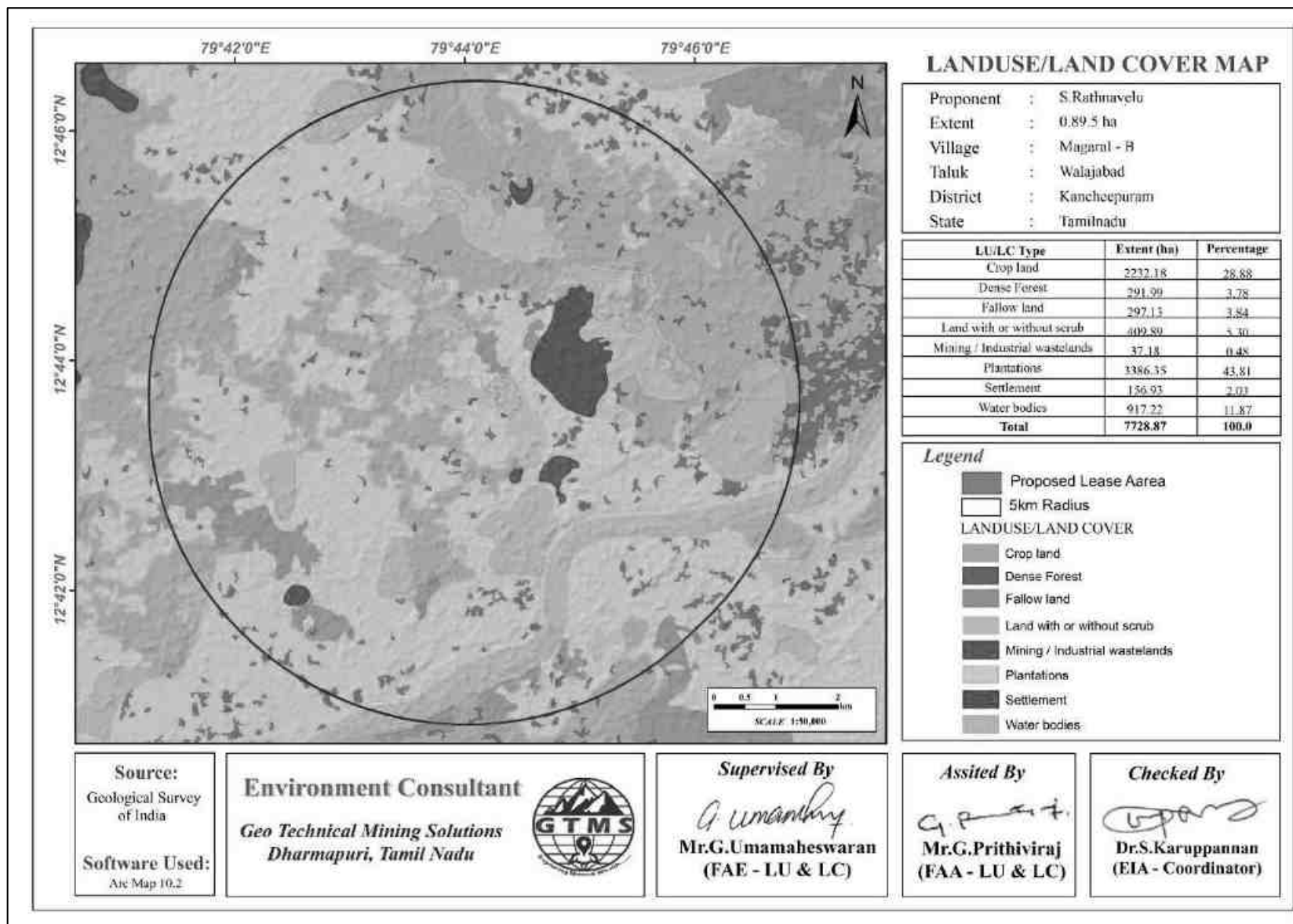


Figure 3.3 LULC Map of 5 km Radius from the Proposed Project Site

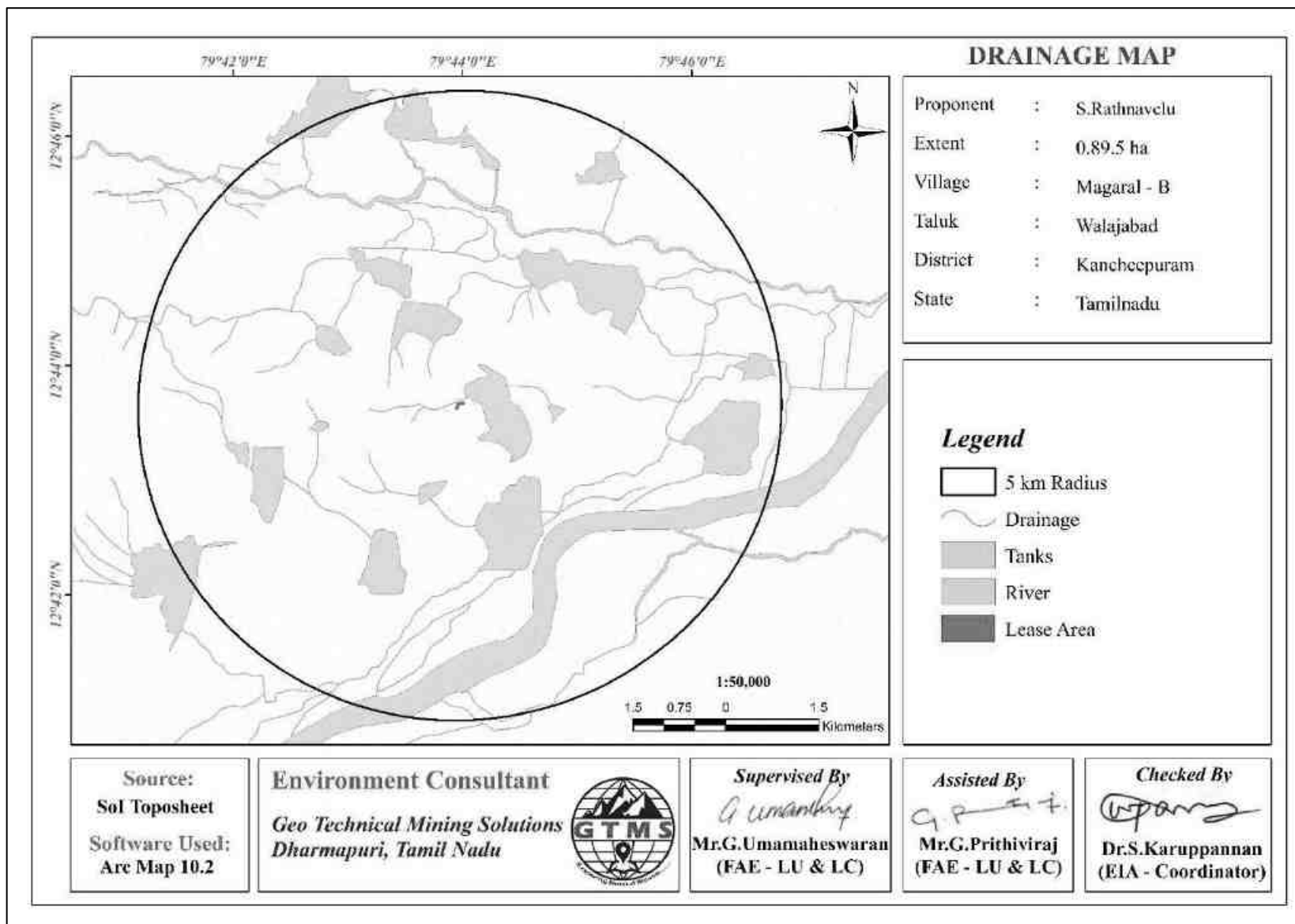


Figure 3.4 Drainage Map of 5 km Radius from the Proposed Project Site Showing a Portion of Dendritic Pattern

3.1.6 Soil Environment

Soil is one of the important components of the land environment. Composite soil samples were collected from the study area and analysed for different parameters to determine the baseline soil characteristics of the study area.

3.1.6.1 Methodology

Seven 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 as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

Table 3.3 Soil Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
S01	Core	0.05	E	12°43'39.07"N, 79°44'2.80"E
S02	Kanikilluppai	1.83	N	12°44'40.52"N, 79°43'55.46"E
S03	Bagavandapuram	3.13	W	12°43'28.59"N, 79°42'12.66"E
S04	Elacheri	4.21	SW	12°41'27.96"N, 79°43'8.70"E
S05	Manalmedu	4.18	SE	12°41'52.23"N, 79°45'25.75"E
S06	Magaral	3.12	E	12°43'21.45"N, 79°45'42.95"E
S07	Kolathur	3.83	NE	12°44'48.53"N, 79°45'47.81"E

Source: On-site monitoring/sampling by Ekdant Enviro Services (p) Limited, in association with GTMS.

3.1.6.2 Results and Discussion

Physical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, to sandy clay loam. pH of the soil varies from 6.63 to 7.42 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 168 to 213 $\mu\text{S}/\text{cm}$. Bulk density ranges between 0.88 and 1.53 g/cm^3 and water content ranges between 2.16 to 8.56 %.

Chemical Characteristics

Calcium ranges between 184 and 442 mg/kg. Magnesium ranges between 83 and 192 mg/kg. Sodium ranges between 165 and 219 mg/kg. Potassium ranges between 144.56 and 213.56 mg/kg. Organic matter content ranges between 0.94 and 1.78 mg/kg and Iron ranges between 21.51 and 47.45 mg/kg.

Soil Erosion

Soil erosion map shows that:

- ❖ Low to moderate soil erosion is in mine lease area. Soil erosion map showing in figure 3.6

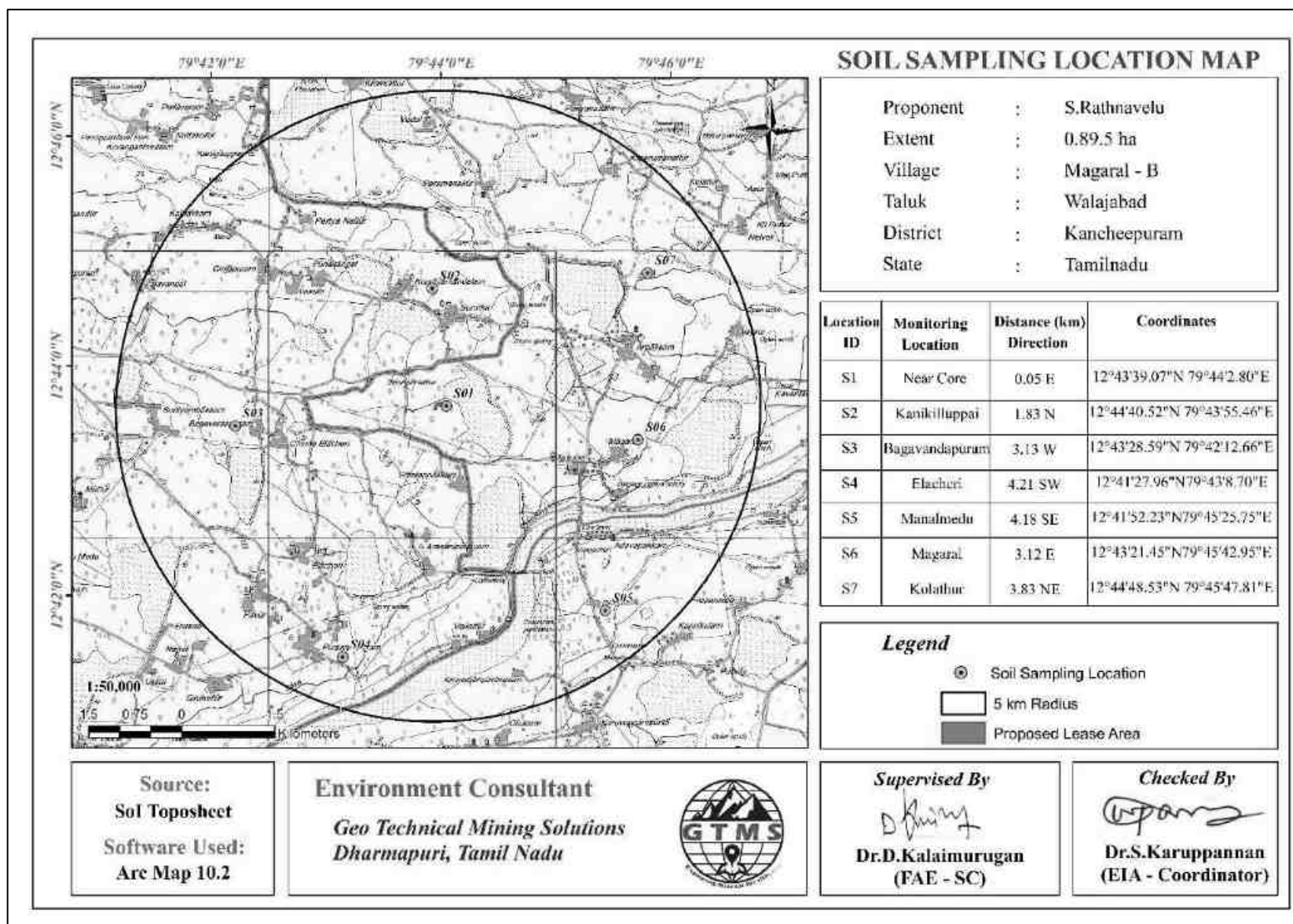


Figure 3.5 Toposheet Showing Soil Sampling Locations within 5 km Radius around the Proposed Project Site

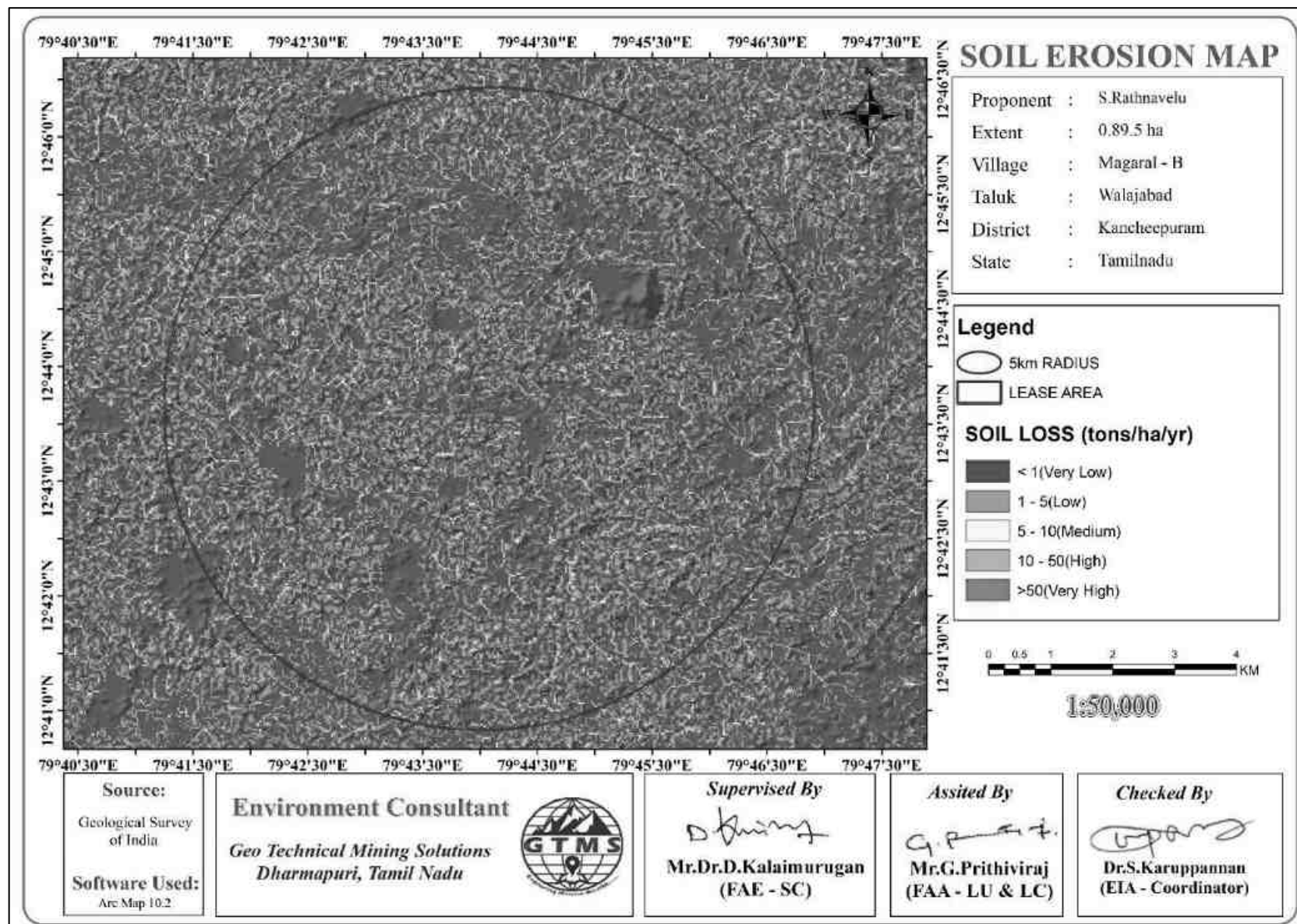


Figure 3.6 Soil erosion map within 5 km Radius around the Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S.NO	PARAMETERS	UNITS	RESULTS						
			S1	S2	S3	S4	S5	S6	S7
1.	pH Value (10% Solution)	-	7.42	7.01	7.12	6.72	7.26	7.21	6.63
2.	EC@25°C (10% Solution)	micromhos/ cm	213	172	168	210	196	179	178
3.	Clay	%	11.51	12.34	11.34	24.56	13.24	14.56	29.67
4.	Sand	%	56.46	61.54	59.67	49.13	57.12	63.19	52.45
5.	Slit	%	32.03	26.12	28.99	26.31	29.64	22.25	17.88
6.	Bulk Density	g/cc	1.05	1.18	0.96	1.53	0.93	0.88	0.96
7.	Water Content	%	2.54	4.54	4.56	8.56	2.16	2.45	5.51
8.	Organic matter	%	1.45	1.26	1.78	1.78	1.13	0.94	1.34
9.	Alkalinity	mg/kg	84.56	86.45	45.78	56.56	72.16	67.45	42.56
10.	Water Holding Capacity	%	39.79	35.45	32.76	59.45	37.58	37.3	52.45
11.	Calcium as Ca	mg/kg	256	386	297	184	442	367	285
12.	Magnesium as Mg	mg/kg	192	136	182	184	83	165	138
13.	Sodium as Na	mg/kg	212	219	213	194	178	201	165
14.	Iron as Fe	mg/kg	42.93	35.76	47.45	23.12	29.45	34.56	21.51
15.	Copper as Cu	mg/kg	BLQ(LOQ=0.05)						
16.	Chlorides as Cl	mg/kg	145	138	147	127	156	186	142
17.	Potassium as K	mg/kg	186.90	212.53	156.67	213.56	196.34	144.56	175.56

Source: Sampling Results Ekdant Enviro Services (p) Limited, 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
SW01	Cheyyar river	2.64	SE	12°42'29.61"N 79°44'52.03"E
SW02	Arpakkam Lake	3.12	NE	12°44'30.46"N 79°45'31.46"E
SW03	Sithalapakkam Lake	2.26	S	12°42'24.04"N 79°44'5.28"E
OW01	Elacheri	0.31	E	12°43'34.50"N 79°44'7.71"E
OW02	Bagavandapuram	2.46	W	12°43'20.35"N 79°42'36.06"E
OW03	Kilnaickenpalayam	3.28	NW	12°44'52.41"N 79°42'36.81"E
BW01	Iyyanpattai	3.74	E	12°43'35.10"N 79°46'5.01"E
BW02	Kalakattur	4.41	N	12°46'4.68"N 79°43'59.47"E

Source: On-site monitoring/sampling by Ekdant Enviro Services (p) Limited, in association with GTMS.

3.2.1 Surface Water Resources and Quality

Cheyyar River, Arpakkam Lake and Sithalapakkam Lake are the three prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 2.64 km SE of Cheyyar River, 3.12 NE of Arpakkam Lake and 2.26 km S of Sithalapakkam Lake, as shown in Table 3.6 and Figure 3.7. Three surface water samples, known as SW1, SW2 and SW3 were collected from the three surface water bodies to assess the baseline water quality. Table 3.6 summarizes surface water quality data of the three samples. Results for surface water samples in the Table 3.6 indicate that the physical and chemical parameters are within permissible limits. Of the two biological parameters, Coliform bacteria are present in the three water samples, whereas *E-Coli* is absent in the samples.

3.2.2 Ground Water Resources and Quality

Groundwater in the study area occurs in the crystalline rocks of Archaean age and Recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose. Five groundwater samples, known as OW1, OW2, OW3, BW1 and BW2 were collected from open wells and bore wells to analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.6. Table 3.7 summarizes ground water quality data of the five samples.

Results for ground water samples in the Table 3.7 indicate that the physical, chemical and biological parameters are within permissible limits in comparison with standards of IS10500:2012.

3.2.3 Hydrogeological Studies

The area within 2 km radius consists of numerous open wells and deep wells. Groundwater level data were collected both from open wells and bore wells for two monsoon seasons as discussed in the following section.

3.2.3.1 Groundwater Levels and Flow Direction

As the groundwater moves from the points of highest static groundwater elevation to the points of lowest static groundwater elevation under the influence of gravity, 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 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from October through December, 2022 (Post Monsoon Season) and from March through May, 2023 (Pre-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 5.5 to 8.8 m BGL in post monsoon and from 8.6 to 13.6 m BGL in pre 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 2022 (Post-Monsoon Season) vary from 40 to 56 m and from 44 to 59 m for the period of March through May, 2023 (Pre-Monsoon Season).

Data on the depths to static water table and potentiometric surface were used to calculate static groundwater table and potentiometric surface elevations for open wells and borewells, respectively to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines. The maps thus produced are shown in Figures 3.8-3.9. From the maps of groundwater flow direction, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 1 and 8 located in NNE and SSW of the proposed project site respectively. The maps thus produced in bore wells are shown in Figures 3.10-3.11. From the groundwater flow map in fare that two monsoon seasons groundwater flows towards the bore well number 8 located in SE direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

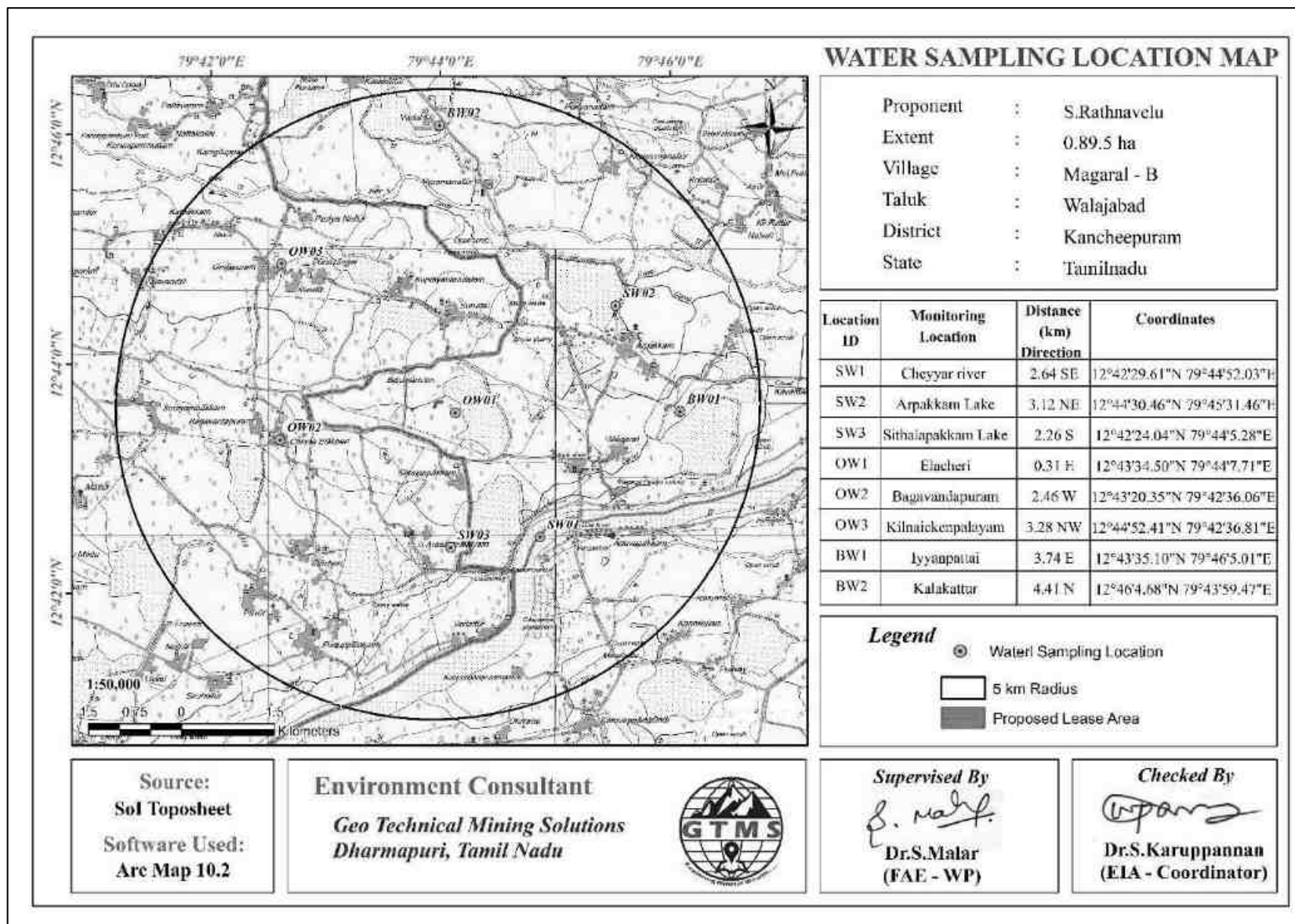


Figure 3.7 Toposheet Showing Water Sampling Locations within 5 km Radius around the Proposed Project Site

Table 3.6 Surface Water and Ground Water Quality Result

S. No	PARAMETERS	UNITS	RESULTS								AS PER IS 10500:2012	
			SW1	SW2	SW3	OW1	OW2	OW3	BW1	BW2	Acceptable Limit	Permissible Limit
1	pH value @ 25°C	-	7.12	7.23	7.00	7.25	6.92	7.21	7.28	7.11	6.5-8.5	6.5-8.5
2	Turbidity	NTU	BL(LOQ=0.1)								1	5
3	Electrical Conductivity at 25°C	µS/cm	543	473	496	556	476	413	679	723	-	-
4	TSS	mg/l	(BLQ =1.0)								-	-
5	TDS	mg/l	276	213	216	313	270	240	361	415	500	2000
6	Total Hardness (CaCO ₃)	mg/l	322	280	213	217	216	316	436	412	200	600
7	Chloride (Cl)	mg/l	69	58	85	106	79	43	165	189	250	1000
8	Sulphate SO ₄	mg/l	12	26	36	56	33	31	55	61	200	400
9	Iron (Fe)	mg/l	(BLQ =0.01)								0.3	0.3
10	Silica (SiO ₂)	mg/l	-	-	-	-	-	-	-	-	-	-
11	Coliform	MPN/100ml	Absent								-	-
12	E-Coli	MPN/100ml	Absent								-	-

Source: Sampling Results Ekdant Enviro Services (p) Limited, in association with GTMS. BLQ-Below the Limit of Quantification

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	12.9	13.3	13.6	13.3	12°43'22.00"N	79°43'38.79"E
DW02	12.5	12.8	13.2	12.8	12°43'33.61"N	79°44'15.70"E
DW03	9.5	9.8	10.6	10.0	12°43'46.15"N	79°43'20.29"E
DW04	8.6	8.9	9.6	9.0	12°42'56.26"N	79°44'17.53"E
DW05	9.6	10.2	10.8	10.2	12°43'11.71"N	79°43'18.42"E
DW06	10.1	10.6	11.0	10.6	12°44'9.34"N	79°43'45.59"E
DW07	10.4	10.8	11.3	10.8	12°44'10.10"N	79°44'26.10"E
DW08	11.1	11.8	12.3	11.7	12°43'57.38"N	79°44'10.04"E
DW09	12.1	12.3	12.5	12.3	12°43'21.47"N	79°44'49.07"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-2022	Nov-2022	Dec-2022	Average		
DW01	5.5	5.9	6.1	5.8	12°43'22.00"N	79°43'38.79"E
DW02	5.8	6.2	6.6	6.2	12°43'33.61"N	79°44'15.70"E
DW03	6.9	7.2	7.8	7.3	12°43'46.15"N	79°43'20.29"E
DW04	7.1	7.5	7.9	7.5	12°42'56.26"N	79°44'17.53"E
DW05	8.0	8.4	8.8	8.4	12°43'11.71"N	79°43'18.42"E
DW06	7.6	7.9	8.4	8.0	12°44'9.34"N	79°43'45.59"E
DW07	7.7	8.1	8.5	8.1	12°44'10.10"N	79°44'26.10"E
DW08	6.1	6.6	6.8	6.5	12°43'57.38"N	79°44'10.04"E
DW09	7.2	7.6	7.8	7.5	12°43'21.47"N	79°44'49.07"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	48	51	54	51.00	12°42'58.89"N	79°44'10.69"E
BW02	50	54	58	54.00	12°43'28.93"N	79°43'25.10"E
BW03	49	53	58	53.50	12°43'6.15"N	79°42'51.31"E
BW04	51	55	59	55.00	12°43'31.82"N	79°42'36.44"E
BW05	44	46	48	46.00	12°44'40.70"N	79°43'42.89"E
BW06	44	48	52	48.00	12°44'14.79"N	79°44'2.09"E
BW07	47	50	53	50.00	12°43'58.89"N	79°44'37.18"E
BW08	46	49	51	48.67	12°43'11.37"N	79°44'58.78"E
BW09	48	52	55	51.67	12°42'32.05"N	79°43'44.51"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-2022	Nov-2022	Dec-2022	Average		
BW01	43	48	50	47.00	12°42'58.89"N	79°44'10.69"E
BW02	45	50	53	49.33	12°43'28.93"N	79°43'25.10"E
BW03	44	51	55	50.00	12°43'6.15"N	79°42'51.31"E
BW04	47	52	56	51.67	12°43'31.82"N	79°42'36.44"E
BW05	41	43	46	43.33	12°44'40.70"N	79°43'42.89"E
BW06	40	44	48	44.00	12°44'14.79"N	79°44'2.09"E
BW07	42	46	49	45.67	12°43'58.89"N	79°44'37.18"E
BW08	41	45	48	44.67	12°43'11.37"N	79°44'58.78"E
BW09	40	43	49	44.00	12°42'32.05"N	79°43'44.51"E

Source: Onsite monitoring data

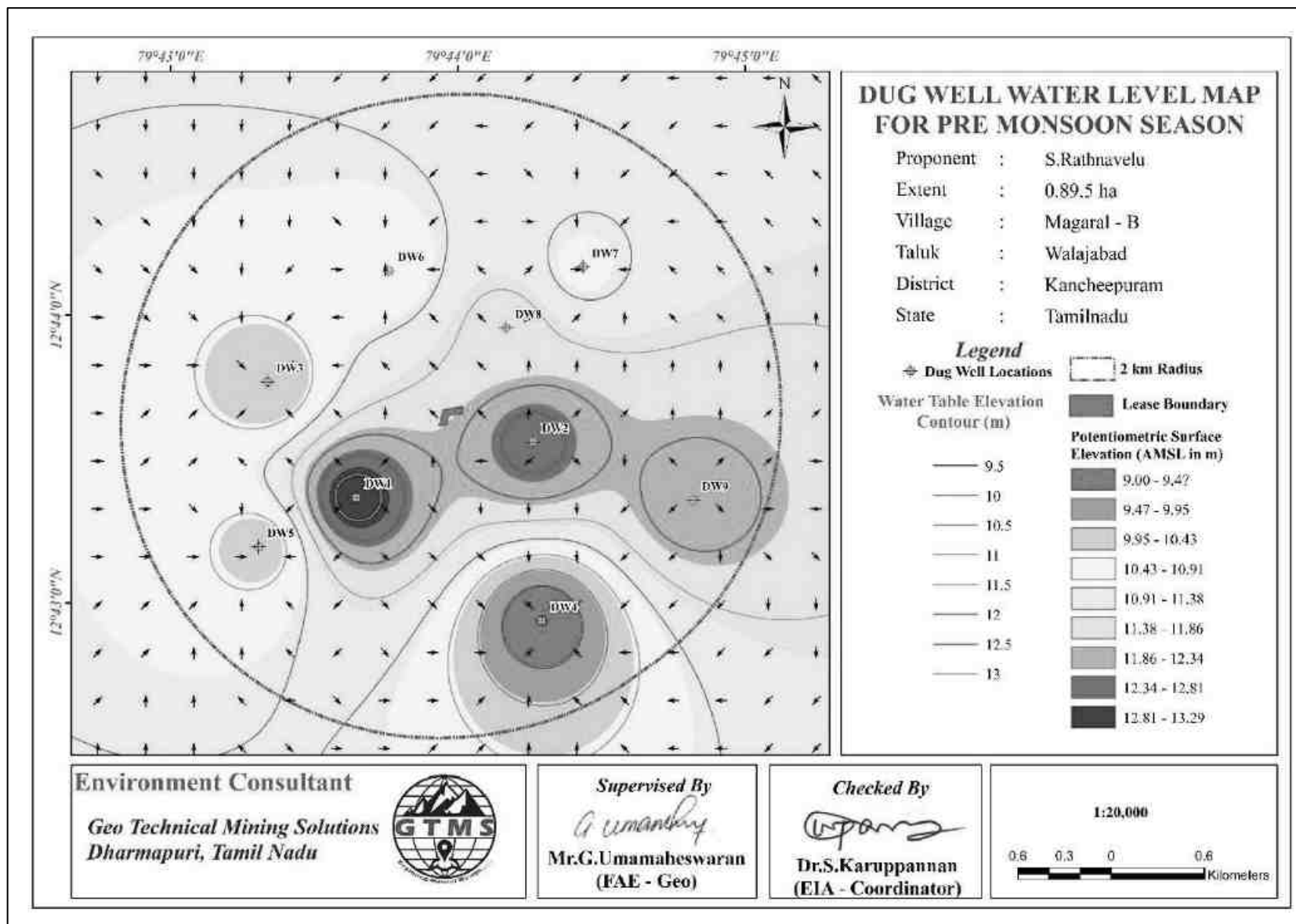


Figure 3.8 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow during Pre-Monsoon Season

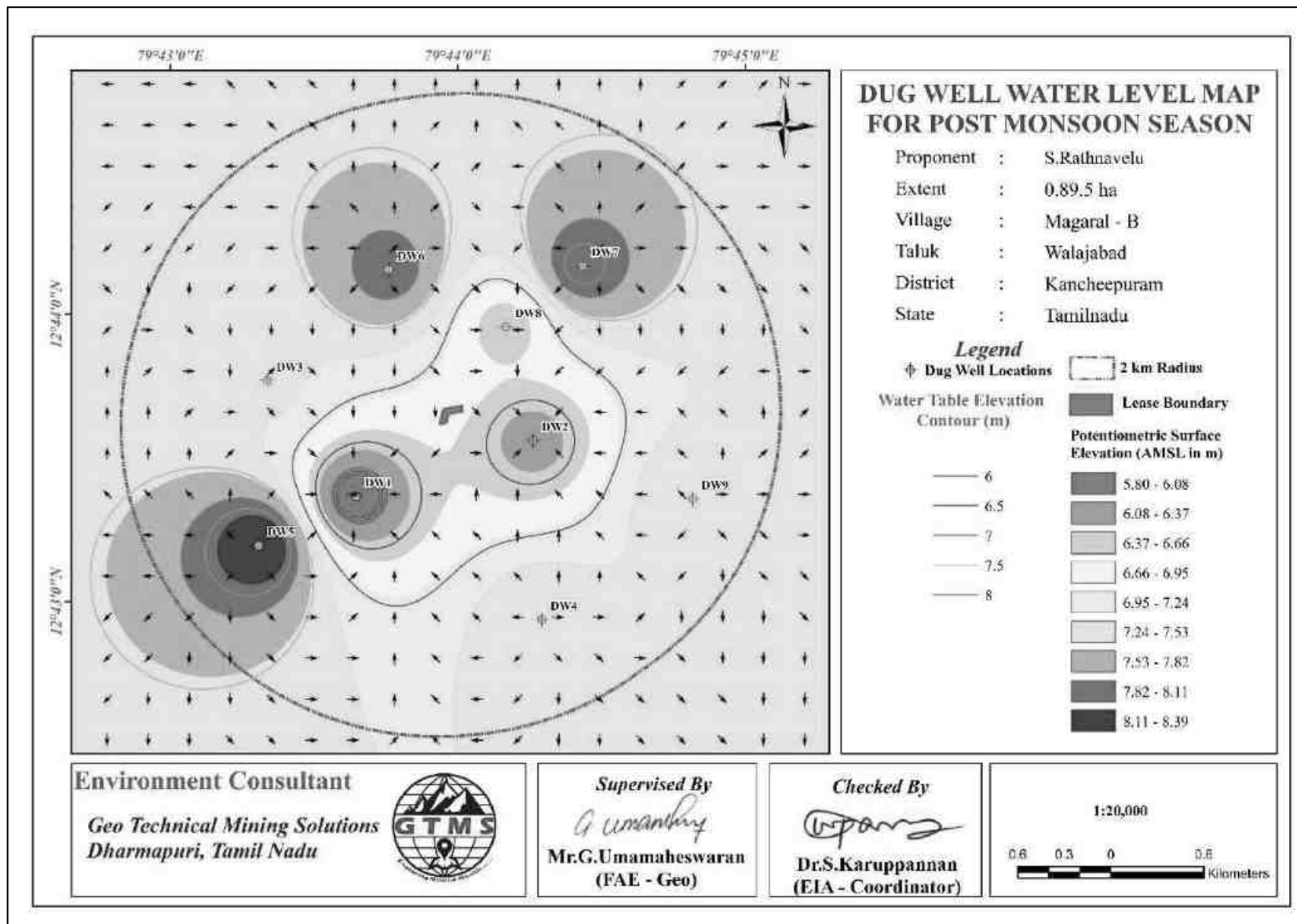


Figure 3.9 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow during Post-Monsoon Season

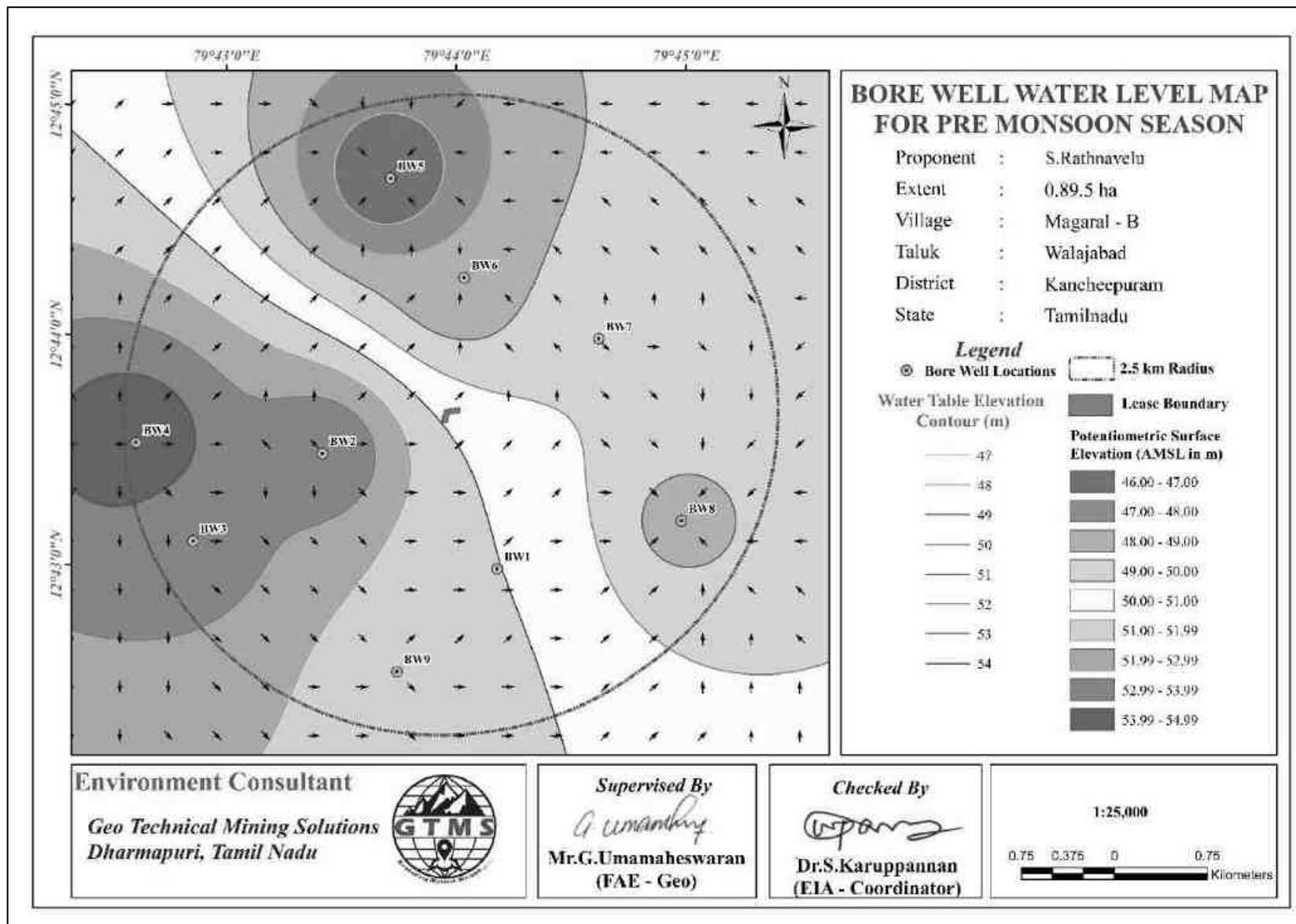


Figure 3.10 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow during Pre-Monsoon Season

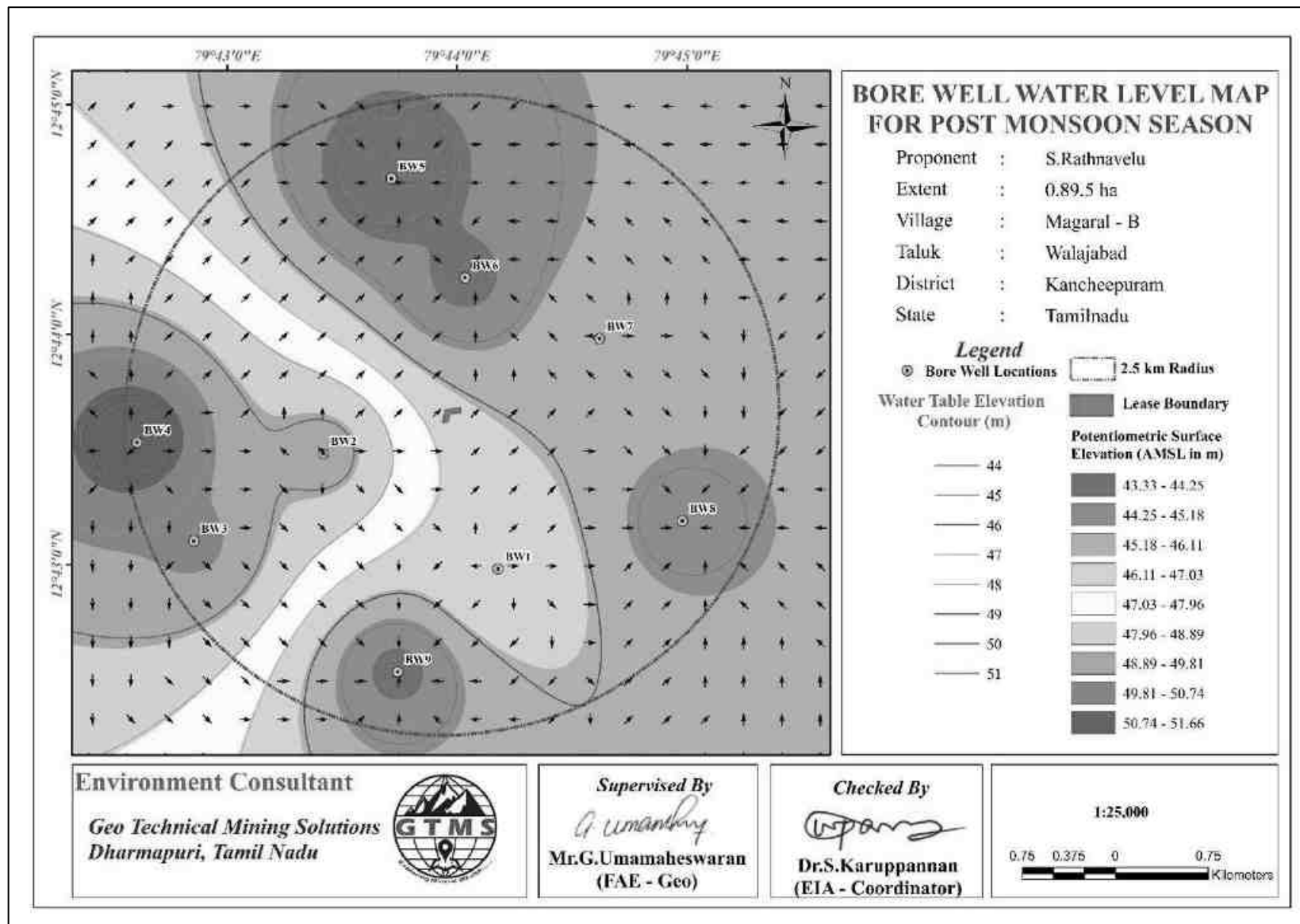


Figure 3.11 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow during Post-Monsoon Season

3.2.3.2 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 – 12°43'35.92"N, 79°44'1.85"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	5	2	16.50	0.741	125.05
2	10	2	75.43	0.245	167.91
3	15	5	62.86	0.454	288.48
4	20	5	117.86	0.326	369.37
5	25	5	188.58	0.263	496.74
6	25	10	82.50	0.594	490.67
7	30	10	125.72	0.580	582.30
8	35	10	176.79	0.406	718.27
9	40	10	235.73	0.368	876.45
10	45	10	302.51	0.355	1073.17
11	50	20	165.01	0.278	1189.65
12	60	20	251.44	0.272	786.42
13	70	20	353.59	0.269	1239.90
14	80	20	471.45	0.262	1281.12
15	90	20	605.03	0.257	1546.68
16	100	20	754.32	0.251	1785.32

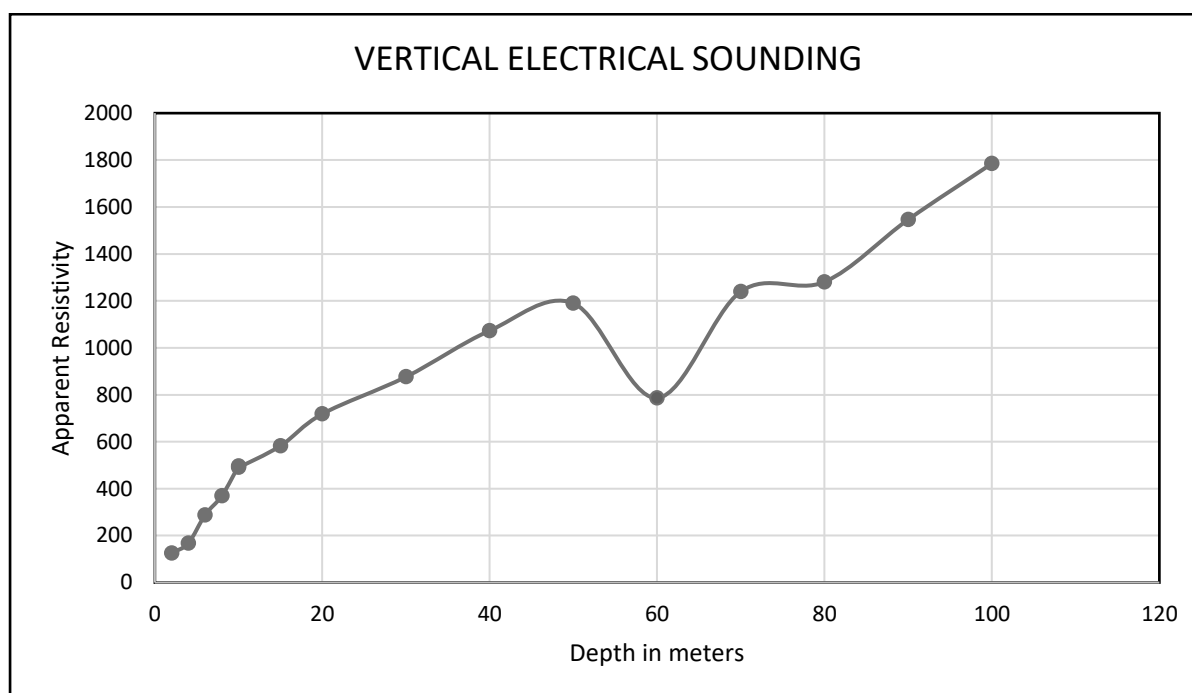


Figure 3.12 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 60 m below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60 m below ground level. The maximum depth proposed for the proposed project is 50 m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

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. According to the onsite data, the temperature in March 2022 varied from 22.19 to 35.52⁰C with the average of 28.08⁰C; in April 2022 from 25.34 to 36.46⁰C with the average of 29.82⁰C; and in May 2022 from 25.64 to 37.22⁰C with the average of 23.14⁰C. In March 2022, relative

humidity ranged from 30.44 to 95.19 % with the average of 71.17% in April 2022 from 36.56 to 92.19% with the average of 72.22% and in May 2022 from 36.19 to 93.19 % with the average of 72.29 %. The wind speed in March 2022 varied from 0.035 to 8.80 m/s with the average of 3.96 m/s in April 2022 from 0.09 to 6.81 m/s with the average of 3.67m/s and in May 2022 from 0.06 to 9.06 m/s with the average of 4.17 m/s. In March 2022, wind direction varied from 2.32 to 359.65⁰ with the average of 119.25⁰ in April 2022 from 0.00 to 357.92⁰ with the average of 149.97⁰ and in May 2022 from 2.09 to 358.03⁰ with the average of 207.43⁰. In March 2022, surface pressure varied from 99.94 to 101.17 kPa with the average of 100.56 kPa in April 2022 from 99.87 to 101.08 kPa with the average of 100.45 kPa and in May 2022 from 99.38 to 100.58 kPa with the average of 100.06 kPa.

Table 3.12 Onsite Meteorological Data

S. No.	Parameters		March 2022	April 2022	May 2022
1	Temperature (°C)	Min	22.19	25.34	25.64
		Max	35.52	36.46	37.22
		Avg	28.08	29.82	30.27
2	Relative Humidity (%)	Min	30.44	36.56	36.19
		Max	95.19	92.19	93.19
		Avg	71.17	72.22	72.29
3	Wind Speed (m/s)	Min	0.35	0.09	0.06
		Max	8.80	6.81	9.06
		Avg	3.96	3.67	4.17
4	Wind Direction (degree)	Min	2.32	0.00	2.09
		Max	359.65	357.92	358.03
		Avg	119.25	149.97	207.43
5	Surface Pressure(kPa)	Min	99.94	99.87	99.38
		Max	101.17	101.08	100.58
		Avg	100.56	100.45	100.06

Source: On-site monitoring/sampling by **Ekdant Enviro Services (p) Limited** in association with GTMS

Rainfall

Rainfall data for the study area were collected for the period of 1981-2021. Long term monthly average rainfall was estimated from the data of 1981-2021 and compared with the monthly rainfall for the year 2021, shown in Figure 3.12. The Figure 3.13 shows that rainfall is generally high in the months of September through November in every year. Particularly, rainfall in September through November of 2021 is higher than the previous years.

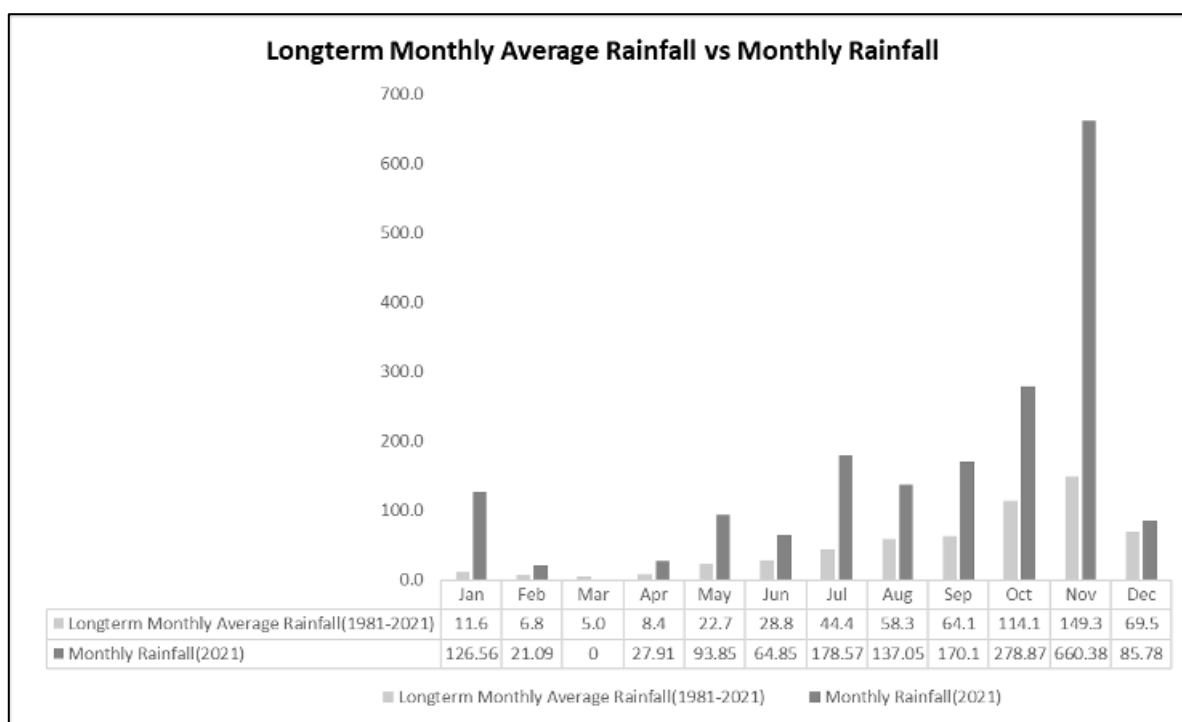


Figure 3.13 Long-Term Monthly Average Rainfall vs Monthly Rainfall

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 March through May of the years from 2019 to 2022 and the seasonal wind rose for the study period of March through May 2023. The wind rose diagrams thus produced are shown in Figure 3.14, 3.14a and 3.15 reveals that:

- ❖ The measured average wind velocity during the study period is 3.86m/s.
- ❖ Predominant wind was dominant in the directions ranging from southeast to northwest.

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

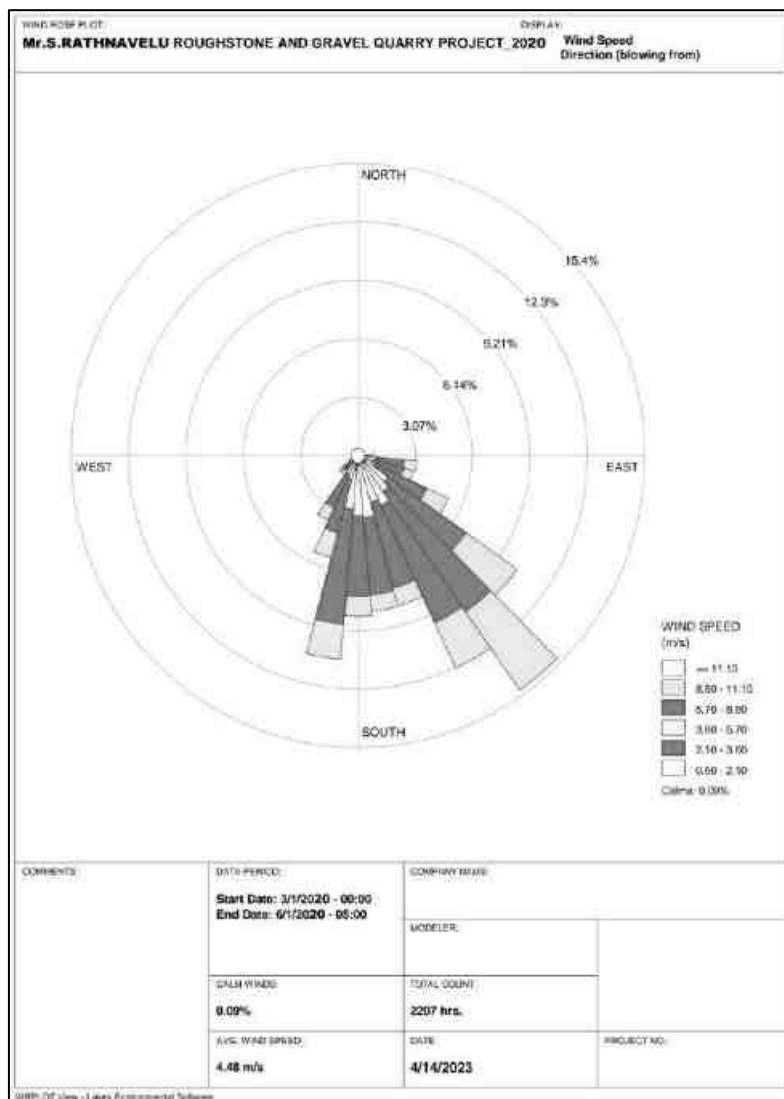
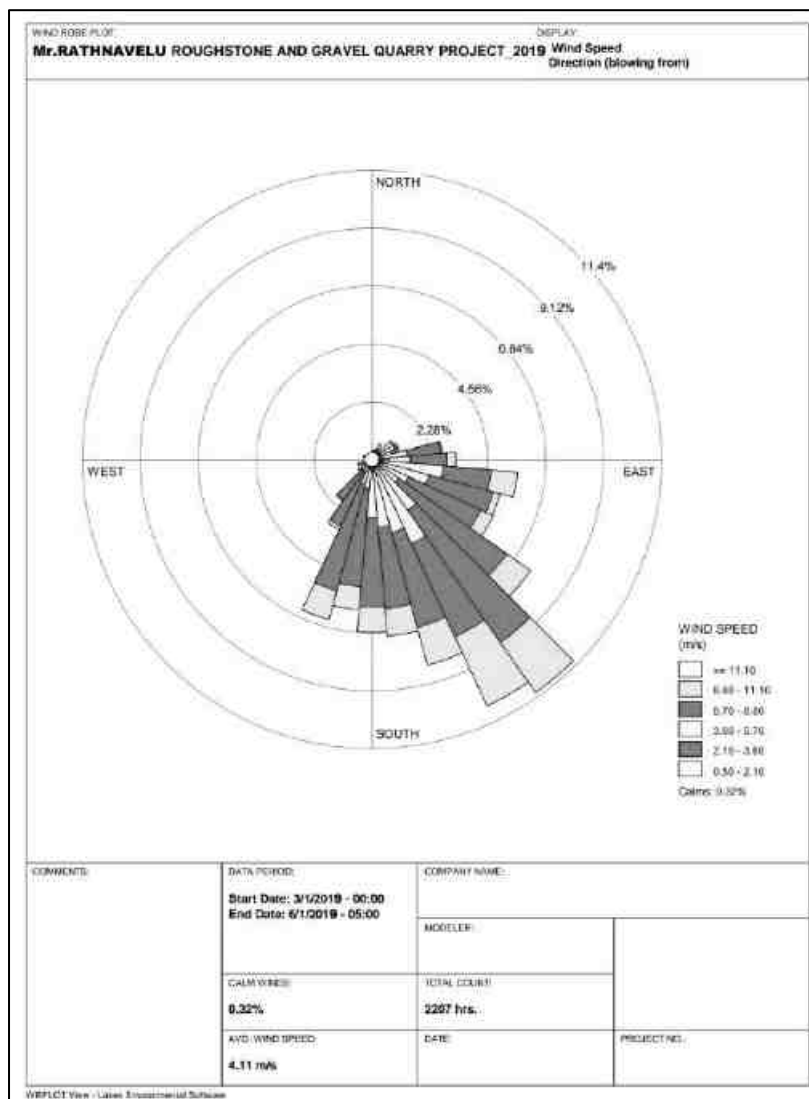


Figure 3.14 Windrose Diagram for 2019 and 2020 (March to May)

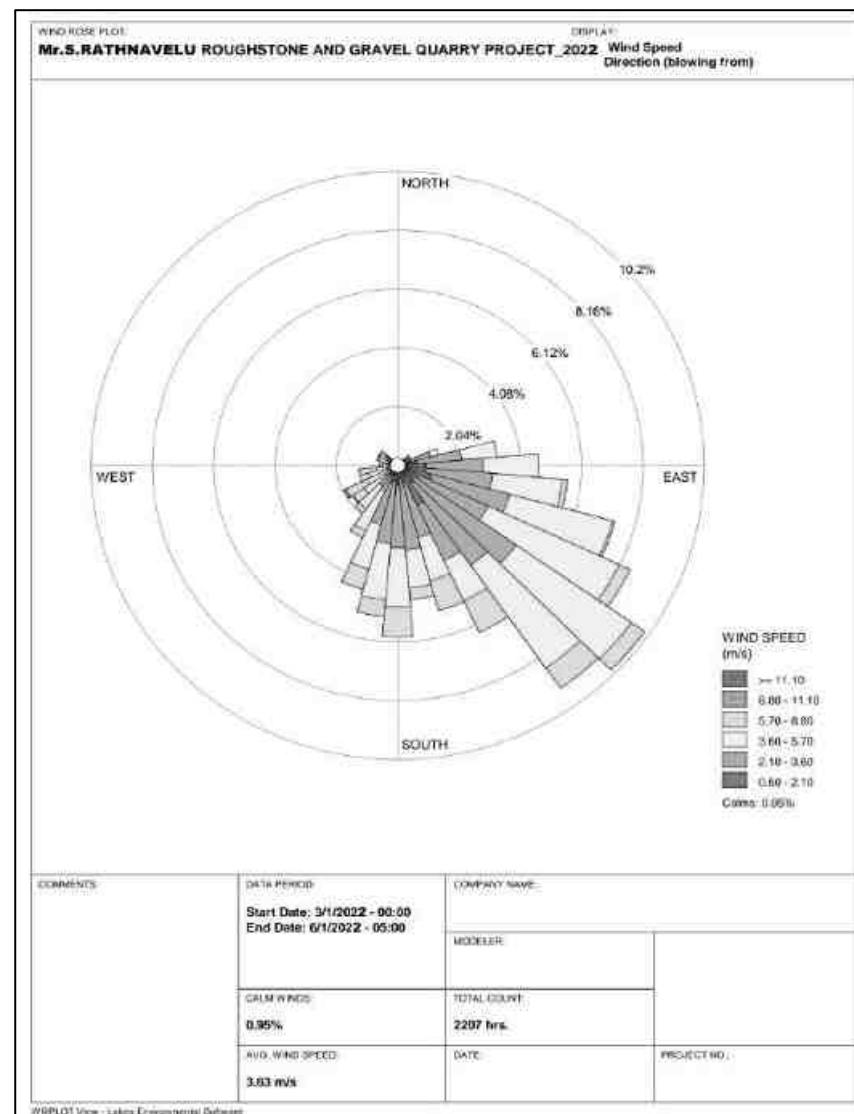
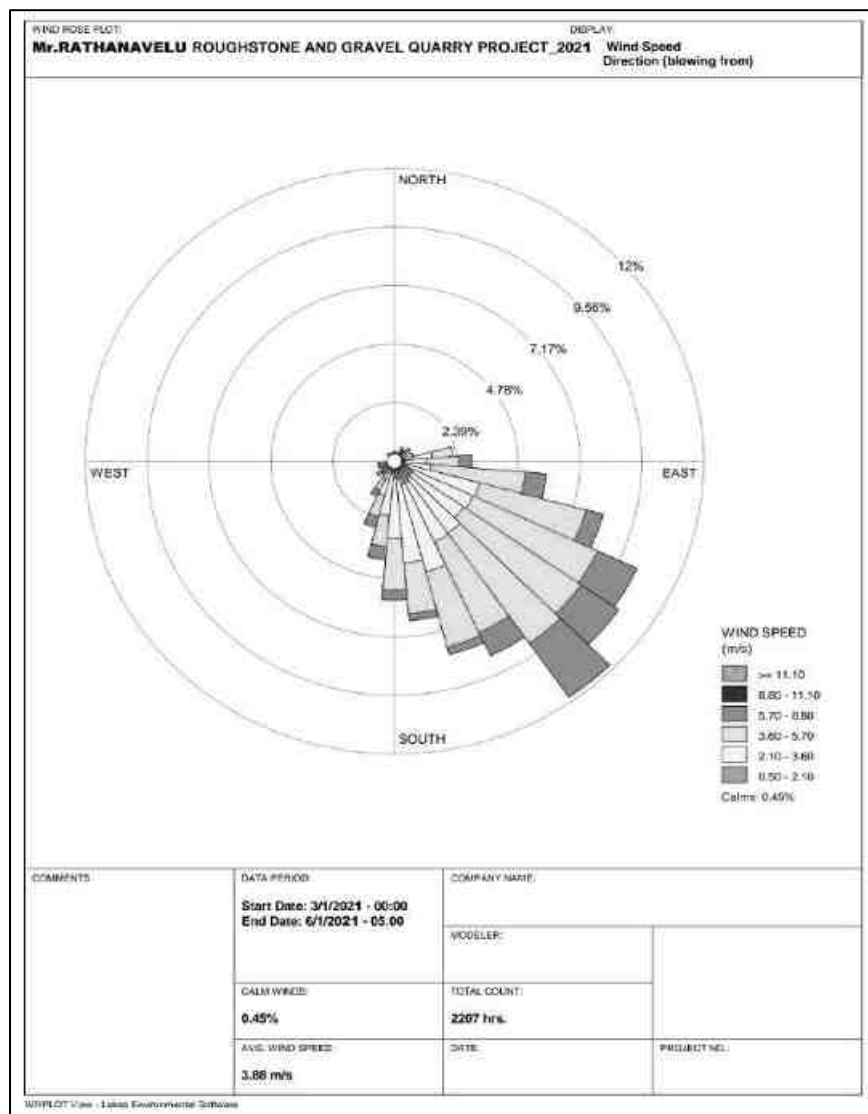


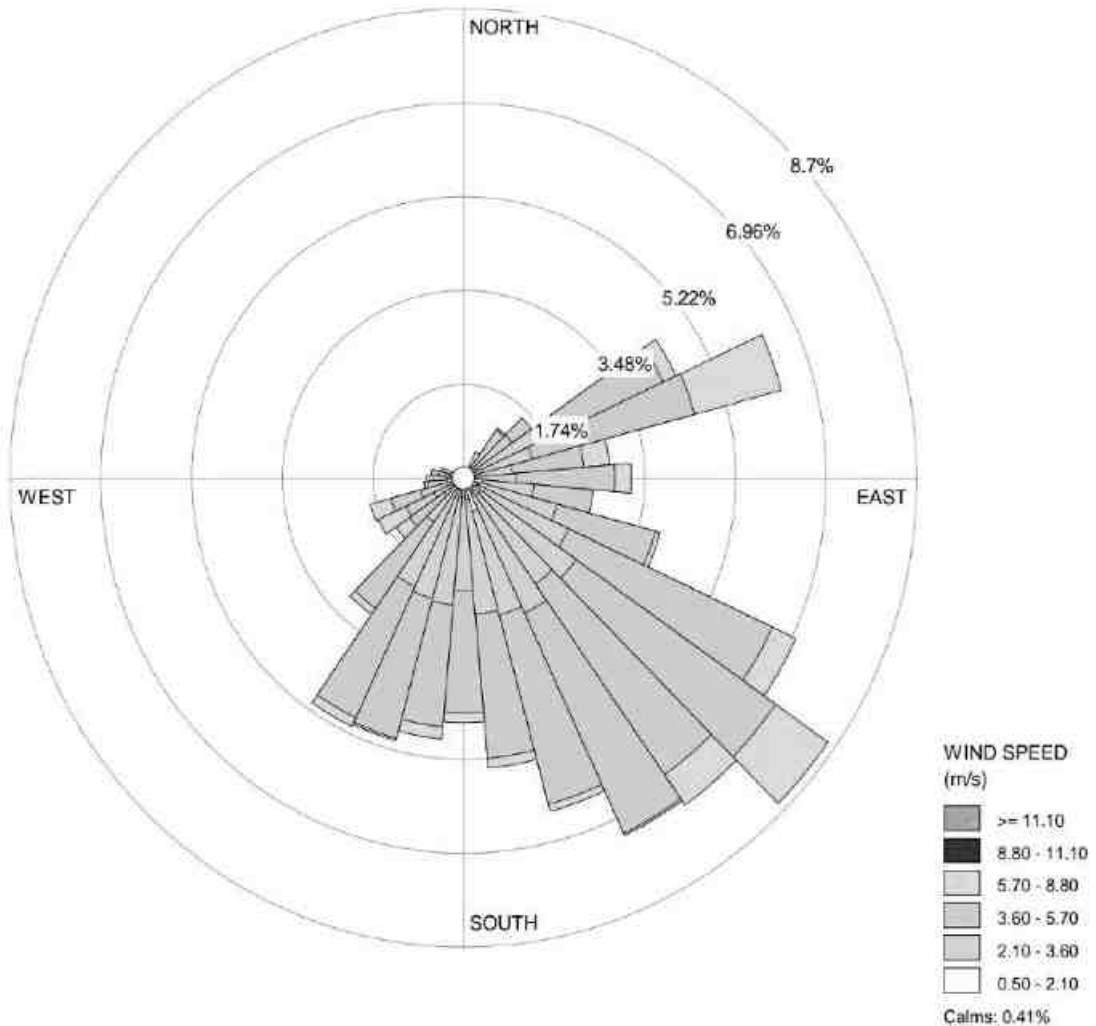
Figure 3.14(A) Windrose Diagram for 2021 and 2022 (March to May)

WIND ROSE PLOT:

M/s.RATHNAVELU ROUGHSTONE AND GRAVEL QUARRY_2023

DISPLAY:

**Wind Speed
Direction (blowing from)**



COMMENTS:

DATA PERIOD:

**Start Date: 01-03-2023 - 00:00
End Date: 31-05-2023 - 23:00**

COMPANY NAME:

MODELER:

CALM WINDS:

0.41%

TOTAL COUNT:

2207 hrs.

AVG. WIND SPEED:

3.86 m/s

DATE:

13-11-2024

PROJECT NO.:

WRPLOT View - Lakas Environmental Software

Figure 3.15 Onsite Wind Rose Diagram

Table 3.13 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method Beta attenuation method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
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
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based on *Ekdant Enviro Services (p) Limited & 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

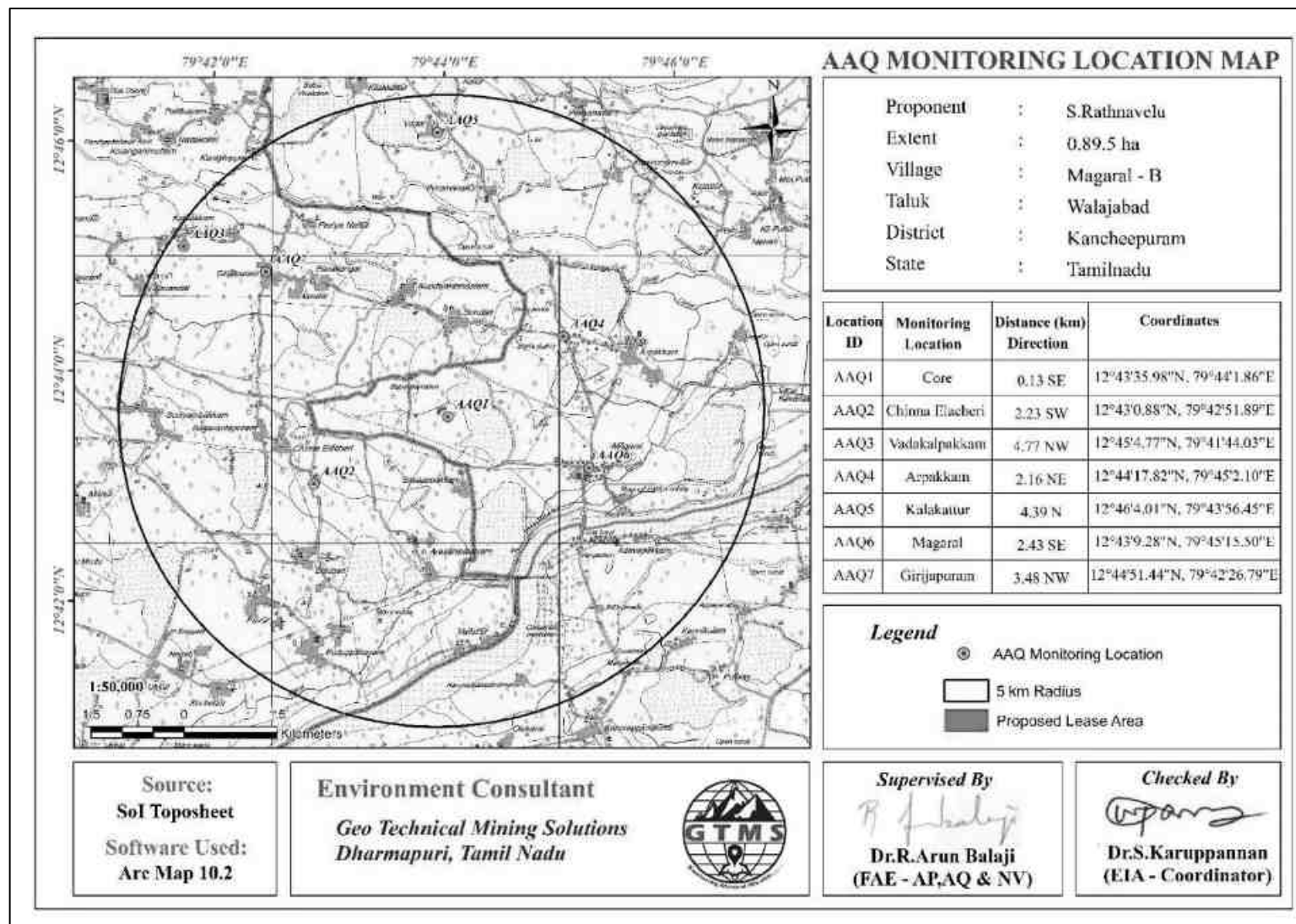


Figure 3.16 Toposheet Showing Ambient Air Quality Monitoring Station Locations Around 5 Km Radius from the Proposed Project Site

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at Seven (7) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March through May 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 PM_{2.5}, PM₁₀, sulphur dioxide (SO₂) 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.

Table 3.15 Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
					Lat	Long
1	AAQ1	Core	0.13	SE	12°43'35.98"N	79°44'1.86"E
2	AAQ2	Chinna Elacheri	2.23	SW	12°43'0.88"N	79°42'51.89"E
3	AAQ3	Vadakalpakkam	4.77	NW	12°45'4.77"N	79°41'44.03"E
4	AAQ4	Arpakkam	2.16	NE	12°44'17.82"N	79°45'2.10"E
5	AAQ5	Kalakattur	4.39	N	12°46'4.01"N	79°43'56.45"E
6	AAQ6	Magaral	2.43	SE	12°43'9.28"N	79°45'15.50"E
7	AAQ7	Girijapuram	3.48	NW	12°44'51.44"N	79°42'26.79"E

Source: On-site monitoring/sampling by **Ekdant Enviro Services (p) Limited** in association with GTMS

Results

As per the monitoring data, PM_{2.5} ranges from 14.7µg/m³ to 19.9µg/m³; PM₁₀ from 34.1µg/m³ to 39.5 µg/m³; SO₂ from 5.9 µg/m³ to 9.6 µg/m³; NO_x from 11.5 µg/m³ to 18.8 µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

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	22.3	18.3	20.4	22.3	41.7	37.9	39.8	41.7
AAQ2	19.1	12.3	16.0	19.1	39.5	34.3	37.0	39.5

AAQ3	18.6	14.4	16.8	18.0	40.3	34.7	37.4	40.1
AAQ4	17.6	14.2	15.8	17.4	36.4	31.7	34.2	36.0
AAQ5	21.1	14.3	18.0	21.1	40.3	31.7	36.4	40.0
AAQ6	23.4	15.5	19.5	23.1	42.2	37.0	39.7	42.2
AAQ7	17.3	13.9	15.4	17.1	35.9	31.2	33.7	35.5
SO₂					NO_x			
AAQ1	10.8	8.0	9.5	10.8	20.0	13.5	16.6	19.6
AAQ2	9.6	5.2	7.0	9.4	15.1	8.6	11.0	14.4
AAQ3	9.0	5.9	7.4	8.3	19.9	8.7	16.9	19.7
AAQ4	8.2	5.1	6.6	8.2	18.6	12.7	15.8	18.4
AAQ5	9.9	5.5	7.3	9.7	18.1	11.6	14.0	17.4
AAQ6	12.0	6.8	9.6	11.9	22.1	14.3	18.5	22.0
AAQ7	8.0	4.9	6.5	8.0	17.9	11.0	15.0	17.3

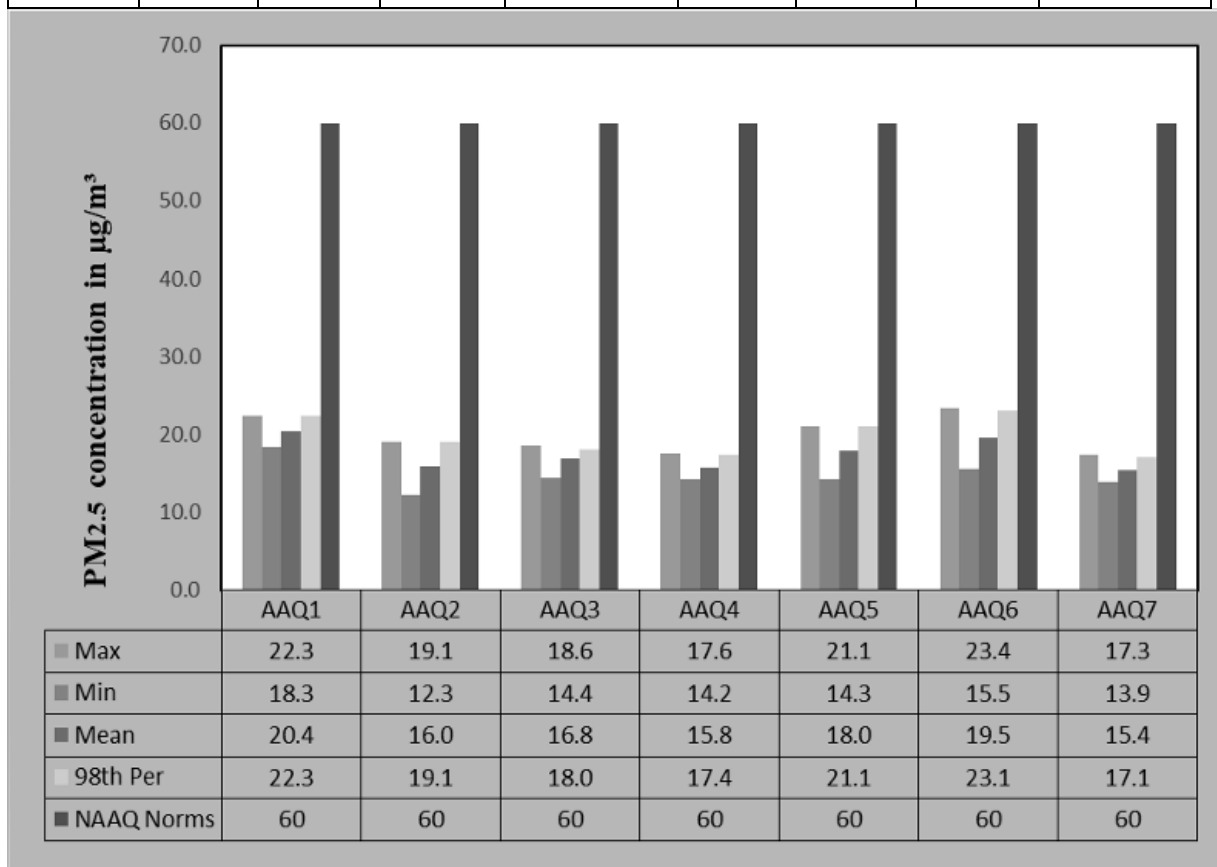


Figure 3.17 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of PM_{2.5} Measured from the Seven Air Quality Monitoring Stations Within 5 km Radius

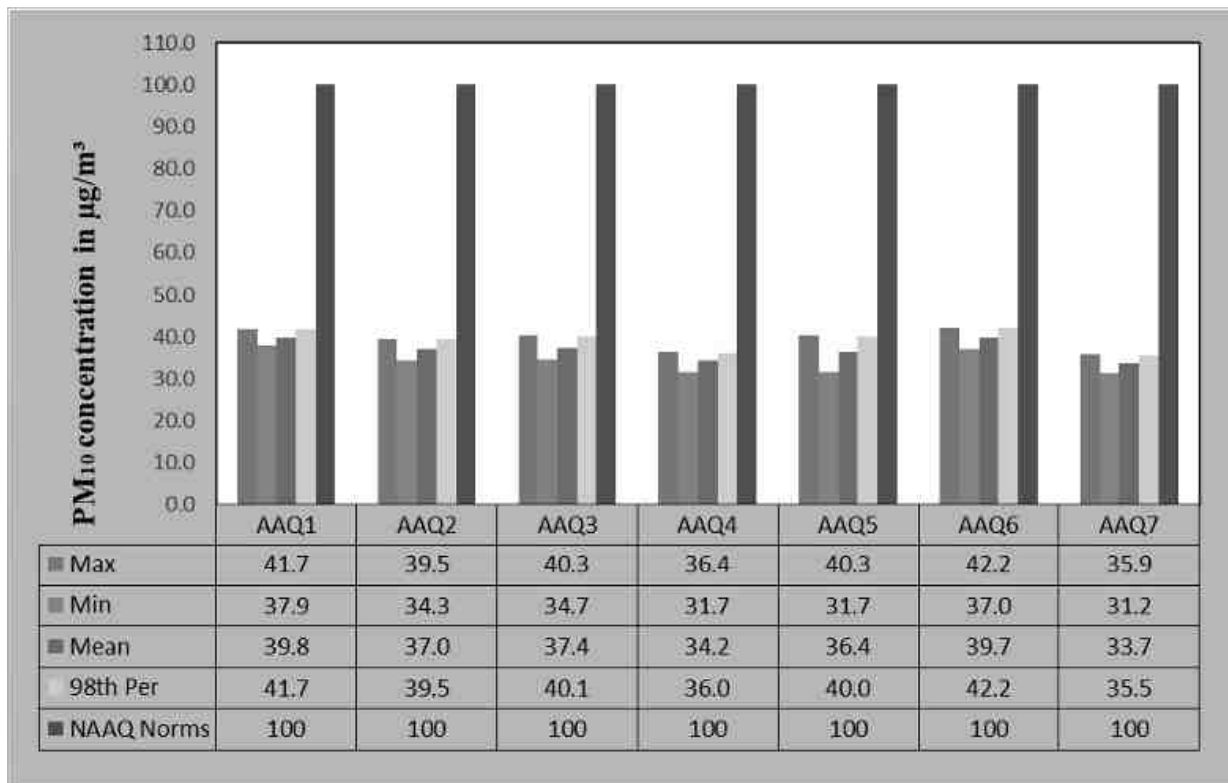


Figure 3.18 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of PM₁₀ Measured from the Seven Air Quality Monitoring Stations Within 5 km Radius

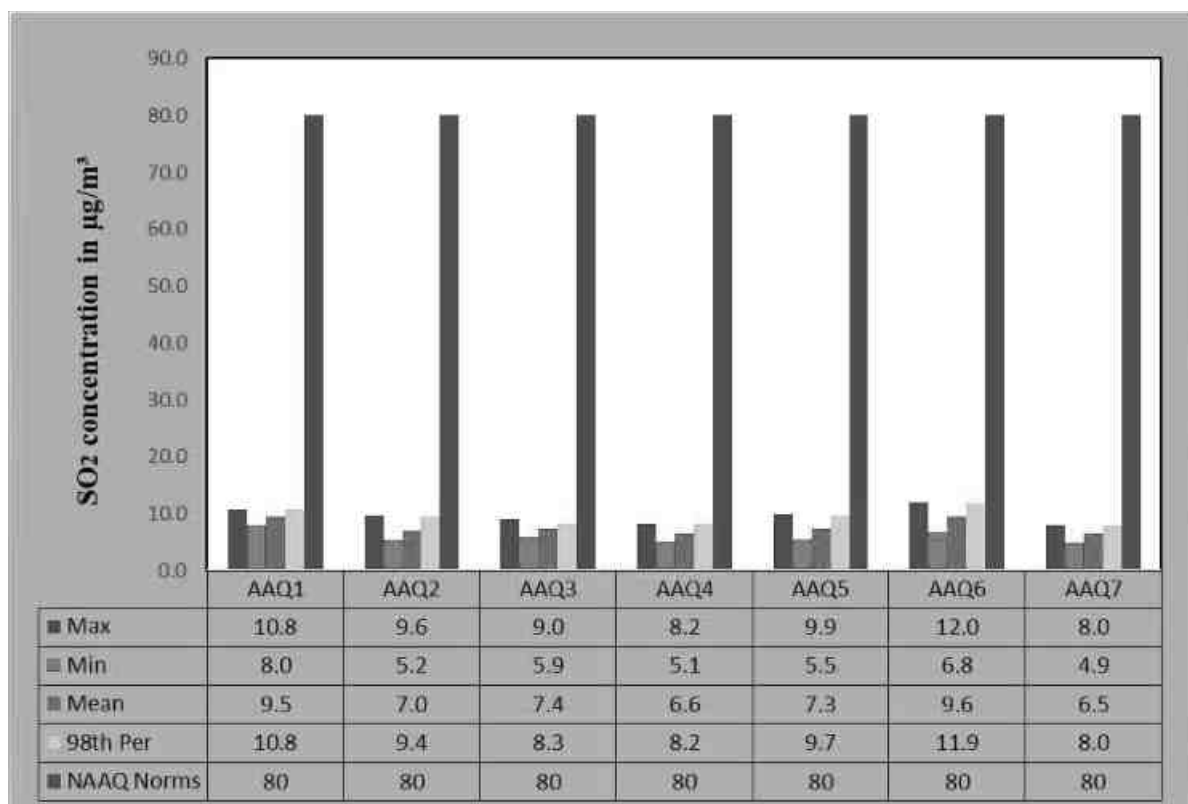


Figure 3.19 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of SO₂ Measured from the Seven Air Quality Monitoring Stations Within 5 km Radius

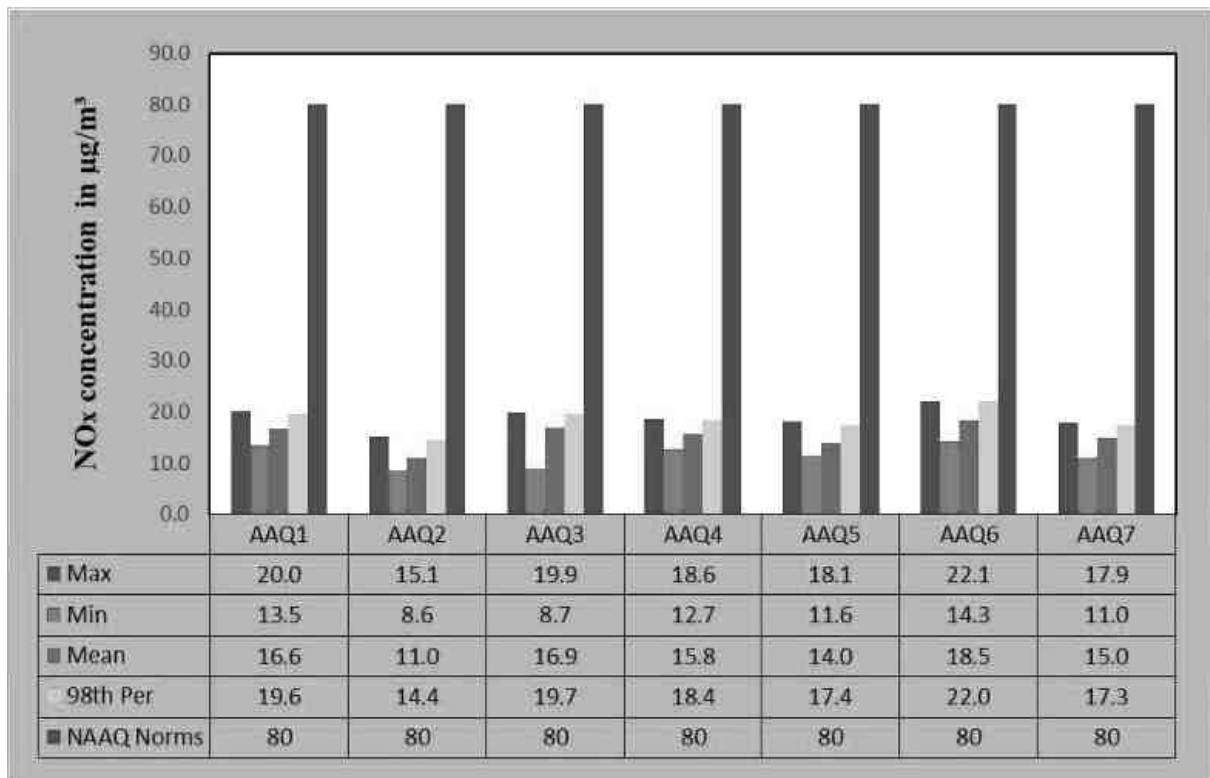


Figure 3.20 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of NO_x Measured from The Seven Air Quality Monitoring Stations Within 5 km Radius

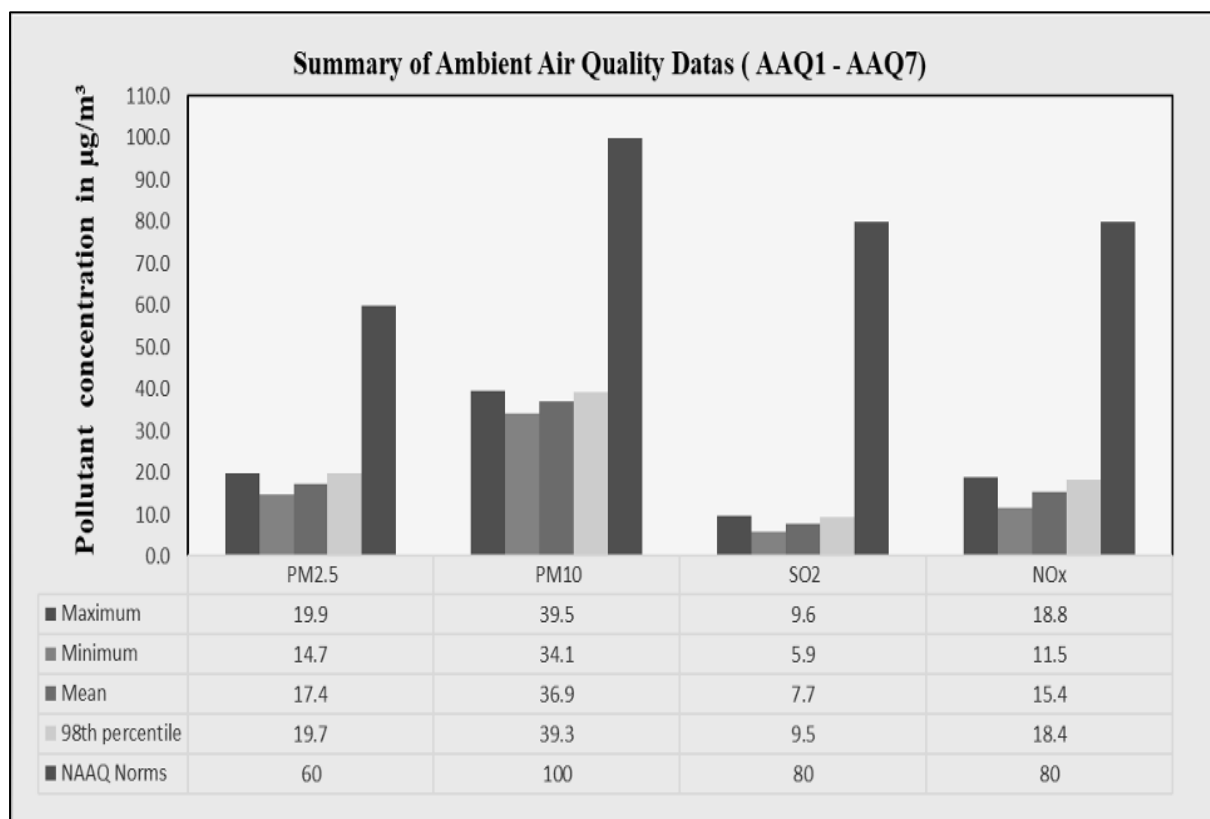


Figure 3.21 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of Pollutants in the Atmosphere Within 5 km Radius

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 (8) 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	
					Lat	Long
1	N1	Core	---	---	12°43'40.59"N	79°44'0.14"E
2	N2	Surutal	0.98	N	12°44'12.91"N	79°44'2.85"E
3	N3	Chinna Elacheri	2.20	SW	12°43'2.05"N	79°42'52.15"E
4	N4	Vadakalpakkam	4.82	NW	12°45'10.05"N	79°41'45.86"E
5	N5	Arpakkam	2.19	NE	12°44'17.09"N	79°45'3.61"E
6	N6	Kalakattur	4.46	N	12°46'6.30"N	79°43'55.99"E
7	N7	Magaral	2.45	SE	12°43'8.88"N	79°45'16.01"E
8	N8	Girijapuram	3.44	NE	12°44'51.79"N	79°42'29.06"E

Source: On-site monitoring/sampling by *Ekdant Enviro Services (p) Limited* 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 (L _{eq} in dB(A))	
N1	Core	Industrial area	42.4	38.6	75	70
N2	Surutal	Residential area	40.6	36.4	55	45
N3	Chinna Elacheri		38.4	33.2	55	45
N4	Vadakalpakkam		39.8	34.7	55	45
N5	Arpakkam		40.2	35.6	55	45
N6	Kalakattur		41.6	38.4	55	45
N7	Magaral		42.6	38.9	55	45
N8	Girijapuram		39.8	34.7	55	45

Source: On-site monitoring/sampling by *Ekdant Enviro Services (p) Limited* in association with GTMS

The Table 3.19 shows that noise level in core zone was 42.4 dB(A) Leq during day time and 38.6 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.4 to 40.6 dB(A) Leq and during night time from 33.2 to 38.9 dB(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 3.22.

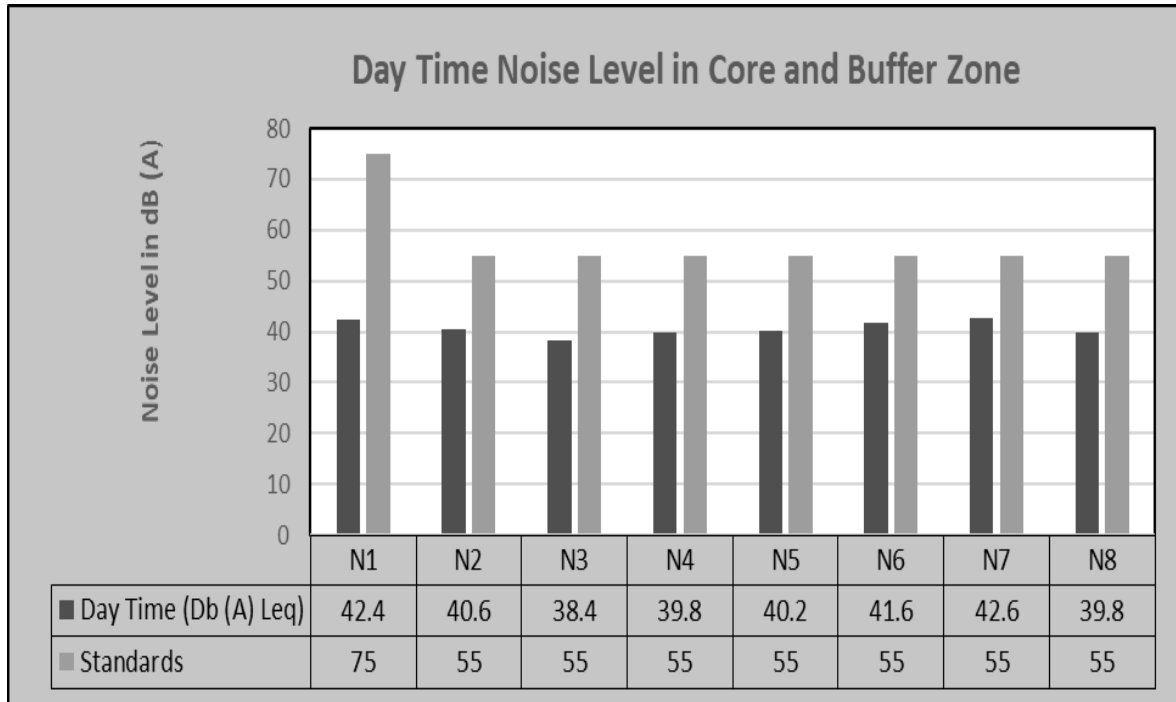


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

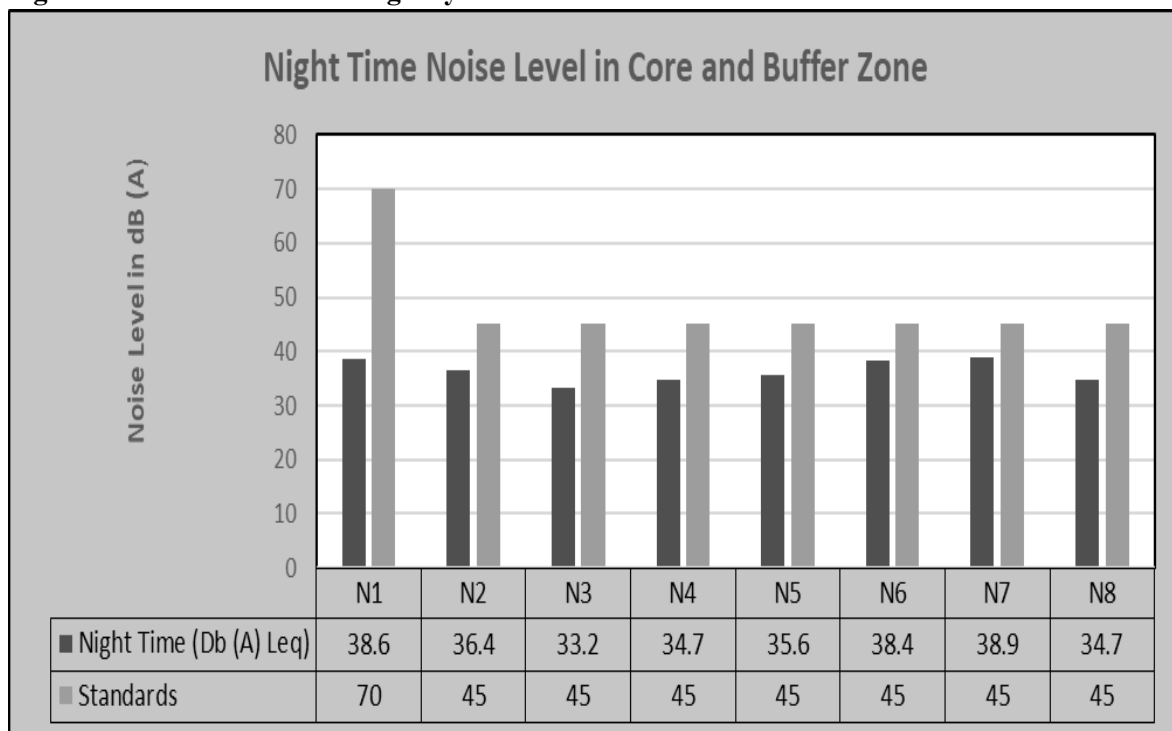


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

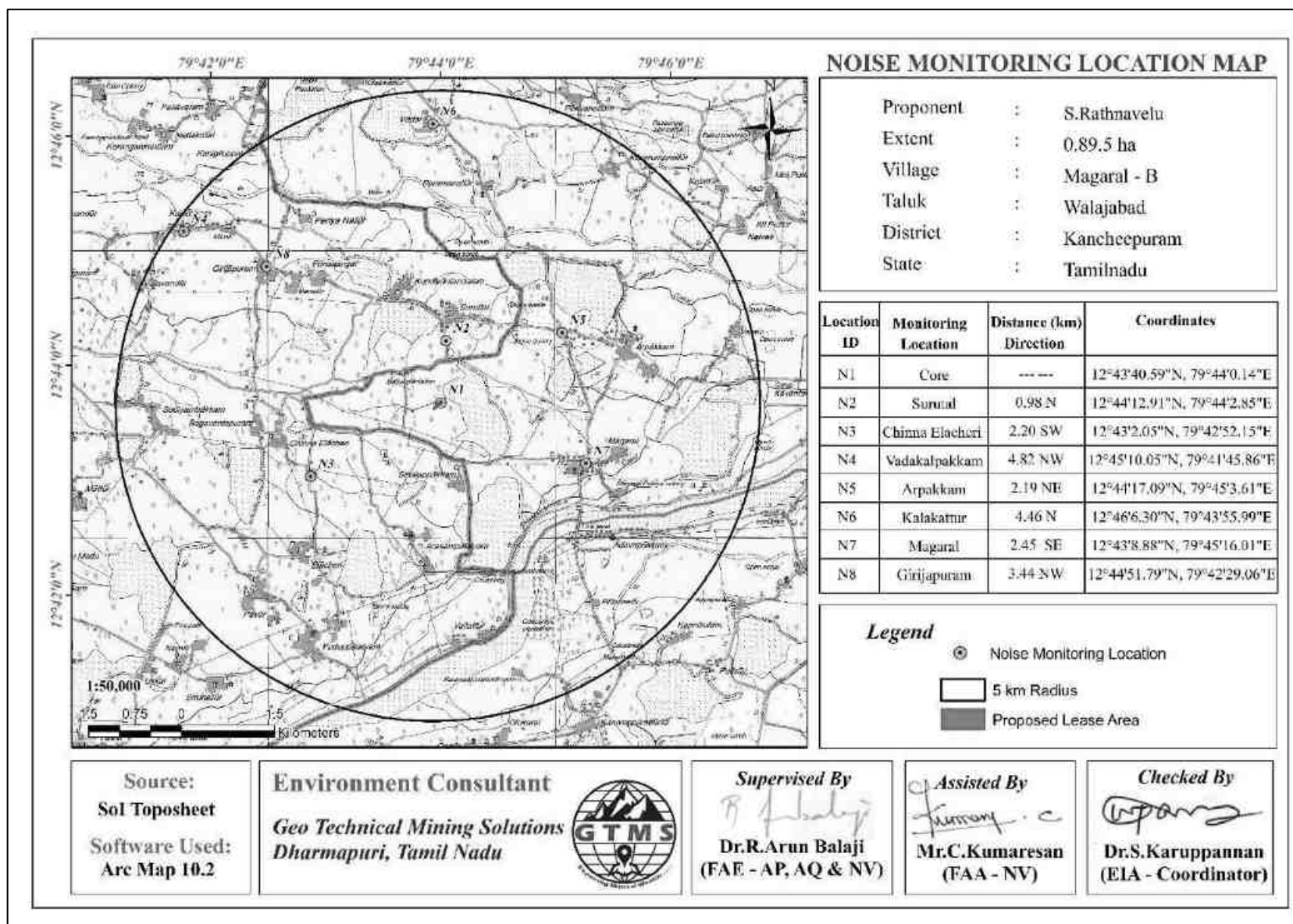


Figure 3.24 Toposheet Showing Noise Level Monitoring Station Locations Around 5 km Radius from the Proposed Project Site

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 also collected from different sources, i.e., government departments such as District Forest Office, 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

Nested quadrat sampling method was used for the study of community structure of the vegetation. The sampling consisted of randomly placed quadrats of 10 m × 10 m were laid down to assess trees, and sub quadrats of 5 m × 5 m were laid down for shrubs, 1 m x 1 m were laid done for herbs. The size and number of quadrats needed were determined using the species-area curve (Misra, 1968). The data on vegetation were quantitatively analysed for abundance, density, frequency as per Curtis & McIntosh (1950). The Important Value Index (IVI) for trees was determined as the sum of relative density, relative frequency and relative dominance (Curtis, 1959).



Figure 3.25 Quadrates Sampling Methods of Flora

Important Value Index (IVI)

The concept of 'Important Value Index (IVI)' has been developed for expressing the dominance and ecological success of any species, with a single value (Mishra, 1968, Sharma, 2005). This index utilizes three characteristics, they are (i) Relative frequency and (ii) Relative density. The three characteristics computed using frequency, density and abundance for all the species falling in all the quadrat by using the following formula. The relative frequency, relative density and relative abundance has been calculated to calculate the IVI value

$$\text{IVI} = \text{Relative frequency} + \text{Relative abundance} + \text{Relative density} [\text{RF} + \text{RA} + \text{RD}]$$

Relative Value Index (RVI) = Relative Density + Relative Frequency [RD + RF].

Relative Value Index used for Expressing dominance and Ecological success of Shrub and herb Species in a particular area.

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 **Shannon Diversity Index** (sometimes called the Shannon-Wiener Index) is a way to measure the diversity of species in a community.

The species diversity index (H) for floral and faunal diversity is calculated by the use of Shannon Wiener Index (Shannon Wiener, 1963) as:

$$H = - \sum (n_i/n) \times \ln (n_i/n)$$

- ✚ Where, n_i is individual density of a species and n is total density of all the species
- ✚ The Evenness Index (E) is calculated by using Shannon's Evenness formula (Magurran, 2004).
- ✚ The higher the value of H, the higher the diversity of species in a particular community
The lower the value of H, the lower the diversity. A value of $H = 0$ indicates a community that only has one species

$$\text{Evenness Index (E)} = H / \ln(S)$$

Where, H is Shannon Wiener Diversity index; S is number of species

The Shannon evenness Index is a way to measure the evenness of species in a community. The term “evenness” simply refers to how similar the abundances of different species are in the community.

3.5.1 Floral diversity Analysis

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 core zone

There are no trees in inside of the mining lease area, but there are 60 *Borassus flabellifer* trees, *Morinda citrifolia* 5 and *Azadirachta indica* 4 within a 7.5-meter safety zone.

Flora in 300 m radius zone

Taxonomically, a total of 33 species belonging to 19 families have been recorded from the 300m radius from the mining lease area. The species in the 300m radius include herbs (18), trees (08), shrubs (05), the 19 families, Fabaceae and Lamiaceae are the main dominating species in the study area, Species Richness (margalef Index) in the study area it mentioned in Table 3.19-3.21 Moreover, no species are found as threatened category. There is government land around 300 meters. *Vachelia leucophylla* is the dominant tree followed by *Phoenix sylvestris* tree, *Carissa carandas*, *Casapella thevetia* and *Lantana camara* plants.

Flora in 10 km radius zone

In the buffer zone, a total of 81 species belonging to 41 families were recorded. Among them are trees (32), shrubs (14), herbs (38), climbers (09), creepers (5), grasses (4), and cactus (1). Majority of the species belongs to the family of Fabaceae and Poaceae, as mentioned in Table 3.28. Species Richness (margalef Index) in the study area it mentioned in Table 3.22 & 3.24 Moreover, no species are found as threatened category.

Table 3.19 Flora in 300 m radius

S.No.	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Trees													
1	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	6	5	10	0.6	50.0	1.2	12.8	12.8	25.6	Not Listed
2	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	5	4	10	0.5	40.0	1.3	10.6	10.3	20.9	Not Listed
3	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	7	6	10	0.7	60.0	1.2	14.9	15.4	30.3	Not Listed
4	Vembu	<i>Azadirachta indica</i>	Meliaceae	6	5	10	0.6	50.0	1.2	12.8	12.8	25.6	Not Listed
5	Vagai	<i>Albizia lebbek</i>	Fabaceae	5	4	10	0.5	40.0	1.3	10.6	10.3	20.9	Not Listed
6	Eshamaram	<i>Phoenix Reclinata</i>	Arecaceae	7	6	10	0.7	60.0	1.2	14.9	15.4	30.3	Not Listed
7	Teaku	<i>Tectona grandis</i>	Lamiaceae	6	5	10	0.6	50.0	1.2	12.8	12.8	25.6	Not Listed
8	Veallai vealan	<i>Vachellia leucophloea</i>	Fabaceae	5	4	10	0.5	40.0	1.3	10.6	10.3	20.9	Lest Concern
Shrubs													
9	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	9	8	15	0.6	53.3	1.1	22.0	22.2	44.2	Not Listed
10	Kela chadi	<i>Carissa carandas</i>	Apocynaceae	8	7	15	0.5	46.7	1.1	19.5	19.4	39.0	Not Listed
11	Arali	<i>Casapella thevetia</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	17.1	16.7	33.7	Not Listed
12	Sappathikalli	<i>Cereus pterogonus</i>	Cactaceae	9	8	15	0.6	53.3	1.1	22.0	22.2	44.2	Not Listed
13	Unichedi	<i>Lantana camara</i>	Verbenaceae	8	7	15	0.5	46.7	1.1	19.5	19.4	39.0	Not Listed

<i>Herbs, Climbers & Grass</i>													
14	Thumbai	<i>Leucas aspera</i>	Lamiaceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
15	Katang kathrikai	<i>Solanum virginianum</i>	Solanaceae	7	6	20	0.4	30.0	1.2	4.8	4.7	9.4	Not Listed
16	Arugampul	<i>Cynodon dactylon</i>	Poaceae	10	9	20	0.5	45.0	1.1	6.8	7.0	13.8	Not Listed
17	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
18	Korai	<i>Cyperus rotundus</i>	Cyperaceae	6	5	20	0.3	25.0	1.2	4.1	3.9	8.0	Not Listed
19	Nearunji	<i>Tribulus terrestris</i>	Zygophyllales	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
20	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	20	0.4	30.0	1.2	4.8	4.7	9.4	Not Listed
21	Vilaiti tulsi	<i>hyptis suaveolens</i>	Lamiaceae	11	10	20	0.6	50.0	1.1	7.5	7.8	15.2	Not Listed
22	Pink Blumea	<i>Blumea axillaris</i>	Asteraceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
23	Rail Pindu	<i>Croton bonplandianus</i>	Euphorbiaceae	7	6	20	0.4	30.0	1.2	4.8	4.7	9.4	Not Listed
24	Communist pacha	<i>Chromolaena odorata</i>	Asteraceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
25	Veattukayapundu	<i>Tridax Procumbens</i>	Asteraceae	9	8	20	0.5	40.0	1.1	6.1	6.2	12.3	Not Listed
26	Kundumani	<i>Abrus precatorius</i>	Fabaceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
27	Mosukkattan	<i>Passiflora foetida</i>	Passifloraceae	7	6	20	0.4	30.0	1.2	4.8	4.7	9.4	Not Listed
28	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	10	9	20	0.5	45.0	1.1	6.8	7.0	13.8	Not Listed
29	Kandakathari	<i>Solanum xanthocarpum</i>	Solanaceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed
30	Arugam Pill	<i>Cynodon dactylon</i>	Poaceae	9	8	20	0.5	40.0	1.1	6.1	6.2	12.3	Not Listed
31	Paspalum	<i>Paspalum quadrifarium</i>	Poaceae	8	7	20	0.4	35.0	1.1	5.4	5.4	10.9	Not Listed

Table 3.20 Calculation of Species Diversity in 300 m Radius

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Tree						
1	Velikathan maram	<i>Prosopis juliflora</i>	6	0.13	-2.06	-0.26
2	Panai maram	<i>Borassus flabellifer</i>	5	0.11	-2.24	-0.24
3	Nuna maram	<i>Morinda citrifolia</i>	7	0.15	-1.90	-0.28
4	Vembu	<i>Azadirachta indica</i>	6	0.13	-2.06	-0.26
5	Vagai	<i>Albizia lebbek</i>	5	0.11	-2.24	-0.24
6	Eshamaram	<i>Phoenix reclinata</i>	7	0.15	-1.90	-0.28
7	Teaku	<i>Tectona grandis</i>	6	0.13	-2.06	-0.26
8	Veallai vealan	<i>Vachellia leucophloea</i>	5	0.11	-2.24	-0.24
H (Shannon Diversity Index) =2.07						
Shrubs						
9	Erukku	<i>Calotropis gigantea</i>	9	0.22	-1.52	-0.33
10	Kela chadi	<i>Carissa carandas</i>	8	0.20	-1.63	-0.32
11	Arali	<i>Casapella thevetia</i>	7	0.17	-1.77	-0.30
12	Sappathikalli	<i>Cereus pterogonus</i>	9	0.22	-1.52	-0.33
13	Unichedi	<i>Lantana camara</i>	8	0.20	-1.63	-0.32
H (Shannon Diversity Index) =1.61						
Herbs						
14	Thumbai	<i>Leucas aspera</i>	8	0.05	-2.91	-0.16
15	Kantang kathrikai	<i>Solanum virginianum</i>	7	0.05	-3.04	-0.14
16	Arugampul	<i>Cynodon dactylon</i>	10	0.07	-2.69	-0.18
17	Poolai poondu	<i>Aerva lanata</i>	8	0.05	-2.91	-0.16
18	Korai	<i>Cyperus rotundus</i>	6	0.04	-3.20	-0.13
19	Nerunji	<i>Tribulus terrestris</i>	8	0.05	-2.91	-0.16
20	Nayuruv	<i>Achyranthes aspera</i>	7	0.05	-3.04	-0.14
21	Vilaiti tulsi	<i>Hyptis suaveolens</i>	11	0.07	-2.59	-0.19
22	Pink Blumea	<i>Blumea axillaris</i>	8	0.05	-2.91	-0.16
23	Rail Pindu	<i>Croton bonplandianus</i>	7	0.05	-3.04	-0.14
24	Communist pacha	<i>Chromolaena odorata</i>	8	0.05	-2.91	-0.16
25	veattukayapundu	<i>Tridax Procumbens</i>	9	0.06	-2.79	-0.17
26	Kundumani	<i>Abrus precatorius</i>	8	0.05	-2.91	-0.16
27	Mosukkattan	<i>Passiflora foetida</i>	7	0.05	-3.04	-0.14

28	Perandai	<i>Cissus quadrangularis</i>	10	0.07	-2.69	-0.18
29	Kandakathari	<i>Solanum xanthocarpum</i>	8	0.05	-2.91	-0.16
30	Arugam Pill	<i>Cynodon dactylon</i>	9	0.06	-2.79	-0.17
31	paspalum	<i>Paspalum quadrifarium</i>	8	0.05	-2.91	-0.16
H (Shannon Diversity Index) =2.88						

Table 3.21 Species Richness (Index) in 300 m Radius

Details	H	H max	Evenness	Species Richness
Trees	2.07	2.08	1.00	1.82
Shrubs	1.61	1.61	1.00	1.08
Herbs	2.88	2.89	1.00	3.41

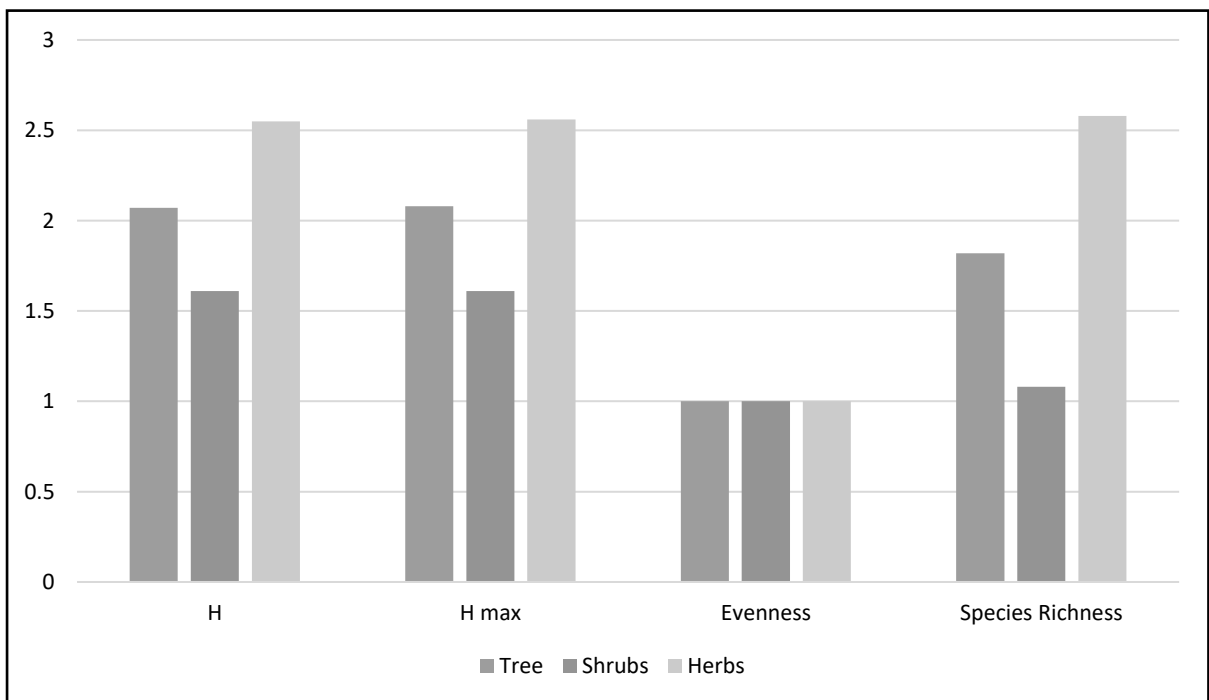


Figure 3.26 Floral Diversity Species Richness (Index) in 300 m Radius

Table 3.22 Flora in Buffer Zone

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	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
2	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
3	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
5	Puliyamaram	<i>Tamarindus indica</i>	Legumes	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
6	Athi	<i>Ficus recemosa</i>	Moraceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
7	Vazhaimaram	<i>Musa</i>	Musaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
8	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
9	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
10	Perumungil	<i>Bambusa bambos</i>	Poaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
11	Karungali	<i>Acacia sundra</i>	Legumes	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
12	Sapota	<i>Manilkara zapota</i>	Sapotaceae	7	6	10	0.7	60.0	1.2	4.1	4.3	8.4	Not Listed
13	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
14	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae	7	6	10	0.7	60.0	1.2	4.1	4.3	8.4	Not Listed
15	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	8	7	10	0.8	70.0	1.1	4.7	5.0	9.7	Not Listed
16	Alamaram	<i>Ficus benghalensis</i>	Moraceae	3	2	10	0.3	20.0	1.5	1.8	1.4	3.2	Not Listed
17	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
18	Manga	<i>Mangifera indica</i>	Anacardiaceae	7	6	10	0.7	60.0	1.2	4.1	4.3	8.4	Not Listed
19	Thekku	<i>Tectona grandis</i>	Verbenaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
20	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
21	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
22	Vadanarayani	<i>Delonix elata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
23	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	7	6	10	0.7	60.0	1.2	4.1	4.3	8.4	Not Listed

24	Pappali maram	<i>Carica papaya L</i>	Caricaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
25	Nochi	<i>Vitex negundo</i>	Verbenaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
26	Vilvam	<i>Aegle marmelos</i>	Rutaceae	4	3	10	0.4	30.0	1.3	2.3	2.2	4.5	Not Listed
27	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
28	Koyya	<i>Psidium guajava</i>	Myrtaceae	7	6	10	0.7	60.0	1.2	4.1	4.3	8.4	Not Listed
29	Seethapazham	<i>Annona reticulata</i>	Annonaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
30	Vagai	<i>Albizia lebbeck</i>	Fabaceae	5	4	10	0.5	40.0	1.3	2.9	2.9	5.8	Not Listed
31	Teaku	<i>Tectona grandis</i>	Lamiaceae	6	5	10	0.6	50.0	1.2	3.5	3.6	7.1	Not Listed
32	Teanai Maram	<i>Cocos nucifera</i>	Arecaceae	3	2	10	0.3	20.0	1.5	1.8	1.4	3.2	Not Listed
Shrubs													
33	Avarai	<i>Senna auriculata</i>	Fabaceae	8	7	15	0.5	46.7	1.1	7.6	7.7	15.3	Not Listed
34	Sundaika	<i>Solanum torvum</i>	Solanaceae	9	8	15	0.6	53.3	1.1	8.6	8.8	17.4	Not Listed
35	Arali	<i>Nerium indicum</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	6.7	6.6	13.3	Not Listed
36	Idlipoo	<i>Xoracoc cineia</i>	Rubiaceae	6	5	15	0.4	33.3	1.2	5.7	5.5	11.2	Not Listed
37	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	7	6	15	0.5	40.0	1.2	6.7	6.6	13.3	Not Listed
38	Icham	<i>Phoenix pusilla</i>	Arecaceae	8	7	15	0.5	46.7	1.1	7.6	7.7	15.3	Not Listed
39	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	5.7	5.5	11.2	Not Listed
40	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	7	6	15	0.5	40.0	1.2	6.7	6.6	13.3	Not Listed
41	Thuthi	<i>Abutilon indicum</i>	Meliaceae	9	8	15	0.6	53.3	1.1	8.6	8.8	17.4	Not Listed
42	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	8	7	15	0.5	46.7	1.1	7.6	7.7	15.3	Not Listed
43	Kundumani	<i>Abrus precatorius</i>	Fabaceae	6	5	15	0.4	33.3	1.2	5.7	5.5	11.2	Not Listed
44	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	15	0.5	46.7	1.1	7.6	7.7	15.3	Not Listed
45	Bulangan	<i>Gmelina asiatica L.</i>	Lamiaceae	9	8	15	0.6	53.3	1.1	8.6	8.8	17.4	Not Listed
46	mottled spurge	<i>Euphorbia lactea</i>	Euphorbiaceae	7	6	15	0.5	40.0	1.2	6.7	6.6	13.3	Not Listed
Herbs, Climber, Creeper & Grasses													
47	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
48	Vetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
49	Koraikkilangu	<i>Cyperus articulatus</i>	Cyperaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
50	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
51	Manjal	<i>Curcuma longa</i>	Zingiberaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
52	Chempu	<i>Colocasia indica</i>	Araceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
53	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
54	Korai	<i>Cyperus rotundus</i>	Cyperaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
55	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed

56	Milagai	<i>Capsicum frutescens</i>	Solanaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
57	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
58	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
59	Thumbai	<i>Leucas aspera</i>	Lamiaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
60	Parttiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
61	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
62	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	11	10	20	0.6	50.0	1.1	3.9	4.0	7.9	Not Listed
63	Manathakkali	<i>Solanum nigrum</i>	Solanaceae	7	8	20	0.4	40.0	0.9	2.5	3.2	5.7	Not Listed
64	Kumipoondur	<i>Gomphrena celosioides</i>	Amaranthaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
65	Kattuthulasi	<i>Ocimum sanctum</i>	Lamiaceae	10	9	20	0.5	45.0	1.1	3.5	3.6	7.1	Not Listed
66	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
67	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
68	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
69	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
70	Nannari	<i>Hemidesmus indicus</i>	Asclepiadaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
71	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
72	Malli	<i>Jasminum augustifolium</i>	Oleaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
73	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
74	Mosukkattan	<i>Passiflora foetida</i>	Passifloraceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
75	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
76	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
77	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
78	Korai	<i>Cyperus rotundus</i>	Poaceae	6	5	20	0.3	25.0	1.2	2.1	2.0	4.1	Not Listed
79	mookuthi poondur	<i>Wedelia trilobata</i>	Asteraceae	7	6	20	0.4	30.0	1.2	2.5	2.4	4.9	Not Listed
80	Nellu	<i>Oryza sativa</i>	Poaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed
81	Pullu	<i>Eragrostis ferruginea</i>	Poaceae	12	11	20	0.6	55.0	1.1	4.2	4.4	8.6	Not Listed
82	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	8	7	20	0.4	35.0	1.1	2.8	2.8	5.6	Not Listed
83	Arugampul	<i>Cynodon dactylon</i>	Poaceae	13	12	20	0.7	60.0	1.1	4.6	4.8	9.4	Not Listed
84	Sapathikalli	<i>Opuntia dillenii</i>	Cactaceae	9	8	20	0.5	40.0	1.1	3.2	3.2	6.4	Not Listed

Table 3.23 Calculation of Species Diversity in buffer Zone

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in(Pi)
Trees						
1	Vembu	<i>Azadirachta indica</i>	5	0.03	-3.53	-0.10
2	Pongam oiltree	<i>Pongamia pinnata</i>	4	0.02	-3.76	-0.09
3	Karuvelam	<i>Acacia nilotica</i>	5	0.03	-3.53	-0.10
4	Thennai maram	<i>Cocos nucifera</i>	4	0.02	-3.76	-0.09
5	Puliya maram	<i>Tamarindus indica</i>	5	0.03	-3.53	-0.10
6	Athi	<i>Ficus recemosa</i>	6	0.04	-3.35	-0.12
7	Vazhai maram	<i>Musa</i>	4	0.02	-3.76	-0.09
8	Nettilinkam	<i>Polylathia longifolia</i>	6	0.04	-3.35	-0.12
9	Amanakku	<i>Ricinus communis</i>	5	0.03	-3.53	-0.10
10	Perumungil	<i>Bambusa bambos</i>	4	0.02	-3.76	-0.09
11	Karungali	<i>Acacia sundra</i>	6	0.04	-3.35	-0.12
12	Sapota	<i>Manilkara zapota</i>	7	0.04	-3.20	-0.13
13	Eucalyptus	<i>Eucalyptus globules</i>	6	0.04	-3.35	-0.12
14	Navalmaram	<i>Sygygium cumini</i>	7	0.04	-3.20	-0.13
15	Ezhumuchaipalam	<i>Citrus lemon</i>	8	0.05	-3.06	-0.14
16	Alamaram	<i>Ficus benghalensis</i>	3	0.02	-4.04	-0.07
17	Panai maram	<i>Borassus flabellifer</i>	5	0.03	-3.53	-0.10
18	Manga	<i>Mangifera indica</i>	7	0.04	-3.20	-0.13
19	Thekku	<i>Tectona grandis</i>	4	0.02	-3.76	-0.09
20	Nelli	<i>Emblia officinalis</i>	5	0.03	-3.53	-0.10
21	Karuvelam maram	<i>Vachellia nilotica</i>	6	0.04	-3.35	-0.12
22	Vadanarayani	<i>Delonix elata</i>	4	0.02	-3.76	-0.09
23	Marudaani	<i>Lawsonia inermis</i>	7	0.04	-3.20	-0.13
24	Pappali maram	<i>Carica papaya L</i>	6	0.04	-3.35	-0.12
25	Nochi	<i>Vitex negundo</i>	5	0.03	-3.53	-0.10
26	Vilvam	<i>Aegle marmelos</i>	4	0.02	-3.76	-0.09
27	Nuna maram	<i>Morinda citrifolia</i>	6	0.04	-3.35	-0.12
28	Koyya	<i>Psidium guajava</i>	7	0.04	-3.20	-0.13
29	Seethapazham	<i>Annona reticulata</i>	6	0.04	-3.35	-0.12
30	vagai	<i>albizia lebbeck</i>	5	0.03	-3.53	-0.10
31	Teaku	<i>Tectona grandis</i>	6	0.04	-3.35	-0.12
32	Teanai Maram	<i>Cocos nucifera</i>	3	0.02	-4.04	-0.07
H (Shannon Diversity Index) =3.44						
Shrbs						
33	Avarai	<i>Senna auriculata</i>	8	0.08	-2.57	-0.20
34	Sundaika	<i>Solanum torvum</i>	9	0.09	-2.46	-0.21
35	Arali	<i>Nerium indicum</i>	7	0.07	-2.71	-0.18
36	Idlipoo	<i>Xoracoc cineas</i>	6	0.06	-2.86	-0.16
37	Neermulli	<i>Hydrophila auriculata</i>	7	0.07	-2.71	-0.18
38	Icham	<i>Phoenix pusilla</i>	8	0.08	-2.57	-0.20
39	Chaturakalli	<i>Euphorbia antiquorum</i>	6	0.06	-2.86	-0.16
40	Kattamanakku	<i>Jatropha curcas</i>	7	0.07	-2.71	-0.18
41	Thuthi	<i>Abutilon indicum</i>	9	0.09	-2.46	-0.21
42	Chemparuthi	<i>Hibiscus rosa-sinensis</i>	8	0.08	-2.57	-0.20
43	Kundumani	<i>Abrus precatorius</i>	6	0.06	-2.86	-0.16
44	Erukku	<i>Calotropis gigantea</i>	8	0.08	-2.57	-0.20
45	Bulangan	<i>Gmelina asiatica L.</i>	9	0.09	-2.46	-0.21
46	mottled spurge	<i>Euphorbia lactea haw.</i>	7	0.07	-2.71	-0.18

H (Shannon Diversity Index) =2.63						
Herbs						
47	Nayuruv	<i>Capsicum frutescens</i>	6	0.02	-3.90	-0.08
48	Vetukaayapoond	<i>Commelina benghalensis</i>	7	0.02	-3.75	-0.09
49	Koraikkilangu	<i>Celome viscosa</i>	8	0.03	-3.61	-0.10
50	Kuppaimeni	<i>Leucas aspera</i>	9	0.03	-3.50	-0.11
51	Manjal	<i>Parthenium hysterophorus</i>	7	0.02	-3.75	-0.09
52	Chempu	<i>Boerhavia diffusa</i>	8	0.03	-3.61	-0.10
53	Karisilanganni	<i>Ocimum tenuiflorum</i>	9	0.03	-3.50	-0.11
54	Korai	<i>Solanum nigrum</i>	6	0.02	-3.90	-0.08
55	Kunnakora	<i>Gomphrena celosioides</i>	7	0.02	-3.75	-0.09
56	Milagai	<i>Ocimum sanctum</i>	6	0.02	-3.90	-0.08
57	Kanamvazha	<i>Coccinia grandis</i>	7	0.02	-3.75	-0.09
58	Nai kadugu	<i>Cissus quadrangularis</i>	8	0.03	-3.61	-0.10
59	Thumbai	<i>Cardiospermum helicacabum</i>	9	0.03	-3.50	-0.11
60	Partiniyam	<i>Clitoria ternatea</i>	6	0.02	-3.90	-0.08
61	Mukurattai	<i>Hemidesmus indicus</i>	7	0.02	-3.75	-0.09
62	Thulasi	<i>Trichosanthes dioica</i>	11	0.04	-3.30	-0.12
63	Manathakkali	<i>Jasminum augustifolium</i>	7	0.02	-3.75	-0.09
64	Kumipoond	<i>Mukia maderaspatana</i>	6	0.02	-3.90	-0.08
65	Kattuthulasi	<i>Passiflora foetida</i>	10	0.03	-3.39	-0.11
66	Kovai	<i>Ipomoea aquatica</i>	7	0.02	-3.75	-0.09
67	Perandai	<i>Desmodium triflorum</i>	9	0.03	-3.50	-0.11
68	Mudakkotan	<i>Euphorbia prostrata</i>	8	0.03	-3.61	-0.10
69	Karkakartum	<i>Cyperus rotundus</i>	7	0.02	-3.75	-0.09
70	Nannari	<i>Wedelia trilobata</i>	6	0.02	-3.90	-0.08
71	Kovakkai	<i>Oryza sativa</i>	8	0.03	-3.61	-0.10
72	Malli	<i>Eragrostis ferruginea</i>	6	0.02	-3.90	-0.08
73	Musumusukkai	<i>Chloris barbata</i>	7	0.02	-3.75	-0.09
74	Mosukkattan	<i>Cynodon dactylon</i>	6	0.02	-3.90	-0.08
75	Vallikeerai	<i>Opuntia dillenii</i>	8	0.03	-3.61	-0.10
76	Siru puladi	<i>Capsicum frutescens</i>	9	0.03	-3.50	-0.11
77	Sithrapaalavi	<i>Commelina benghalensis</i>	8	0.03	-3.61	-0.10
78	Korai	<i>Celome viscosa</i>	6	0.02	-3.90	-0.08
79	mookuthi poond	<i>Leucas aspera</i>	7	0.02	-3.75	-0.09
80	Nellu	<i>Parthenium hysterophorus</i>	9	0.03	-3.50	-0.11
81	Pullu	<i>Boerhavia diffusa</i>	12	0.04	-3.21	-0.13
82	Chevvarakupul	<i>Ocimum tenuiflorum</i>	8	0.03	-3.61	-0.10
83	Arugampul	<i>Solanum nigrum</i>	13	0.04	-3.13	-0.14
84	Sapathikalli	<i>Gomphrena celosioides</i>	9	0.03	-3.50	-0.11
H (Shannon Diversity Index) =3.62						

Table 3.24 Species Richness (Index) in Buffer Zone

Details	H	H max	Evenness	Species Richness
Trees	3.44	3.47	0.99	6.03
Shrubs	2.63	2.64	1.00	2.79
Herbs	3.62	3.64	0.99	6.50

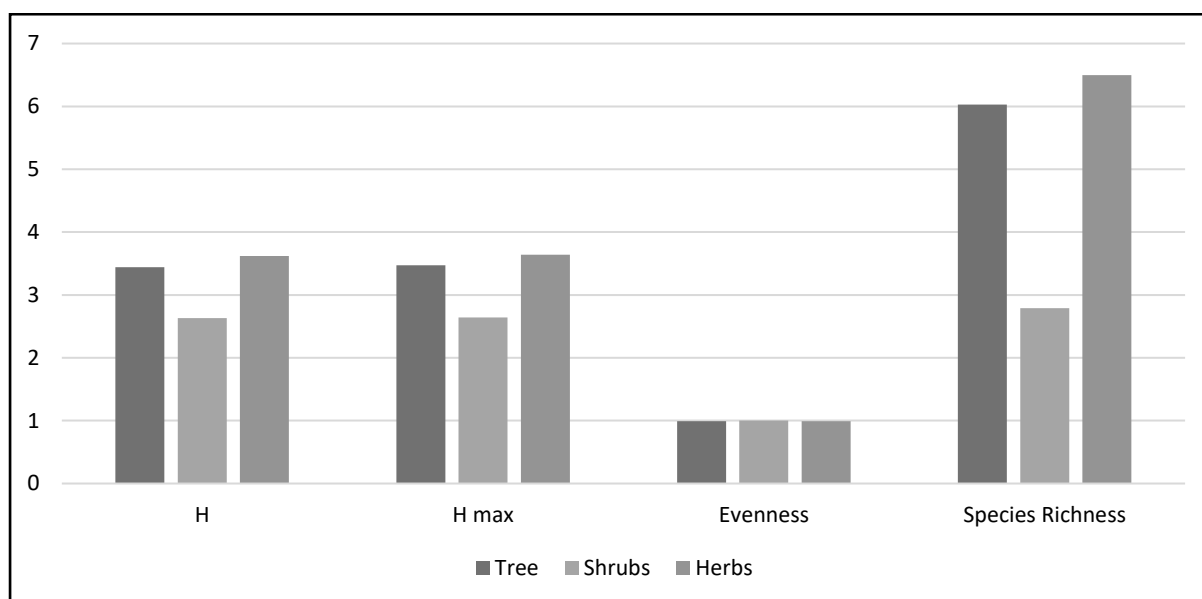


Figure 3.27 Floral Diversity Species Richness (Index) in Buffer Zone

Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. The list of aquatic plants observed in the study area is given in Table 3.25.

Table 3.25 Aquatic Vegetation

S. No.	Scientific Name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1	<i>Eichornia crassipe</i>	Water hyacinth	Agayatamarai	NA
2	<i>Aponogeton natans</i>	Floating lace plant	Kottikizhnagu	NA
3	<i>Nymphaea nouchali</i>	Blue water lily	Nellambal	LC
4	<i>Carex cruciata</i>	Cross grass	Koraipullu	NA
5	<i>Cynodon dactylon</i>	Scutch grass	Arugampul	LC
6	<i>Cyperus exaltatus</i>	Tall flat sedge	Koraikizhangu	LC

LC- Least Concern, NA-Not yet assessed

Forest Vegetation

There are no biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Marudam R. F is located about 7.03km SE of core zone. It is a dense Scrub Forest Land, mostly containing *Calliea cinerea*, *Catunaregam spinosa*, *Carissa spinarum*, *Albizia amara*, *Buchanania lanzan*, and *Dodonaea viscosa*. Thus, the area under study (Mine lease area and the 10Km 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.

3.5.2 Faunal diversity analysis

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.

Survey Methodology

The assessment of fauna was done on the basis of primary data collected from the lease area. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition, officials, local people were another source of information for studying the fauna of the area. Field activities are physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife ENVIS data base ([wiienvis.nic.in/Database/Schedule Species Database](http://wiienvis.nic.in/Database/Schedule%20Species%20Database)) and Zoological Survey of India (ZSI). Detailed fauna is mentioned in the Table 3.28 and 3.29.

Survey and Monitoring of Mammals

Intensive survey has been done by line transect methods (Walking and in vehicle) for all major habitats for surveying of mammals by direct and indirect evidence. Indirect methods such as faecal matter (i.e., scat) and pug mark by establishing 10 × 100m linear transects depending on the habitat (i.e., existing wildlife game routes/forest trails used). Direct observation technique has been used for surveying large and medium sized mammals. But this technique is perfectly suitable for surveying of diurnal mammals; however, good photographs were also taken for species identification.

Survey and Monitoring of Birds

Birds are sampled by using point count methods, and opportunistic bird sightings. By the bird vocal sounds and photographs, the species were identified in consultation with village local people. Point count: in these methods, the observer will stand in a randomly chosen point and birds seen or heard in 50 m radius are recorded for 5 min. This observation is repeated in another point at least 30 m from the first point. We have enumerated 20-point counts in each quartile, which constitute a total of 80-point counts (20 x 4) within 10 km radius area. Opportunistic bird sightings: while traveling in study area, many bird species will be detected in survey time. Such species are recoded by their appearance or by their call.

Survey and monitoring of reptiles

Several survey techniques such as standard walk transect visual encounter survey methods were used to sampling reptiles in each and every habitat of the study area. While doing this survey, photographs were taken for identification of species. Species identification was

done by using standard field guides in consultation with village people expert. The butterfly was enumerated by 2 linear transects of $10 \times 100\text{m}$ were laid within each quartile at minimum interval of 1km. Further, amphibians and fishes documented in existing literature and secondary information in consultation with local people and wildlife experts.

Fauna in Core Zone

A total of 22 species belonging to 15 families were observed in the core zone (Table 3.26). Among them are 9 species of Insects, 3 species of Reptiles, 1 species of Mammals, and 9 species of Avian. None of these species are threatened or endemic in the study area and surroundings. There are no Schedule I species and 8 species are under schedule IV according to Indian wild life Act, 1972. There are no critically endangered, endangered, vulnerable and endemic species in the core zone.

Table 3.26 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	Praying mantis	Mantidae	<i>Mantis religiosa</i>	NL	NL
8	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
9	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
REPTILES					
10	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
11	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
12	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
AVES					
1	Green bee-eater	Meropidae	<i>Merops orientalis</i>	NL	LC
2	Koel	Cuculidae	<i>Eudynamis</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>Eudynamis</i>	Schedule IV	LC

			<i>scolopaceus</i>		
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

Fauna in Buffer Zone

Taxonomically, a total of 44 species belonging to 34 families were recorded from the buffer area. Among them were 20 species of Birds, 13 species of Insects, 5 species of Reptiles, 3 species of Mammals, and 3 species of Amphibians, as mentioned in Table.3.27. There are four species under Schedule II and twenty-six species under schedule IV according to Indian wild life Act 1972. And there are no critically endangered, vulnerable and endemic species in the buffer area. There is no schedule I Species in study area and there are no critically endangered, endangered, vulnerable and endemic species.

Table 3.27 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	Tawny costar	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
4	Common Indian Crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
5	Green marsh hawk	Libellulidae	<i>Orthetrum sabina</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	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
10	Lesser grass blue	Lycaenidae	<i>Zizina otis indica</i>	Schedule IV	LC
11	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
12	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
13	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
REPTILES					
1	Chameleon	Chamaeleonidae	<i>Chameleonzeylanicus</i>	Sch II (Part II)	LC
2	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
3	Green Vine snake	Colubridae	<i>Ahaetulla nasuta</i>	Schedule IV	LC
4	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
5	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
MAMMALS					
1	palmsquirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
2	Indian FieldMouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
3	Home mouse	Muridae	<i>Mus musculustytleri</i>	NL	LC
AVES					

1	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
2	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
3	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
4	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	Schedule IV	LC
5	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
6	green bee-eater	Meropidae	<i>Merops orientalis</i>	NL	LC
7	Small Sunbird	Nectariniidae	<i>Nectarinia asiatica</i>	Schedule IV	LC
8	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
9	Blue Rock Pigeon	Columbidae	<i>Columba livia</i>	Schedule IV	LC
10	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
11	Small Sunbird	Nectariniidae	<i>Nectarinia asiatica</i>	Schedule IV	LC

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

3.5.3 Agriculture & Horticulture in Kanchipuram district

The pre-monsoon rainfall is almost uniform throughout the district. The coastal taluks get more rains rather than the interior regions. This district is mainly depending on the seasonal rains, the distress conditions prevail in the event of the failure of rains. Northeast and Southwest monsoon are the major donors with 54% and 36% contribution each to the total annual rainfall. Agriculture is the main occupation of the people with 20% of the population engaged in it. Paddy is the major crop cultivated in this district. Groundnuts, Sugarcane, Cereals and Millets and Pulses are the other major crops. Paddy is the major crop cultivated in this district. Groundnuts, Sugarcane, Cereals & Millets and Pulses are the other major crops cultivated.

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. 3.28.

Table 3.28 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	Sugarcane	<i>Saccharum officinarum</i>	Poaceae
5	Proso Millets	<i>Panicum miliaceum L</i>	Poaceae
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 Kanchipuram 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 3.29.

Table 3.29 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-ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It is a measure of an individual's or family's or group of people's economic and social position based on education, income, health, and occupation. Socio-economic most important determinant of livelihoods as levels of knowledge, skill and income conditions which mean for their living. People from one income group to another consumption power is also differ among income groups of population This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project It is expected that the socio-economic status of the area will substantially improve because of this proposed project. As the proposed project will provide

direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of their standard of living.

3.6.1 Objectives of the Study

The main objectives of the study are as follows:

- ❖ To study the demographic conditions by level of income of sample population in the study area.
- ❖ To analyses the level of education among different income groups of population.
- ❖ To investigate the housing situation by level of income of the sample population in the study unit

3.6.2 Scope of Work

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

3.6.3 Socio-Economic Status of Study area

The study area covers 18 villages including Adavapakkam, Arpakkam, Kadukalur, Kannikulam, Karuveppampooni, Kavanthandalam, Magaral, Nelveli, Ozhugarai, Perumanallur, Pulivoy, Puthali, Silambakkam, Sirunallur, Vedal, Vengacheri, Vengaram, Vitchanthangal. As Magaral-B is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 3.34 and for other 27 villages in Tables 3.31-3.33.

Table 3.30 Magaral-B Village Population Facts

Magaral-B village	
Number of Households	709
Population	2834
Male Population	1399
Female Population	1435
Children Population	303
Sex-ratio	1026
Literacy	69.30%
Male Literacy	75.50%
Female Literacy	63.30%
Scheduled Tribes (ST) %	36
Scheduled Caste (SC) %	1777
Total Workers	1501
Main Workers	427
Marginal Workers	1074

Source: <https://www.census2011.co.in/data/village/629733-magaral-tamil-nadu.html>

Table 3.31 Population and Literacy Data of Study Area

Village Name	Total Population Person	Total Population Male	Total Population Female	Population in the age group 0-6 Male	Population in the age group 0-6 Female	Scheduled Castes population Person	Scheduled Tribes population Person	Literates Population Person	Illiterate Persons
Adavapakkam	765	396	369	69	28	499	8	465	300
Arpakkam	2937	1475	1462	181	197	1626	320	1794	1143
Kadukalur	1204	587	617	81	77	850	8	691	513
Kannikulam	727	372	355	47	35	421	23	453	274
Karuveppampoondi	1652	846	806	96	89	844	19	1157	495
Kavanthandalam	1619	796	823	66	68	392	67	970	649
Magaral	2834	1399	1435	154	149	1777	36	1754	1080
Nelveli	667	322	345	38	50	577	0	403	264
Ozhugarai	1240	613	627	61	71	488	0	697	543
Perumanallur	438	203	235	16	28	12	18	277	161
Pulivoy	491	237	254	16	32	217	19	324	167
Puthali	1032	510	522	66	76	766	27	674	358
Silambakkam	461	244	217	24	23	0	11	270	191
Sirunallur	2163	1079	1084	101	92	791	10	1440	723
Vedal	2472	1221	1251	70	63	1016	54	825	295
Vengacheri	753	379	374	49	43	1	45	435	318
Vengaram	176	89	87	9	18	86	0	96	80
Vitchanthangal	1016	517	499	64	56	343	13	369	148

<https://www.census2011.co.in/data/village/629733-magaral-tamil-nadu.html>

Table 3.32 Educational Facilities & Water & Drainage & Health Facilities Data of Study Area

Village Name	Govt Primary School	Govt Vocational Training School/ITI	Primary Health Sub Centre (Numbers)	Tap Water Untreated	Is the Area Covered under Total Sanitation Campaign	Telephone (landlines)	Public Bus Service	Gravel (kutch) Roads	Self - Help Group (SHG)	Nutritional Centres-Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Adavapakkam	1	2	0	1	2	1	2	1	1	1	2	1
Arpakkam	1	2	0	1	2	1	1	1	2	1	2	1
Kadukalur	1	2	0	2	2	1	1	1	1	1	2	1
Kannikulam	1	2	0	2	2	1	2	1	1	1	2	1
Karuveppampooni	1	2	0	1	1	1	1	1	1	1	1	1
Kavanthandalam	1	2	0	1	1	1	1	1	1	1	2	1
Magaral	1	2	0	1	2	1	1	1	2	1	2	1
Nelveli	1	2	0	2	2	2	1	1	1	1	2	1
Ozhugarai	1	2	0	1	2	1	1	1	1	1	2	1
Perumanallur	1	2	0	2	1	1	1	1	1	1	2	1
Pulivoy	1	2	0	2	2	1	1	1	2	1	2	1
Puthali	1	2	0	1	2	1	1	1	1	1	2	1
Silambakkam	1	2	0	1	2	1	1	1	1	1	2	1
Sirunallur	1	2	0	1	2	1	1	1	1	1	2	1
Vedal	1	2	0	1	1	1	1	1	1	1	2	1
Vengacheri	1	2	0	1	2	1	2	1	1	1	2	1
Vengaram	2	2	0	1	2	2	1	1	1	2	2	1
Vitchanthangal	2	2	0	1	2	1	1	1	1	1	2	1

<https://www.census2011.co.in/data/village/629733-magaral-tamil-nadu.html> status: ((Govt(1)/Private(2))

Table 3.33 Other Facilities in The Study Area

Village Name	Tractors	Carts Driven by Animals	Black Topped (pucca) Road	ATM	Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Public Distribution System	Mandis/Regular Market	Weekly Haat	Power Supply for Agriculture Use	Power Supply for Commercial Use	Agricultural Commodities (First)	Manufacturers Commodities	Handicrafts Commodities (First)	Forest Area (in Hectares)	Net Area Sown (in Hectares)
Adavapakkam	2	2	1	2	1	2	2	1	2	2	1	2	PADDY	--	0	2.15	58.23
Arpakkam	2	2	1	2	2	1	1	1	2	2	1	1	PADDY	HOLLOW BLOCKS	0	0	272.18
Kadukalur	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	9.85	600
Kannikulam	2	2	1	2	2	2	2	1	2	2	1	1	PADDY	--	0	1	58.98
Karuveppampooni	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	3	301.87
Kavanthandalam	2	2	1	2	2	1	1	1	2	2	1	2	PADDY	--	0	0	211.69
Magaral	2	2	1	2	1	1	2	1	2	2	1	2	PADDY	--	0	0	203.23
Nelveli	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	0	71.63
Ozhugarai	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	1	68.75
Perumanallur	2	2	1	2	2	2	2	1	2	2	1	1		--	0	0	65.13
Pulivoy	2	2	1	2	2	2	2	2	2	2	1	1	PADDY	--	0	0	97.19
Puthali	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	112.2	117.29
Silambakkam	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	50	59.63
Sirunallur	2	2	1	2	2	2	2	1	2	2	1	1	PADDY	--	0	0	150.57
Vedal	2	2	1	2	2	2	2	1	2	2	1	1	PADDY	--	0	0	500
Vengacheri	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	19.19	118.47
Vengaram	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	--	0	2	25.1
Vitchanthangal	2	2	1	2	2	2	2	1	2	2	1	1	--	--	0	0	125.52

<https://www.census2011.co.in/data/village/629733-magaral-tamil-nadu.html> (Status A(1)/NA(2))

3.6.4 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.

3.6.5 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 and Gravel is proposed to be transported mainly through Village Road and Vanthavasi–Kancheepuram (SH-116) as shown in Table 3.34 and in Figure 3.28. 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 3.34 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	0.14 Km-SW	Village Road
TS2	Vanthavasi– Kancheepuram (SH-116)	6.41 Km-SW	Vanthavasi– Kancheepuram (SH-116)

Source: On-site monitoring by GTMS FAE & TM

Table 3.35 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	37	111	67	67	79	40	218
TS2	98	294	73	73	90	48	415

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 3.36 Rough and Gravel Transportation Requirement

Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	40	120

Source: Approved Mining Plan

Table 3.37 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 – 1960guidelines
Village Road	218	120	338	1200
Vanthavasi– Kancheepuram (SH-116)	415	535	454	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

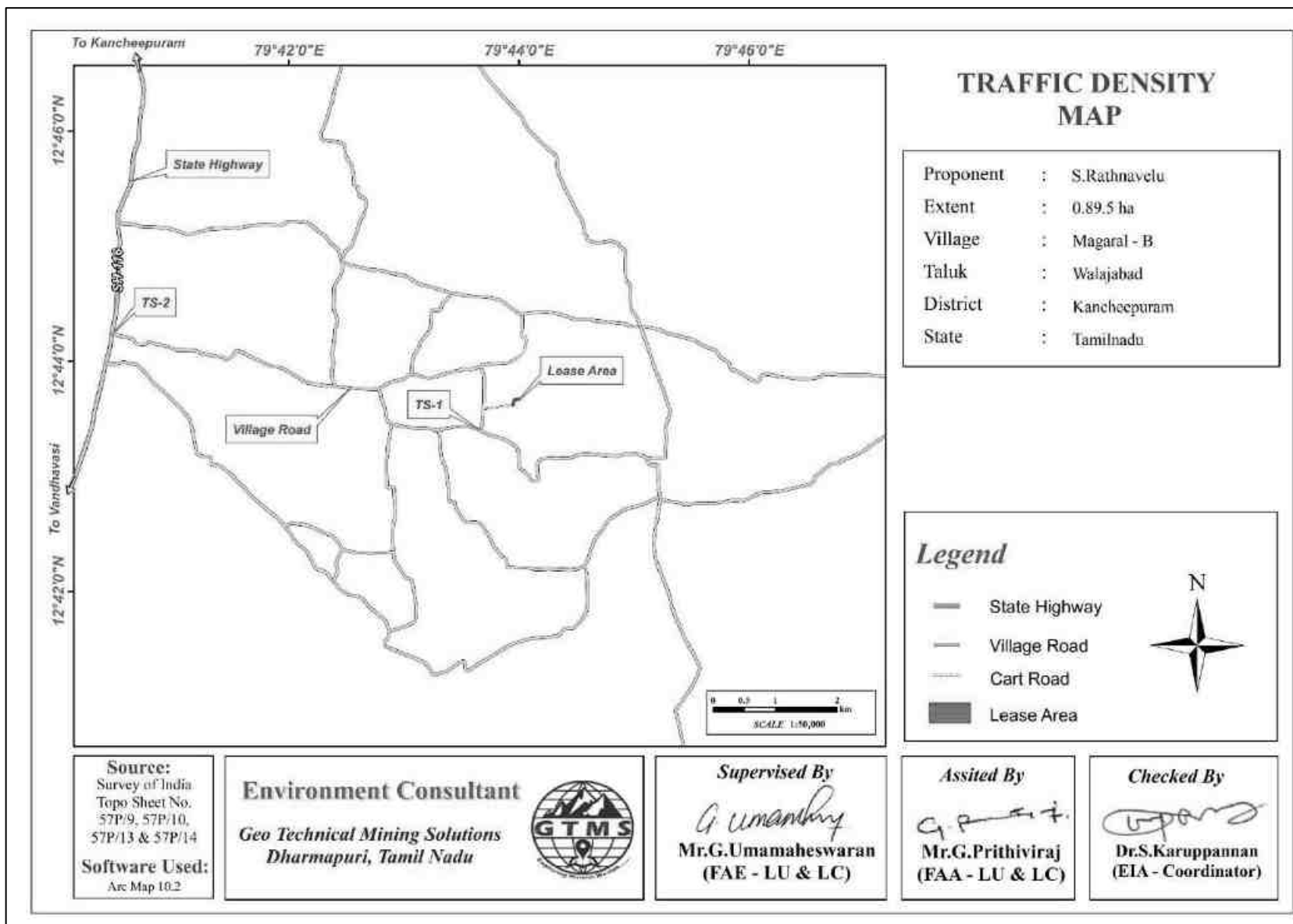


Figure 3.28 Traffic Density Map

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, National Park within the project area. There is no Protected area is found within 10 km radius from the proposed project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.38.

Table 3.38 Details of Environmentally Sensitive Ecological Features in the Study Area

Sl. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
		None	Nil within 10 km radius
2	Reserve Forest	Marutham R. F	7.4 km SE
		Edamachi R.F	14.43km SE
		Kavanipakkam R. F	15.12km West
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Palar River	2.43km SE
		Cheyyar River	2.48 km S
		Mamandur lake	7.74km NW
		Arpakkam Tank	0.5km SE
		Magaral ponneri	1.58km SE
		Kavnthandalam Vayalurtank	1.5km SE
		Chithalapakkam Tank	1.24km SW
		Suruttal Big Tank	0.91km SE
		Suruttal chitteri	1.07km NE
		Kundiyanthandalam tank	1.73km NW
		Poonathangal Tank	1.96km NW
		Elacheri Chitheri	2.02km NW
		Arpakkam Retteri	2.15km NE
		Punnai tank	2.17km SW
		Pavoor Tank	4.14km SW
		Kavanthandalam Chitheri	4.45km West
		Keezhiparamanallur tank	4.08km NE
		Melperamanallur tank	3.42km NE
		Vitchanthangal Odanthangal Tank	4.17km North
		Neiyadupakkam	6.81km West
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Critically 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	Notified Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet





Figure 3.29 Field Study & Socio-Economic Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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

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

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

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

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

4.1 LAND ENVIRONMENT

4.1.1 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

4.1.2 Common 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 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

No top soil will be removed in this project. However, some of the common mitigation measures is discussed in the following sections.

4.2.1 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

Soil Erosion

- ❖ Low to moderate soil erosion is in mine lease area

4.2.2 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.
- ❖ Retention of Vegetation – Soil erosion is controlled by retaining or replanting existing vegetation where possible
- ❖ Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as for specified specially during rainy season.

4.3 WATER ENVIRONMENT

The total water requirement for this project will be 5.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. There are no waste dumps in this quarry. Based on the available information and the geophysical investigations the study concluded that the project area is considered to have poor groundwater potential. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected.

4.3.1 Anticipated Impact

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

- ❖ Generation of waste water from vehicle washing.
- ❖ Washouts from surface exposure or working areas
- ❖ Domestic sewage
- ❖ Disturbance to drainage course in the project area
- ❖ Mine Pit water discharge
- ❖ Increase in sediment load during monsoon in downstream of lease area
- ❖ This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of oil & grease, suspended solids.
- ❖ The sewage from soak pit may percolate to the ground water table and contaminate it.
- ❖ Surface drainage may be affected due to Mining

- ❖ As the proposed project acquires 5.0 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not deplete aquifer beneath the lease area.

4.3.2 Common Mitigation Measures for the Proposed Project

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

4.4 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by jack hammer drilling, excavation, loading and transportation.

4.4.1 Anticipated Impact from proposed project

- ❖ During mining at various stages of activities such as excavation, drilling and transportation of materials, particulate matter (PM), gases such as sulphur dioxide, oxides of nitrogen from vehicular exhaust are the main air pollutants
- ❖ Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air
- ❖ The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust
- ❖ Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area

4.4.2 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chauha et al.,2001. The equations used for SPM, SO₂, and NO_x 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).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. As the SPM emission calculation for overall mine is not considering pollution control measures, one-third of the SPM value is taken for derivation of PM₁₀ keeping in mind that proper control measures are followed. 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}, PM₁₀, SO₂ and NO_x 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	PM _{2.5}	0.581162016	32400	1.79371E-05
Overall Mine	PM ₁₀	1.45290504	32400	4.48427E-05

4.4.2.1 Frame work of Computation and Model Details

By using the above-mentioned inputs, Ground Level Concentrations (GLC) due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere.

Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction includes the impacts of excavation, drilling, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and cloud cover.

The model was used to predict the impact on the ambient air environment at each receptor at various localities within 10km radius around the project site and the maximum incremental GLC at the project site. All the prediction models in Figures 4.1- 4.2 shows the maximum concentrations of PM_{2.5}, PM₁₀ close to the proposed project site due to low to moderate wind speeds.

4.4.2.2 Modelling of Incremental Concentration

The air borne particulate matter such as PM₁₀ and PM_{2.5} generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions due to excavation and loading equipment's and vehicles plying on haul roads are the significant air pollutants arising from mining operation, leading to an adverse impact on the ambient air environment in and around the project area. 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.

4.4.2.3 Model Results

The post project resultant concentrations of PM₁₀, PM_{2.5} is given in Tables 4.3-4.4.

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	Direction	PM _{2.5} concentrations($\mu\text{g}/\text{m}^3$)			Comparison against air quality standard ($60 \mu\text{g}/\text{m}^3$)	Magnitude of change (%)	Significance
			Base line	Predicted	Total			
AAQ1	0.13	SE	20.4	3.3	23.7	Below standard	16.2	Not significant
AAQ2	2.23	SW	16.0	1	17		6.3	
AAQ3	4.77	NW	16.8	0.5	17.3		3.0	
AAQ4	2.16	NE	15.8	0.5	16.3		3.2	
AAQ5	4.39	N	18.0	0	18		0.0	
AAQ6	2.43	SE	19.5	0	19.5		0.0	
AAQ7	3.48	NW	15.4	0	15.4		0.0	

Table 4.4 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area (km)	Direction	PM ₁₀ concentrations($\mu\text{g}/\text{m}^3$)			Comparison against air quality standard ($100 \mu\text{g}/\text{m}^3$)	Magnitude of change (%)	Significance
			Base line	Predicted	Total			
AAQ1	0.13	SE	39.8	8.41	48.21	Below standard	21.1	Not significant
AAQ2	2.23	SW	37.0	5	42		13.5	
AAQ3	4.77	NW	37.4	0.5	37.9		1.3	
AAQ4	2.16	NE	34.2	0.5	34.7		1.5	
AAQ5	4.39	N	36.4	0	36.4		0.0	
AAQ6	2.43	SE	39.7	0	39.7		0.0	
AAQ7	3.48	NW	33.7	0	33.7		0.0	

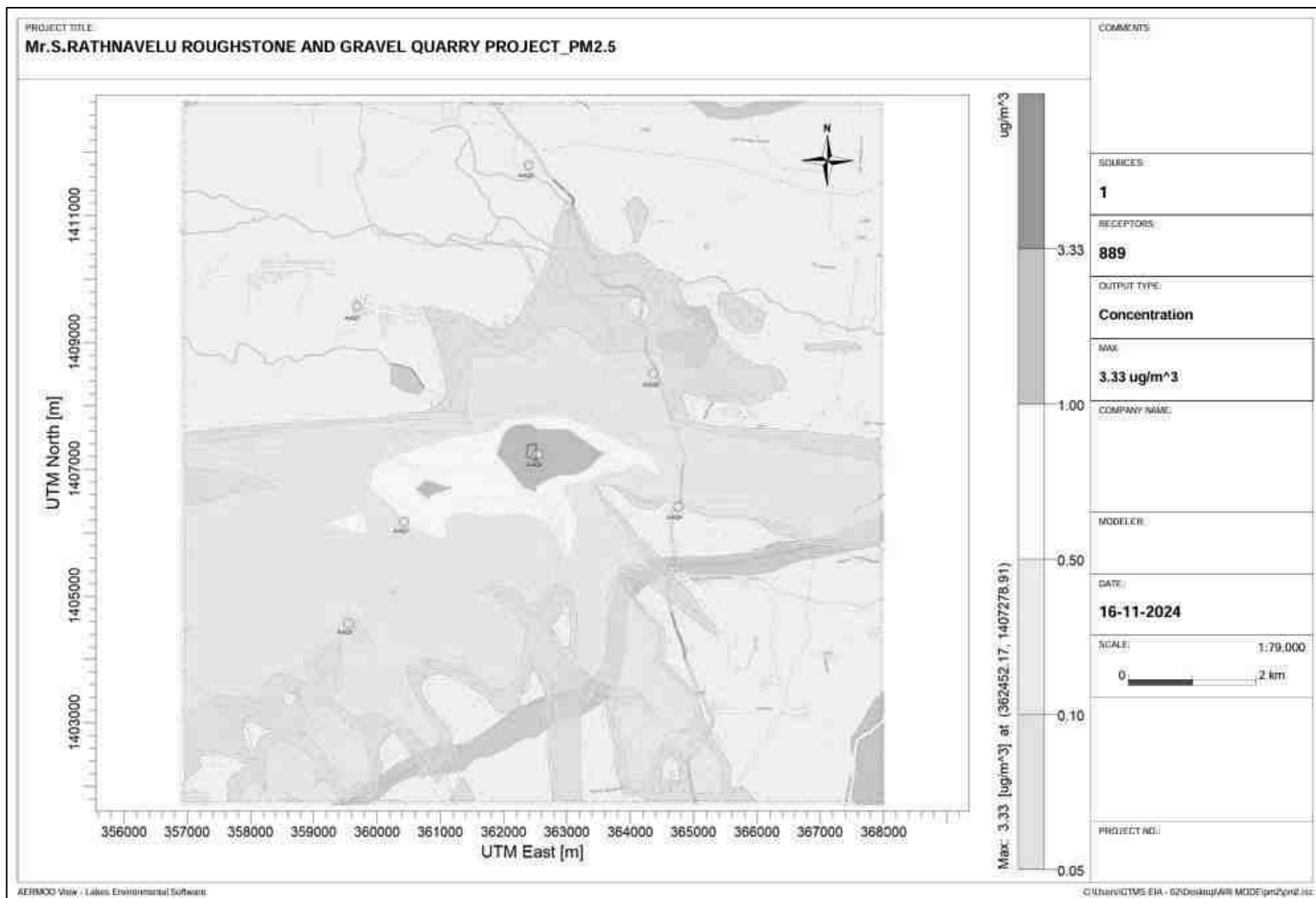


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

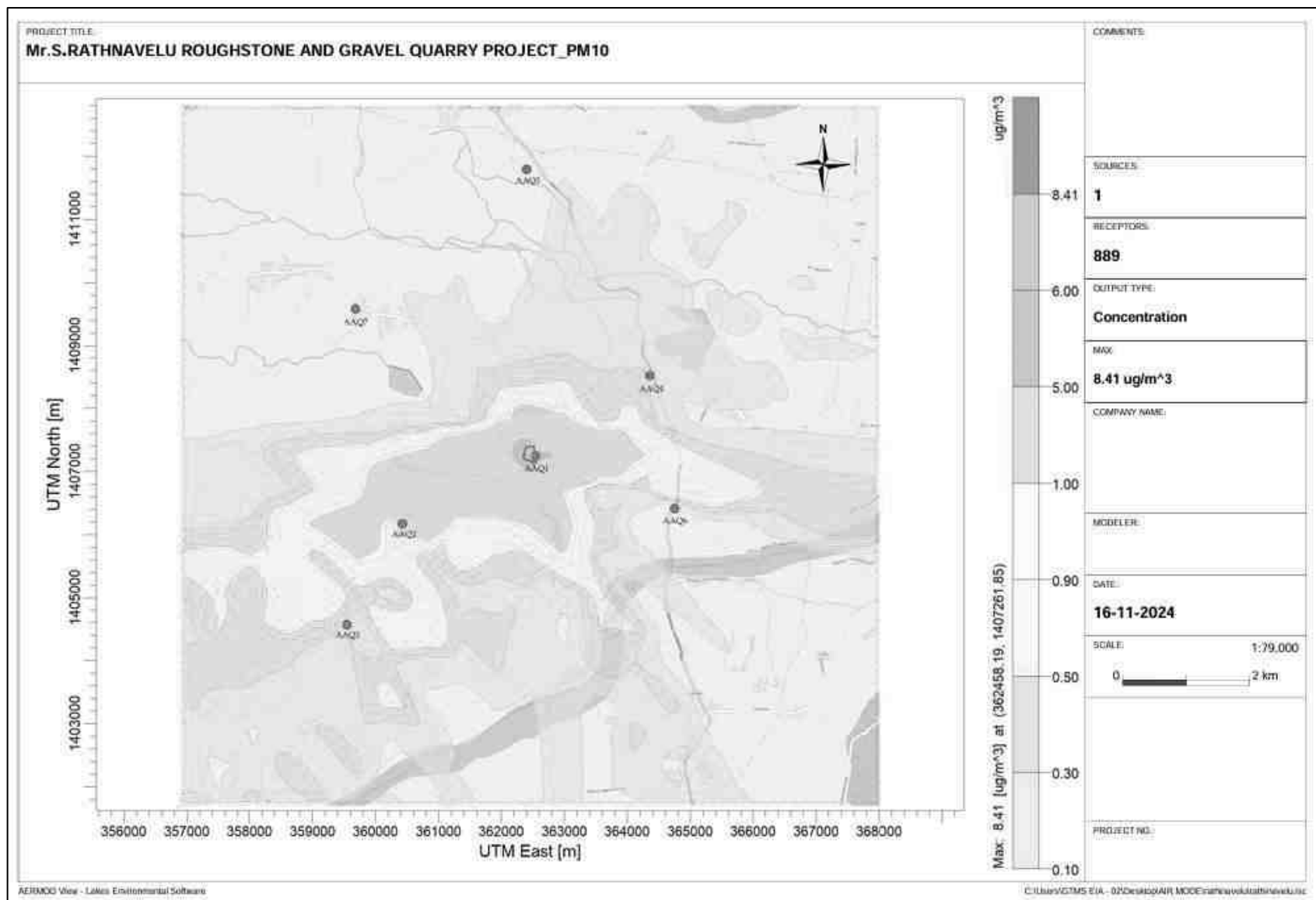


Figure 4.2 Predicted Incremental Concentration of PM₁₀

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.

4.4.3 Common Mitigation Measures

Drilling

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

Advantages of Wet Drilling

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

Blasting

- ❖ Suitable time of blasting will be chosen according to the local conditions and water will be sprinkled on blasting face.
- ❖ Blasting will be avoided when temperature inversion is likely to occur and strong wind blows towards residential areas.
- ❖ Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone.
- ❖ Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours.
- ❖ Before loading of material water will be sprayed on blasted material.
- ❖ Dust mask will be provided to the workers and their use will be strictly monitored.

Haul Road 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 main mine haul roads 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

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

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves which are propagated outwards from the source through the air at a speed of 1,100 ft/sec with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

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

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

4.5.1 Anticipated Impact

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.5.

Table 4.5 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). We have considered the total noise to be produced by mining activity to be 95.8 dB (A) for noise prediction modelling.

Table 4.6 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	100	42.4	43.960	46.260
Surutal	980	40.6	24.135	40.697
Chinna Elacheri	2200	38.4	17.111	38.432
Vadakalpakkam	4820	39.8	10.299	39.805
Arpakkam	2190	40.2	17.151	40.221
Kalakattur	4460	41.6	10.97	41.60
Magaral	2450	42.6	16.18	42.61
Girijapuram	3440	39.8	13.23	39.81
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.

4.5.2 Common Mitigation Measures

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

- ❖ Usage of sharp drill bits while drilling which will help in reducing noise
- ❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ❖ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system
- ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise
- ❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise
- ❖ Silencers / mufflers will be installed in all machineries

- ❖ 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

4.5.3 Ground Vibrations

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

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

The empirical equation for assessment of peak particle velocity (PPV) is 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 4.7 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1 & P2	16.58	1030	0.071	23	0.02	121

Table 4.8 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	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1& P2	16.58	100	2.98	19	0.38	146
		200	0.98		0.17	138
		300	0.51		0.10	134
		400	0.32		0.07	131
		500	0.22		0.06	128

4.5.3.1 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.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 2023kg per day, 546154 kg per year and 2730768 kg over five years, as provided in Table 4.9.

Table 4.9 Carbon Released During Five Years of Rough Stone and Gravel Production

	Per day	Per year	Per five years
Fuel consumption of excavator	139	37555	187777
Fuel consumption of compressor	16.4	4428	22140
Fuel consumption of tipper	599	161805	809027
Total fuel consumption in liters	755	203789	1018943
CO ₂ emission in kg	2023	546154	2730768

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 roads will not be constructed to reduce impact on flora.

Carbon Sequestration

- ❖ 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 24 kg 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 1620 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 194206 kg of the total carbon, as provided in Table 4.10.

Table 4.10 CO₂ Sequestration

CO ₂ sequestration in kg	144	38841	194206
Remaining CO ₂ not sequestered in kg	1879	507313	2536563
Trees required for environmental compensation	21138		
Area required for environmental compensation in hectares	42		

Greenbelt Development

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. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone. Greenbelt development plan and budget required for green belt development plan are given in Tables 4.12-4.13. For greenbelt development, species are recommended, as shown in Table 4.11 on the basis of:

- ❖ Natural growth of existing species and survival rate of various species.
- ❖ Suitability of a particular plant species for a particular type of area.
- ❖ Creating of biodiversity.
- ❖ Fast growing, thick canopy copy, perennial and evergreen large leaf area.
- ❖ Efficient in absorbing pollutants without major effects of natural growth.

Table 4.11 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 Palisade & Spongy parenchyma. Spongy parenchyma is
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	Nettilingam	Tree	
4	<i>Albizia lebbek</i>	Fabaceae	Vagai	Tree	
5	<i>Delonix regia</i>	Fabaceae	Cemmayir-konrai	Tree	

6	<i>Bauhinia racemosa</i>	Fabaceae	Aathi	Tree	present at lower epidermis Many vascular bundles arranged almost parallel series
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 4.12 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		
	648	518	4,662
	Number of plants outside the mine lease area		
	972	777	6,993
Total	1620	1295	11,655

Table 4.13 Budget for Greenbelt Development Plan

Activity	Plantation in the construction phase(3Months)	Cost	Capital Cost (Rs.)	Recurring Cost-per annum
Plantation inside the mine lease area (in safety margins)	648	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))"	1,29,600	19,440
Plantation outside the area	972	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	2,91,600	29,160
Total			4,21,200	48,560

Source: EMP budget

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

- ❖ There is no Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site.
- ❖ No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- ❖ Fencing around all the proposed mine lease areas will be constructed to restrict the entry of stray animals
- ❖ Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.6.4 Measures for Protection and Conservation of Wildlife Species

- ❖ All the preventive measures will be taken for growth & development of fauna.
- ❖ Creating and development awareness for nature and wildlife in the adjoin villages.
- ❖ The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.
- ❖ Undertaking mitigation measures for conducive environment to the flora and fauna in consultation with Forest Department.
- ❖ Dust suppression system will be installed within mine and periphery of mine for proposed project
- ❖ Plantation around mine area will help in creating habitats for small faunal species and to
- ❖ create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

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.

4.6.5 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.

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

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

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 III, there is no major history of landslides, earthquake, and subsidence etc., recorded in the 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 Semi Mechanized mining method with secondary blasting will be applied to extract rough stone 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 / trippers 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 Semi 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.

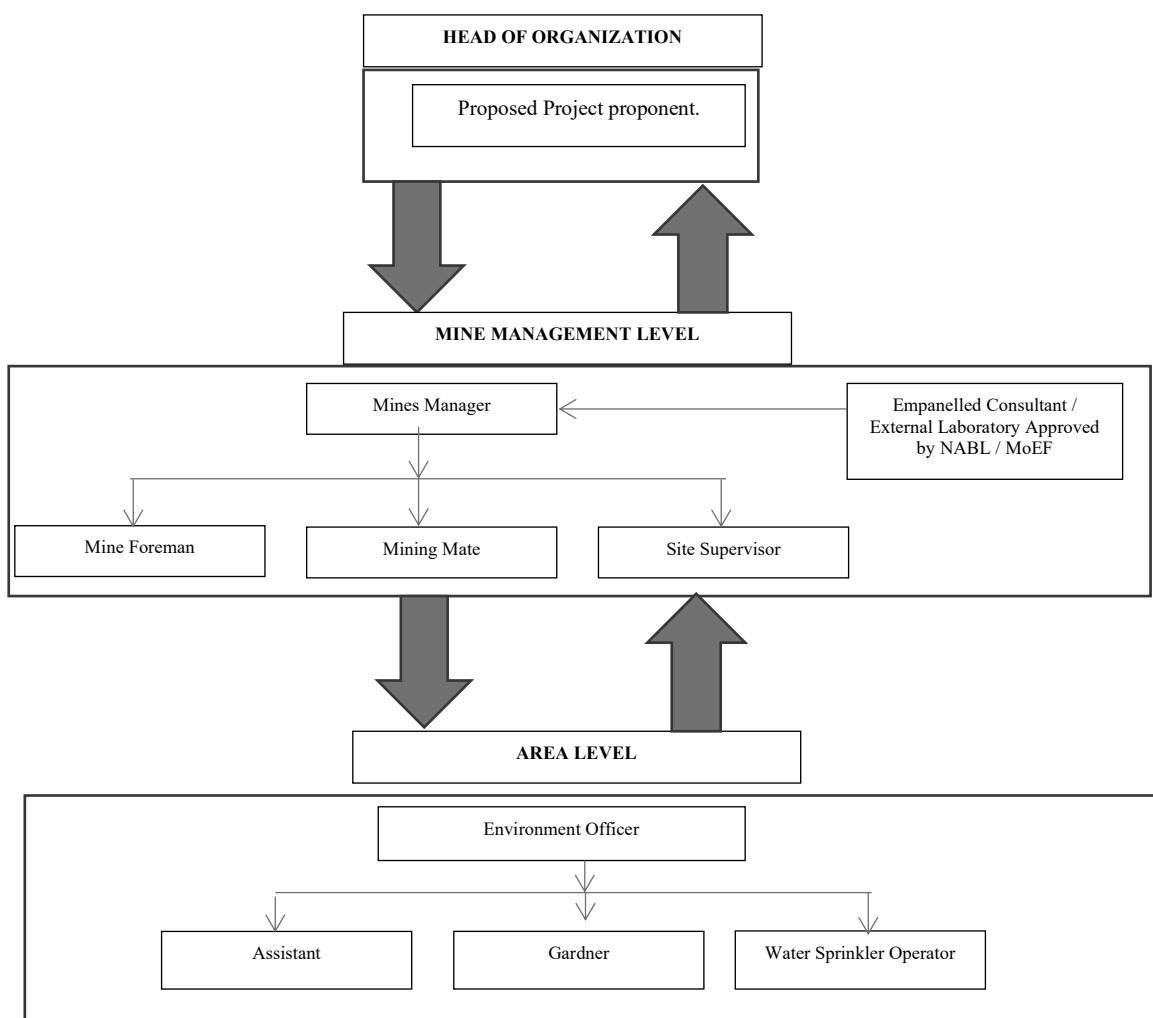


Figure 6.1 Proposed Environmental Monitoring Chart

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 heavy mining machineries	Improper handling and unsafe working practice	All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited; Fire-fighting and first-aid provisions in the mine office complex and mining area; Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use Working of quarry, as per approved plans and regularly updating the mine plans; Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut; Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	Improper and unsafe practices 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.

4	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes Vibration due to movement of vehicles	Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting can be conducted safely. SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation Shots are fired during daytime only. All holes charged on any one day shall be fired on the same day. The danger zone will be distinctly demarcated (by means of red flags)
5	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	Before commencing work, drivers personally check the truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. Concave mirrors should be kept at all corners All vehicles should be fitted with reverse horn with one spotter at every tipping point Loading according to the vehicle capacity Periodical maintenance of vehicles as per operator manual
6	Natural Calamities	Unexpected happenings	Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets
7	Failure of mine benches and pit slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production

and salvage operations in this same order of priorities. The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

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

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations. Structure of the team has been shown in Figure 7.1.

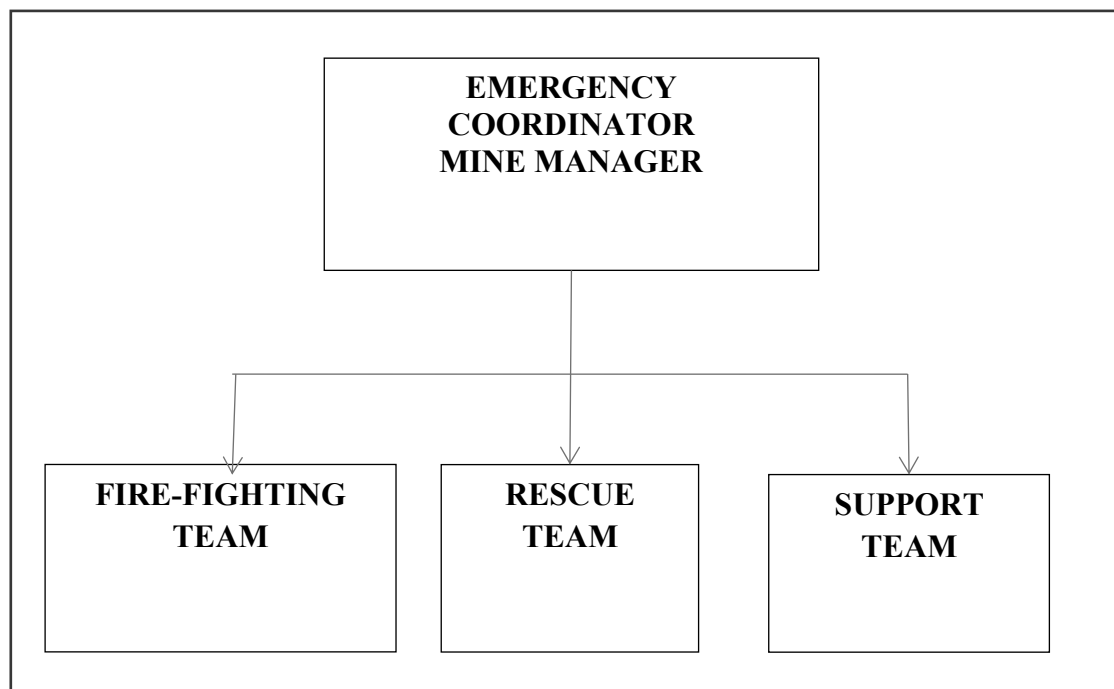


Figure 7.1 Disaster management team layout for proposed project

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 quarries within the cluster and major impact anticipated is on air & noise environment and ground vibrations due to blasting. For this cumulative study, 3 proposed projects, known as P1, P2 and P3 are taken into consideration. The details of P1 and P2 have been given in Table 1.3 and the details of P3 is discussed in Table 7.2.

Table 7.2 Salient Features of Proposed Project Site “P3”

Name of the Quarry	Mr. D. Govindasamy Rough Stone and Gravel Quarry
Toposheet No	57-P/10
Latitude	12°43'32.65"N to 12°43'43.28"N
Longitude	79°44'0.85"E to 79°44'8.88"E
Highest Elevation	71 m AMSL

Proposed Depth as per ToR	30 m BGL		
Ultimate Pit Dimension	Length (m)	Width (m)	Depth (m)
	186	77	30
Geological Resources	Rough Stone in m ³	Gravel in m ³	
	958452	58088	
Mineable Reserves	Rough Stone in m ³	Gravel in m ³	
	417131	45804	
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³	
	417131	45804	
Method of Mining	Open-Cast Semi Mechanized Method		
Topography	Flat Terrain		
Machinery proposed	Jack Hammer	4	
	Compressor	1	
	Hydraulic Excavator	1	
	Tippers	10	
Blasting Method	Quarrying operation is done with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone. 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 drilling is proposed.		
Proposed Manpower Deployment	18 Nos		
Project Cost	Rs.81,27,500 /-		
CER Cost	Rs. 5,00,000/-		
Proposed Water Requirement	6.750 KLD		

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

7.4.1 Air Environment

As the production of rough stone plays a vital role in affecting the air environment. The data on the cumulative production resulting from the three proposed project have been given in Tables 7.5

Table 7.3 Cumulative Production Load of Rough Stone

Proposed Production Details				
Quarry	5 Years in m³	Per Year in m³	Per Day in m³	Number of Lorry Load Per Day
P1 & P2	232619	46,523	172	29
P3	417131	83426	309	51
Grand Total	6,49,750	1,29,769	481	80

Table 7.4 Cumulative Production Load of Gravel

Proposed Production Details				
Quarry	1 Years in m³	Per Year in m³	Per Day in m³	Number of Lorry Load Per Day
P1 & P2	18009	18009	67	11
P3	45804	22902	85	14
Grand Total	63813	40,911	152	25

The cumulative study shows that the overall production of rough stone from the 3 quarries is 481m³ per day with a capacity of 80 trips per day and gravel from the 3 quarries is 152m³ per day with a capacity of 25 trips per day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the three proposed project on air environment of the cluster have been provided in Table 7.5. The cumulative values resulting from the three projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.5 Cumulative impact results from the three proposed project

Pollutants	Baseline Data (µg/m³)	Incremental Values (µg/m³)		Cumulative Value (µg/m³)
		P1 & P2	P3	
PM _{2.5}	20.4	3.3	6.49	30.19
PM ₁₀	39.8	8.4	12.9	61.1

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 quarries within the 500 m radius.

Table 7.6 Predicted Noise Incremental Values from Cluster

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 & P2	1030	N	40.6	24.135	40.69	55
Habitation Near P3	920	N	39.8	37.88	41.96	
Cumulative Noise (dB(A))					44.38	

Source: Lab Monitoring Data

The cumulative analysis of noise due to 3 proposed project shows that habitation near P1 P2 and P3 will receive about 44.38 dB (A), as shown in Table 7.8. The cumulative results for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time.

7.4.3 Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the all the 3 mines have been shown in Table 7.7.

Table 7.7 Ground Vibrations at three Mines

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1 & P2	16.58	1030	0.071
P3	78	920	0.29
Total			0.36

Source: Blasting Calculations

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

7.4.4 Socio Economic Environment

Socio economic benefits of the three proposed projects were calculated and the results are shown in Tables 7.8. The three projects will contribute Rs. 15,00,000 towards CER fund.

Table 7.8 Socio Economic Benefits from three Mines

Location ID	Project Cost (Rs.)	CER Cost (Rs.)
P1 & P2	1,60,02,577	10,00,000
P3	81,27,500	5,00,000
Grand Total	2,41,30,077	15,00,000

Table 7.9 Employment Benefits from three Mines

Location ID	Employment
P1 & P2	22
P3	18
Grand Total	40

A total of 40 people will get employment due to 3 proposed mine in cluster.

7.4.5 Ecological Environment

Table 7.10 Greenbelt Development Benefits From 3 Mines

ID	No of Trees proposed to be planted	Area to be Covered(m²)	Name of the Species	No. of Trees expected to be grown @ 80% survival rate
P1 & P2	1,620	14,580	Neem, Pongamia, Teak	1296
P3	1453	13073		1162
Total	3,073	27,653		2458

Cumulative studies show that the three proposed projects will plant about 3073 native tree species like Neem, Teak, etc both inside and outside the lease area. It is expected that 80 % of trees, i.e., 2458 trees will survive in this green belt development program.

7.4.6 Traffic Density

Table 7.4 shows that the three proposed projects will add 105 truck load per day, accounting for addition of 315 PCUs to the nearby roads.

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 7.11.

Table 7.11 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 Magaral-B Village aims to produce **232619m³** of rough stone and **18009m³** 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 22 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 15 persons in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarry is located in Magaral-B Village, Walajabad Taluk and Kancheepuram District is well established. The following physical infrastructure facilities will further improve due to proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force

will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

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

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

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 will be taken up in the Magaral-B village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., 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 with reference to 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. 2,56,22,852** 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 Cost	5,00,000	---
Seigniorage @ Rs.90/m ³ of rough stone, Rs.56/m ³ of Gravel	2,09,35,710	10,08,504
District Mineral Foundation Tax @ 10% of Seigniorage	20,93,571	1,00,850
Green Tax @ 10% of Seigniorage	20,93,571	1,00,850
Total	2,56,22,852	12,10,204

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, **Mr. S. Rathnavelu**, 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	32400	32400
	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	75000	7500
	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	35000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	8750
	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	64800
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			992400	253450
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	Provision made in Operating Cost	0	0

	HEMM at regular interval will be done.			
	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	651333
Total Noise Environment			50000	653333
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	32400	16200
Total Water Environment			32400	16200

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 Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed display board at the quarry entrance as permanent structure	10000	1000
Total Implementation of EC, Mining Plus & DGMS Condition			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)	88000	22000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	22000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	12960
	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	648000	32400

	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	162000	32400
	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			938000	908760
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))"	129600	19440
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	291600	29160

Total Development of Green Belt		421200	48600
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)	110160	0
Green fund	G.O.(Ms). No.23, Dated: 28.09.2021	2194421	0
TOTAL		4778581	1903343 (Excl. Mine Closure Cost)

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

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year (Including Mine Closure Cost)	Total Recurring Cost	Total EMP Cost (Capital Cost + Total Recurring Cost)
1903343	1998510	2098436	2203358	2313526	10517173	15295754

In order to implement the environmental protection measures, an amount of **Rs.4778581** as capital cost and recurring cost as **Rs.1903343** 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 total recurring cost over 5 years is **Rs.10517173** and the overall EMP cost for 5 years will be **Rs.15295754** as shown in Table 10.1.

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

This EIA report was prepared in compliance with ToR File No. 10707 and ToR Identification No.TO24B0108TN5967835N, dated 14.05.2024 by considering 3 proposed quarry, 2 existing quarry in a cluster with the total extent of **12.14.00** ha in Magaral-B Village, Walajabad Taluk, Kancheepuram District and Tamil Nadu State. Cluster area was calculated as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016. Baseline Monitoring studies were carried out during the period of March-May, 2023.

11.2 PROJECT DESCRIPTION

The proposed project deals with excavation of rough stone and gravel, which is primarily used, in construction projects. The method adopted for rough stone and gravel excavation is a manual open cast mining method involving formation of benches with 5 m height and 5 m width and secondary blasting. The proposed project area is located between latitudes from 12°43'41.11"N to 12°43'43.28"N and from longitudes from 79°43'55.53"E to 79°44'1.13"E in Magaral-B Village, Walajabad Taluk, Kancheepuram District. The project site is a Patta land with the extent of 0.89.50 ha leased for the project proponent, Mr. S.Rathnavelu. The proponent had applied for quarry lease on 16.08.2023 to extract rough stone and gravel obtained the precise area communication letter issued by Department of Geology and Mining, Kancheepuram vide Rc.No.311/Q3/2023, dated:09.11.2023. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Deputy Director of Geology and Mining, Kancheepuram (Rc.No.311/Q3/2023, dated:27.11.2023).

According to the approved mining plan, about 232619 m³ of rough stone and 18009 m³ gravel will be mined up to the depth of 50 m BGL in five years. To achieve the estimated production, 3 Jack Hammers, 2 compressor, 1 excavator with bucket/rock breaker, and 7 tippers will be deployed. To operate the machineries and to break the rough stone to preferred dimension, about 22 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 117m*117 m*50 m and about 0.87.35 ha of land is unutilized. Whereas, at the end of the mine life, about 1.81.0 ha of land will have been quarried; about 0.43.45 ha of land will be used for green belt development and the rest will be used for road and infrastructures.

The final mine closure plan shows that about Rs. **1101600** capital cost with the annual recurring cost of Rs. **97160** will be spent towards mine closure.

11.3 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring studies were carried out during March-May, 2023 to assess the existing environmental conditions in the study area. For the purpose of the EIA studies, project area was considered as the core zone and area outside the project area up to 5 km radius from the periphery of the project site was considered as buffer zone. Baseline Environmental data has been collected for land, water, noise, ecology, socio-economy, and traffic.

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. Totally, 8 LULC were mapped. The areal extent of each LULC is provided in Table 11.1. Of the total area, mining area covers only 37.18 ha accounting for 0.48 %, of which cluster area of 12.14.00 ha contributes only about 0.15%. This small percentage of mining activities shall not have any significant impact on the land environment.

Table 11.1 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop land	2232.18	28.88
2	Dense Forest	291.99	3.78
3	Fallow land	297.13	3.84
4	Land with or without scrub	409.89	5.30
5	Mining / Industrial waste lands	37.18	0.48
6	Plantations	3386.35	43.81
7	Settlement	156.93	2.03
8	Water bodies	917.22	11.87
Total		7728.87	100.0

Source: Sentinel II Satellite Imagery

11.3.2 Soil Characteristics

Physical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, to sandy clay loam. pH of the soil varies from 6.63 to 7.42 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 168 to 213 $\mu\text{S}/\text{cm}$. Bulk density ranges between 0.88 and 1.53 g/cm^3 and water content ranges between 2.16 to 8.56 %.

Chemical Characteristics

Calcium ranges between 184 and 442 mg/kg. Magnesium ranges between 83 and 192 mg/kg. Sodium ranges between 165 and 219 mg/kg. Potassium ranges between 144.56 and

213.56 mg/kg. Organic matter content ranges between 0.94 and 1.78 mg/kg and Iron ranges between 21.51 and 47.45 mg/kg.

11.3.3 Water Environment

Surface Water

Cheyar River, Arpakkam Lake and Sithalapakkam Lake are the three prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 2.64 km SE of Cheyyar River, 3.12 NE of Arpakkam Lake and 2.26 km S of Sithalapakkam Lake, as shown in Table 3.6 and Figure 3.7. Three surface water samples, known as SW1, SW2 and SW3 were collected from the three surface water bodies to assess the baseline water quality. Table 3.6 summarizes surface water quality data of the three samples.

Results for surface water samples in the Table 3.6 indicate that the physical and chemical parameters are within permissible limits. Of the two biological parameters, Coliform bacteria are present in the three water samples, whereas E-Coli is absent in the samples.

Ground Water

Groundwater in the study area occurs in the crystalline rocks of Archaean age and Recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose. Five groundwater samples, known as OW1, OW2, OW3, BW4 and BW5 were collected from open wells and bore wells to analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.6. Table 3.7 summarizes ground water quality data of the five samples.

Results for ground water samples in the Table 3.7 indicate that the physical, chemical and biological parameters are within permissible limits in comparison with standards of IS10500:2012.

11.3.4 AIR ENVIRONMENT

Site Specific Meteorology

Site specific meteorology during the study period was recorded by an automated weather station. According to the onsite data, the temperature in March, 2022 varied from 22.19 to

35.52⁰C with the average of 28.08⁰C; in April, 2022 from 25.34 to 36.46⁰C with the average of 29.82⁰C; and in May, 2022 from 25.64 to 37.22⁰C with the average of 23.14⁰C. In March, 2022, relative humidity ranged from 30.44 to 95.19 % with the average of 71.17%; in April, 2022, from 36.56 to 92.19 % with the average of 72.22; and in May, 2022, from 36.19 to 93.19 % with the average of 72.29 %. The wind speed in March, 2022 varied from 0.035 to 8.80 m/s with the average of 3.96 m/s; in April, 2022 from 0.09 to 6.81 m/s with the average of 3.67 m/s; and in May, 2022 from 0.06 to 9.06 m/s with the average of 4.17 m/s. In March, 2022, wind direction varied from 2.32 to 359.65⁰ with the average of 119.25⁰; in April, 2022, from 0.00 to 357.92⁰ with the average of 149.97⁰; and in May, 2022, from 2.09 to 358.03⁰ with the average of 207.43⁰. In March, 2022, surface pressure varied from 99.94 to 101.17 kPa with the average of 100.56 kPa; in April, 2022, from 99.87 to 101.08 kPa with the average of 100.45 kPa; and in May, 2022, from 99.38 to 100.58 kPa with the average of 100.06 kPa

Ambient Air Quality Results

As per the monitoring data, PM_{2.5} ranges from 14.7 µg/m³ to 19.9 µg/m³; PM₁₀ from 34.1 µg/m³ to 39.5 µg/m³; SO₂ from 5.9 µg/m³ to 9.6 µg/m³; NO_x from 11.5 µg/m³ to 18.8 µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

11.3.5 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 locations around the proposed project area. The Table 3.18 shows that noise level in core zone was 42.4 dB (A) Leq during day time and 38.6 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.4 to 40.6 dB (A) Leq and during night time from 33.2 to 38.9 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.3.6 BIOLOGICAL ENVIRONMENT

Flora in core zone

There are no trees in inside of the mining lease area, but there are 60 *Borassus flabellifer* trees, *Morinda citrifolia* 5 and *Azadirachta indica* 4 within a 7.5-meter safety zone.

Flora in 300 m radius zone

Taxonomically, a total of 33 species belonging to 19 families have been recorded from the 300m radius from the mining lease area. The species in the 300m radius include herbs (18), trees (08), shrubs (05), the 19 families, Fabaceae and Lamiaceae are the main

dominating species in the study area, Species Richness (margalef Index) in the study area it mentioned in Table 3.26-3.27 Moreover, no species are found as threatened category. There is government land around 300 meters. *Vachelia leucophylla* is the dominant tree followed by *Phoenix sylvestris* tree, *Carissa carandas*, *Casapella thevetia* and *Lantana camara* plants.

Flora in 10 km radius zone

In the buffer zone, a total of 81 species belonging to 41 families were recorded. Among them are trees (32), shrubs (14), herbs (38), climbers (09), creepers (5), grasses (4), and cactus (1). Majority of the species belongs to the family of Fabaceae and Poaceae, as mentioned in Table 3.28. Species Richness (margalef Index) in the study area it mentioned in Table 3.29 & 3.30 Moreover, no species are found as threatened category.

Fauna in Core Zone

A total of 22 species belonging to 15 families were observed in the core zone (Table 3.26). Among them are 9 species of Insects, 3 species of Reptiles, 1 species of Mammals, and 9 species of Avian. None of these species are threatened or endemic in the study area and surroundings. There are no Schedule I species and 8 species are under schedule IV according to Indian wild life Act, 1972. There are no critically endangered, endangered, vulnerable and endemic species in the core zone.

Fauna in Buffer Zone

Taxonomically, a total of 44 species belonging to 34 families were recorded from the buffer area. Among them were 20 species of Birds, 13 species of Insects, 5 species of Reptiles, 3 species of Mammals, and 3 species of Amphibians, as mentioned in Table.3.32. There are four species under Schedule II and twenty-six species under schedule IV according to Indian wild life Act 1972. And there are no critically endangered, vulnerable and endemic species in the buffer area. There is no schedule I Species in study area and there are no critically endangered, endangered, vulnerable and endemic species

11.3.7 SOCIO-ECONOMIC ENVIRONMENT

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.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.4.1 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

- ✚ 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.

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 5.0 KLD 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

- ✚ To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar
- ✚ Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone
- ✚ Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours
- ✚ Before loading of material water will be sprayed on blasted material
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored
- ✚ 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
- ✚ The un-metalled haul roads will be compacted weekly before being put into use
- ✚ 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
- ✚ Planting of trees all along main mine haul roads and around the project site will be practiced to prevent the generation of dust
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored

11.4.5 Noise Environment

Anticipated Impact

Total noise level in all the sampling areas is well below the CPCB standards for industrial and residential areas. The peak particle velocity produced by the charge of 16.58kg is well below that of 0.3 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Mitigation Measures

- ✚ The blasting operations in the cluster quarries will use shallow holes and delay detonators to reduce the ground vibrations
- ✚ Proper quantity of explosives, suitable stemming materials and appropriate delay system will be used during 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
- ✚ 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
- ✚ 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.
- ✚ Carbon released from quarrying machineries and tippers during quarrying would be 2023kg per day, 546154 kg per year and 2730768 kg 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 roads will not be constructed to reduce impact on flora.
- ✚ 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 194206 kg 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, about 1620 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 194206 kg 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 proposed three projects will allocate Rs. 15,00,000/- towards CER as recommended by SEAC
- ✚ The proposed three projects will directly provide jobs to 40 local people, in addition to indirect jobs
- ✚ The proposed three projects will plant 3073 about trees in and around the lease area.
- ✚ The proposed three projects will add 315 PCU 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 22 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.4778581** as capital cost and recurring cost as **Rs.1903343** 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 total recurring cost over 5 years is **Rs.10517173** and the overall EMP cost for 5 years will be **Rs.15295754**.

CHAPTER XII DISCLOSURES OF CONSULTANT

The Project Proponent, **Mr.S.Rathnavelu** 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.

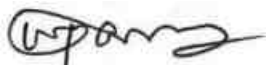
The accredited experts and associated members who were engaged in this EIA study are
given below:

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

15.	S.Vasugi	FAA	1(a)(i)	AQ	B
16.	P. Dhatchayini	FAA	1(a)(i)	AQ	B
17.	V. Malavika	FAA	1(a)(i)	NV, SHW	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 modeling, and prediction	HW	Hazardous Wastes		
EB	Ecology and bio-diversity	GIS	Geographical Information System		

ECLARATION 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. S. Karuppannan**

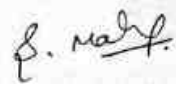
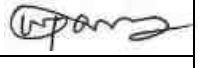
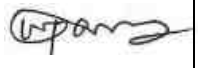
Designation : EIA Coordinator

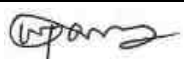
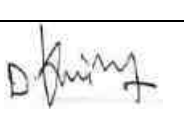
Name of the EIA Consultant Organization : Geo Technical Mining Solutions

Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for **Mr.S.Rathnavelu** rough stone and gravel quarry project with the extent of 0.89.50 ha situated in the cluster with the extent of **12.14.00** ha in Magaral-B Village of Walajabad Taluk, Kancheepuram 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	J. N. Manikandan	
			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.	Dr. S. Malar	
3	HG	- Interpretation of ground water table and predict impact and propose mitigation measures. - Analysis and description of aquifer Characteristics	Dr. M. Vijay Prabhu	
			G. Uma Maheswaran	
			Dr. S. Karuppannan	
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.	G. Gopala Krishnan	
			G. Uma Maheswaran	
			Dr. M. Vijay Prabhu	
			Dr. S. Karuppannan	
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 per IUCN list. - Impact of the project on flora and fauna. - Suggesting species for greenbelt	Dr. J. Rajarajeshwari	

		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.	Dr. S. Karuppannan	
			G. Uma Maheswaran	
			Dr. M. Vijay Prabhu	
9	NV	○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP.	Dr. R. Arun Balaji	
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. J. Rajarajeshwari	
			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	

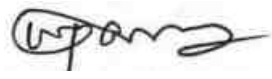
List of Functional Area Associate Engaged in this Project

S.No.	Name	Functional Area	Involvement	Signature
1	G. Prithiviraj	LU, HG	○ Site visit with FAE ○ Provide inputs & Assisting FAE for LU and HG	

2	C. Kumaresan	NV	○ Assistance to FAE in both primary and secondary data collection ○ Assistance in noise prediction modelling	
3	P. Vellaiyan	HG & GEO	○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection	
4	S.Vasugi	AQ	○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection	
5	P.Dhatchayini	AQ	○ Site visit with FAE ○ Assistance to FAE in collection of both primary and secondary data	
6	V.Malavika	NV, SHW	○ Site visit along with FAE ○ Assistance in report preparation	

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.Rathnavelu** rough stone and gravel quarry project with the extent of 0.89.50 ha located within the cluster of **12.14.00** ha in Magaral-B Villages of Walajabad Taluk, Kancheepuram 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 : Valid till 31.12.2026



File No: 10707
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 14/05/2024



To,

SIVASWAMY RATHNAVELU
SIVASWAMY RATHNAVELU
S.Rathnavelu, S/o R.Sivaswamy, Old No.5, New No.2/33, Bhuvaneswari Nagar, 1st Street,
Gowrivakkam, Chennai - 600073, Gowrivakkam, CHENNAI, TAMIL NADU, 600073
rathnavelu.magalar@gmail.com

Subject: Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project rough stone and gravel quarry at S.F. No : 700/1 (Part) over an extent of 0.89.5Ha lease Magaral B Village Kanchipuram District submitted to Ministry vide proposal number SIA/TN/MIN/459512/2024 dated 02/04/2024.

Ref: 1. Online Proposal No. SIA/TN/MIN/459512/2024, dated: 25.01.2024
2. Your application submitted for Terms of Reference dated: 19.02.2024

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5967835N
(ii) File No.	10707
(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	Magaral B Village rough stone and gravel quarry lease
(viii) Name of Company/Organization	SIVASWAMY RATHNAVELU
(ix) Location of Project (District, State)	KANCHIPURAM, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 03/05/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B, Part C EIA, EMP)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference 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).
6. 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 State Environment Impact Assessment Authority(SEIAA) Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of M/s. SIVASWAMY RATHNAVELU under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference 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.
9. This issues with the approval of the Competent Authority.
10. 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.
- 11.

Copy To

1. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Chairperson, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Kancheepuram District.
7. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Standard Conditions:

S. No	Terms of Reference
1.1	Cluster Management Committee

S. No	Terms of Reference
	1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. 2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., 3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines. 4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network. 5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. 6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail. 7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. 8. The committee shall furnish the Emergency Management plan within the cluster. 9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public. 10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety. 11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents. Impact study of mining 12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following a) Soil health & soil biological, physical land chemical features . b) Climate change leading to Droughts, Floods etc. c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people. d) Possibilities of water contamination and impact on aquatic ecosystem health. e) Agriculture, Forestry & Traditional practices. f) Hydrothermal/Geothermal effect due to destruction in the Environment. g) Bio-geochemical processes and its foot prints including environmental stress. h) Sediment geochemistry in the surface streams. Agriculture & Agro-Biodiversity 13. Impact on surrounding agricultural fields around the proposed mining Area. 14. Impact on soil flora & vegetation around the project site. 15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP. 16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. 17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. 18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock. Forests 19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife. 20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic,

S. No	Terms of Reference
	vulnerable and endangered indigenous flora and fauna. 21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection. 22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site. Water Environment 23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. 24. Erosion Control measures. 25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. 26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities. 28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts. 29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components. 30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites. Energy 31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. Climate Change 32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. 33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock. Mine Closure Plan 34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. EMP 35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued. 36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan. Risk Assessment 37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. Disaster Management Plan 38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. Others

S. No	Terms of Reference
	39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. 40. 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. 41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
1.2	<u>SEIAA SPECIF CONDITIONS:</u> After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) for the quantity of 2,32,619 m³ of Rough Stone and 18,009 m³ of Gravel up to the ultimate depth of 50m below ground level and the annual peak production should not exceed 52,759 m³ of Rough Stone, along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	1. The Proponent shall furnish a comprehensive EIA study involving the environmental impacts including air pollution, water pollution, etc., carried out by the Centre for Climate Change, Anna University Chennai for all the existing quarries situated within 1 Km radius from the proposed site along with the mitigation measures, during the EIA appraisal. 2. The PP shall carry out a comprehensive study indicating the Travelling route used for quarry operation, Crusher activity as proposed pertaining to the traffic surveys and Axle load surveys and demand forecasting for the next 10 years in the cluster area including the Traffic Volume, Identification of possible improvements in the existing alignment and bypassing congested locations with alternatives, investigation of required sub-grade and sub-soil characteristics and strength for road and embankment design and sub soil investigation, identification of sources of construction material, etc along with mitigation measures by involving anyone of these reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, IIT (ISM)/Dhanbad, IIT-Madras, and Division of Transport Studies, Anna University Chennai-CEG Campus. Further, the study shall also consider the local and slow traffic which may need segregation from the main traffic and provision of service roads (or) physical barrier including fencing, wherever necessary to improve efficiency and safety, particularly the trucks plying through the schools/hospitals/villages. 3. The Proponent shall study about the addition of proposed quarrying operation in the existing cluster over the economic growth of the area falling within 10 km from the cluster of mines. 4. The PP shall ensure that the venue of the Public Hearing meeting to be carried out by TNPCB, is preferably in Magaral B Village, Walajabad Taluk, Kancheepuram District (or) within the limits as specified in the EIA Notifications. 5. The PP shall submit the Certified Compliance Report (CCR) obtained from IRO(SZ), MoEF&CC with the status of non-compliance, and to furnish mitigation measures/remedial action plan with the budget allocation for the non-compliance stated in the CCR. 6. The PP shall complete the fencing, tree plantation and photographs, videos of the same shall be furnished. 7. The PP shall mark the DGPS reference pillars painted with blue & white colour indicating the

S. No	Terms of Reference
	safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds, and provide the details during the EIA appraisal. 8. The Proponent shall complete the garland drainage around the boundary of the proposed quarry and the photographs indicating the same shall be shown during the EIA appraisal. 9. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry. 10. The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path. 11. 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 with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, Schools/Colleges 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. 12. The proponent shall furnish photographs and video showing the 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. 13. During the EIA appraisal, the PP shall furnish the affidavit stating that he will not employ any external agency for carrying out the blasting operation in the proposed quarry and he shall also install the temporary (or) permanent magazine approved by the concerned licensing authority before the execution of the lease, for storing the authorized explosives & detonators separately in accordance with the Explosive Rules, 2008. 14. During the EIA appraisal, the PP shall furnish the affidavit stating that he will appoint a First Class/Second Class Mine Manager for managing the quarrying operations before obtaining the CTO from the TNPCB. Further, the PP will also send the 'Notice of Opening' indicating the appointment of such Statutory officials and the proposed usage of HEMM shall be sent to the Director of Mines Safety, Chennai Region of the Mine under the provisions of MMR 1961 atleast 30 days before the commencement of the mining operation after the execution of lease, if the EC is granted. 15. Since the cluster of mines are situated within a radial distance of 500 m, the PP shall carry out the scientific studies to design the controlled blast parameters for reducing the cumulative blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations carried out in the cluster of quarries located in the region, and subsequently with proper validation of the design through trial blasts in any of the existing & operating quarries to monitor the PPV produced from the blasting at 300m, 500m, after obtaining the prior permission from the DMS / Chennai Region in accordance with DGMS Circular No. 7 of 1997, by involving anyone of these reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, IIT (ISM)/Dhanbad, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. Further the report shall also include the actual data on the air dust particles produced at the time of blasting. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, as a part of EIA study during the appraisal without any deviation. 16. The PP shall prepare the Standard Operating Procedures (SoP) for carrying out the 'Best Mining Practices' in the areas of drilling, blasting excavation, transportation and green belt development and provide the same during the EIA appraisal. 17. 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.

3. Seac Standard Conditions

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

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

S. No	Terms of Reference
	court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible. 32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner 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

S. No	Terms of Reference
	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	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details

S. No	Terms of Reference																																																
	of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.																																																
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.																																																
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.																																																
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																																																
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights <table><tr><th>S.N</th><th>ML/Project Land use</th><th>Area under Surface Rights(ha)</th><th>Area Under Mining Rights(ha)</th><th>Area under Both (ha)</th></tr><tr><td>1</td><td>Agricultural land</td><td></td><td></td><td></td></tr><tr><td>2</td><td>Forest Land</td><td></td><td></td><td></td></tr><tr><td>3</td><td>Grazing Land</td><td></td><td></td><td></td></tr><tr><td>4</td><td>Settlements</td><td></td><td></td><td></td></tr><tr><td>5</td><td>Others (specify)</td><td></td><td></td><td></td></tr></table> <table><tr><th>S.N.</th><th>Details</th><th>Area (ha)</th></tr><tr><td>1</td><td>Buildings</td><td></td></tr><tr><td>2</td><td>Infrastructure</td><td></td></tr><tr><td>3</td><td>Roads</td><td></td></tr><tr><td>4</td><td>Others (specify)</td><td></td></tr><tr><td></td><td>Total</td><td></td></tr></table>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the																																																

S. No	Terms of Reference
	State Govt. should also be obtained and furnished.
1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be

S. No	Terms of Reference
	provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.

S. No	Terms of Reference
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.38	Corporate Environment Responsibility:
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.
1.43	e) Environment Managament Cell and its responsibilities to be clearly spleel out in EIA/ EMP report
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.
1.48	Details on the Forest Clearance should be given as per the format given: Total ML Total Date Extent of Balance area for which Status of appl For

S. No	Terms of Reference
	Project Area Forest of FC Forest Land FC is yet to be diversion of forest (ha) land (ha) obtained land If more than one provide details of each FC
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.

From

To

A.Arumuganainar, M.Sc.,
Assistant Director (i/c),
Dept. of Geology and Mining,
Kancheepuram.

Thiru. S. Rathnavelu,
S/o. R. Sivaswamy,
Old No.5, New No. 2-33,
Bhuvaneswari Nagar,
Gowrivakkam,
Chennai-73.

Rc.No.311/Q3/2023, Dated.26.11.2023

Sir,

Sub: Mines & Minerals – Minor Mineral – Rough stone -
Kancheepuram District – Walajabad Taluk – Magaral
'B' Village - S.F. No.700/1 (P)- over an extent of
2.18.50 Hectares – area for which permission is
requested 0.89.50 Hectares of patta land – Quarry
lease application preferred by Thiru. S. Rathnavelu
S/o. R. Sivaswamy – Details of quarries situated within
500 meter radial distance – furnished - reg.

- Ref: 1. Precise are notice issued by the Assistant
Director, Geology and Mining, Kancheepuram
in Rc.No.311/Q3/2023, dated.09.11.2023.
2. Representation of Thiru. S. Rathnavelu S/o.
R. Sivaswamy dated.21.11.2023.

With reference to your letter in the reference 2nd cited, the details
of existing, proposed and abandoned quarries located within 500
meter radius from the proposed Rough Stone quarry, over an extent of
2.18.50 Hectares, area for which permission is requested 0.89.50
Hectares of patta land in S.F. No.700/1 (P) of Magaral 'B' Village,
Walajabad Taluk, Kancheepuram District are as follows.

1. Existing quarries:

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Village & Taluk	S.F. Nos.	Extent (in hecets)	Lease period
1.	S. Rathnavelu, S/o.R. Sivaswamy, Old No. 44, New No.2/33, Bhuvaneswari Nagar, 1st street, Gowrivakkam, Chennai - 73.	Roughstone & Gravel	Walajabad, Magaral-B	700/1(P), 700/2	2.34.50	23.01.2019 To 22.01.2024

2.	R.Sankar, S/o. S. Raman, No.232, Chenjiyammam Kovil Street, Chithalappakkam Village, Vembakkam Taluk, Tiruvannamalai District - 631702	Roughstone & Gravel	Walajabad Magaral-B	636/1C1, 636/2B, 636/2C, 636/2D, 636/2E, 641/1, 646/1B1, 646/1B2	2.84.50	09.02.2023 To 08.02.2028 (5 Years)
3.	S. Karunanidhi, S/o. Sadaiyan, No.171, Thottangulam Village, Walajabad Taluk, Kancheepuram District - 631603	Roughstone & Gravel	Walajabad, Magaral-B	694/3A, 694/3D, 694/3G, 694/3L, 694/3C, 694/3K, 694/3M, 683, 684/1, 684/2, 694/3B, 694/3J.	3.15.00	27.03.2023 To 26.03.2026 (3 Years)

II. Proposed Quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Village & Taluk	S.F. Nos.	Extent (in hecets)	Remarks
1.	S. Rathnavelu, S/o.R. Sivaswamy, Old No. 44, New No.2/33, Bhuvaneswari Nagar, Ist street, Gowrivakkam, Chennai - 73.	Roughstone & Gravel	Walajabad, Magaral-B	700/1(P), 700/2	0.89.50	Under Processing (Present Application)
2.	Thiru. D. Govindhasamy S/o. Desingu, No.288, Palla street, Chithalappakkam Village, Arasanipalaiyam Post, Vempakkam Taluk, Tiruvannamalai District	Roughstone & Gravel	Walajabad, Magaral-B	699/2, 699/3	2.90.50	Under Processing (Present Application)

III. Abandoned quarries :

Sl. No	Name of the lessee / permit holder	Name of the Mineral	Village & Taluk	S.F. Nos.	Extent (in hecets)	Lease period
1.	K.Samiyappan, S/o Kandasamy, No.11, 3rd East Street, Poonga Nagar, Sothupakkam, Cheyyur Taluk, Kancheepuram District- 603319	Roughstone & Gravel	Walajabad, Magaral-B	702/2	2.02.50	30.06.2018 To 29.06.2023

Assistant Director(i/c),
Geology and Mining,
Kancheepuram.



From

To

Thiru A. Arumuganainar, M.Sc.,
Assistant Director (i/c),
Dept. of Geology and Mining,
Kancheepuram.

Thiru S. Rathnavelu
S/o.R. Sivaswamy,
Old No.5, New No.2-33,
Bhuvaneswari Nagar,
Gowrivakkam, Chennai - 73.

Rc.No.311/Q3/2023, Dated 27.11.2023

Sir,

Sub: Mines and Quarries - Kancheepuram District - Walajabad Taluk - Magaral 'B' Village - S.F.No.700/1 (P) and 700/2 over an extent of 2.34.50 Hectares and S.F.No.700/1 (P) over an extent of 0.89.5 Hectares of patta land - Permission requested for Quarrying Rough stone and Gravel under rule 19(1) of Tamil Nadu Minor Mineral Concession Rules 1959 - applied by Thiru S. Rathnavelu, S/o R. Sivaswamy - Modified Mining Plan submitted - **Modified Mining Plan approved for Five years** - Instructed to obtain Environmental clearance from State Level Environment Impact Assessment Authority, Tamil Nadu - Reg.

- Ref: 1. Application of Thiru S. Rathnavelu, S/o.R. Sivaswamy, Old No.5, New No.2-33, Bhuvaneswari Nagar, Gowrivakkam, Chennai - 73.
2. Precise area notice issued by the Assistant Director, Geology and Mining, Kancheepuram in Rc.No.311/ Q3/ 2023, dated 09.11.2023.
3. Representation of Thiru S. Rathnavelu, S/o.R. Sivaswamy, dated 21.11.2023.
4. Precise area notice issued by the Assistant Director, Geology and Mining, Kancheepuram in Rc.No.311/Q3/2023, dated 22.11.2023.

In the reference 1st cited, one Thiru S. Rathnavelu, S/o.R. Sivaswamy, Old No.5, New No.2-33, Bhuvaneswari Nagar, Gowrivakkam, Chennai - 73, has applied for quarrying rough stone and gravel from S.F.No.700/1 (P) over an extent of 2.18.50 Hectares area for which permission is requested 0.89.50 Hectares of Magaral 'B' Village, Walajabad Taluk, Kancheepuram District, under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.



The mining plan submitted for the above reference 2nd cited was approved and subsequently the applicant communicated as per the reference 3rd cited requesting to submit the Modified mining prepared under the rule 56 act of Mineral Concession, rules 2016 and MM(D&R) act, 1956 to amalgamation of two mining leases held by Thiru S.Rathnavelu S/o.Sivasamy as per rule 19(1) of TNMMCR, 1959 for a grant of quarrying of rough stone and gravel in patta land at S.F.No's: 700/1 (Part) & 700/2, over an extent of 2.34.50 hectares and S.F.No. 700/1 (Part) over an extent of 0.89.5 hectares of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State.

In this regard, based on the recommendations of the Revenue Divisional Officer, Kancheepuram, Executive Engineer, Lower Palar Basin Division, Kancheepuram and inspection report submitted by the Assistant Geologist, Dept. of Geology and Mining, Kancheepuram, the above application was considered for quarrying Rough stone and Gravel from the above area under rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959 for a period of **Five years** subject to noted conditions and precise area has been communicated to the applicant vide reference 4th cited.

In exercise of the power delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the Modified Mining Plan submitted by Thiru S. Rathnavelu, S/o R. Sivaswamy, for the grant of lease to quarry Rough Stone and Gravel over an extent of 0.89.50 Hectares in S.F.No.700/1 (P) - Patta lands of Magaral 'B' Village, Walajabad Taluk, Kancheepuram District, the mineable reserves of Rough stone & Gravel after leaving safety distance is arrived as 2,32,619 M³ of Rough stone, 18009 M³ of Gravel for Five years upto depth of 50 meter (BGL). This approval is subject to the following conditions:-

- i. That the Modified Mining Plan is approved without prejudice to any other Law applicable to quarrying Rough stone and Gravel from time to time whether such laws are made by the Central Government / State Government or any other authority.



- ii. The approval of the Modified Mining Plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957 or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- iii. The Modified Mining Plan is approved without prejudice to any other order or direction from any Court of competent jurisdiction.
- iv. The applicant is directed to submit the application in Form - I as prescribed by the MoEF along with the approved Modified Mining Plan.
- v. Thiru S. Rathnavelu, S/o. Sivasamy, has applied for renewal of application under Rule 20(2) of Tamil Nadu Minor Mineral Concession Rules, 1959. Over an extent of 2.34.5 Hectares of patta land in S.F.No.700/1(P) and SF No .700/2. The applicant Thiru.S. Rathnavelu should get prior permission from Directorate General of Mines Safety regarding amalgamation of two quarry leases under the rule 56 of Mineral Concession Rules 2016.
- vi. Thiru S. Rathnavelu, S/o. Sivasamy, the lessee should obtain prior permission from Chief Inspector of Mines (also designated as Director General of Mines Safety) under the provisions of Regulations 111(3) of the Metalliferous Mines Regulations, 1961 to work the common boundary of two adjoining mining leases of Thiru S. Rathnavelu, S/o. Sivasamy.

Encl:- Approved Modified mining Plan


Assistant Director (i/c),
Geology and Mining,
Kancheepuram.





நக.எண்.311/க்யூ3/2023

உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.

நாள். 22.11.2023.

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சாதாரண கற்கள் மற்றும் கிராவல் மண் - காஞ்சிபுரம் மாவட்டம் - வாலாஜாபாத் வட்டம் - மாகரல் "ஆ" கிராமம் - புல எண்.700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க ஐந்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி-திரு. S. ரத்தினவேலு, த/பெ. சிவசுவாமி, என்பவர் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959, விதி எண்.19(1)-ன் கீழ் மனு செய்தது - தகுதி வாய்ந்த நிலப்பரப்பாக தெரிவிக்கப்பட்டது. - மாற்றியமைக்கப்பட்ட சுரங்கத் திட்டம் சமர்ப்பிக்க கோருவது - தொடர்பாக.

1. திரு.S. ரத்தினவேலு, த/பெ.R. சிவசுவாமி, பழைய எண்.5, புதிய எண்.2/33, புவனேஸ்வரி நகர், 1வது தெரு, கௌரிவாக்கம், சென்னை - 73, என்பவரின் மனு நாள்.16.08.2023.
2. காஞ்சிபுரம் வருவாய் கோட்ட அலுவலர் அறிக்கை எண்.ந.க.971/2018/அ1, நாள்.05.06.2018.
3. இவ்வலுவலக அறிவிக்கை இதே எண்ணிட்டது நாள் 09.11.2023.
4. இவ்வலுவலக கடிதம் இதே எண்ணிட்டது (சுரங்கத்திட்டம் ஒப்புதலளிக்கப்பட்டது) நாள் 20.11.2023.
5. திரு.S. ரத்தினவேலு, த/பெ.R. சிவசுவாமி என்பவரின் மனு நாள் 21.11.2023.
6. மற்றும் தொடர்புடைய ஆவணங்கள்.

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண்.700/1 (P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க



திரு.S. ரத்தினவேலு, த/பெ.R. சிவசுவாமி, என்பவர் ஐந்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளார்.

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராம புல எண்கள்.700/1(P) (1.29.00), 700/2 (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 23.01.2019 முதல் 22.01.2024 வரை ஐந்து ஆண்டுகள் அனுமதி வழங்கப்பட்டு அதனடிப்படையில் குவாரிப்பணி செய்து வருகின்றனர். மேலும் விண்ணப்பதாரர் தான் அனுமதி பெற்று நடத்தி வரும் மேலே குறிப்பிட்ட குவாரியை மேலும் 5 ஆண்டுகள் அதாவது 22.1.2029 வரை நீட்டித்து அனுமதி வழங்க விண்ணப்பம் செய்துள்ளார். இந்நிலையில் மேற்படி புல எண்.700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் 1.29.00 ஹெக்டேர் பரப்பில் குவாரிப்பணி செய்ய அனுமதி வழங்கியது போக மீதமுள்ள 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க ஐந்து ஆண்டுகளுக்கு அனுமதி கோரி பார்வை 1-ல் காணும் கடிதத்தில் விண்ணப்பதாரர் மனு செய்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்ந்து காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், செயற் பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடிநிலக்கோட்டம், காஞ்சிபுரம் மற்றும் காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் மேற்காணும் விண்ணப்ப புலத்தில் தணிக்கை மேற்கொண்டு, காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண்.700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பளவில் குவாரி அனுமதி வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்பப் புலங்களுக்கு அருகிலுள்ள அரசு புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.

2. பொது மக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்பப் புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-ல் 10 மீட்டர் இடைவெளி விட வேண்டும்.
4. விண்ணப்பப் புலங்களுக்கு வடகிழக்கு பகுதியில் உள்ள தாழ் மின்னழுத்த கம்பியை அகற்ற வேண்டும் (அ) உரிய பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி செய்ய வேண்டும்.
5. மேய்க்கால் அரசு புறம்போக்கு புல எண்.695 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.
6. செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடிநிலக்கோட்டம், காஞ்சிபுரம், அவர்களின் நிபந்தனைகளை தவறாது கடைபிடிக்க வேண்டும்.
7. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959, விதி எண்.41-ன்படி விண்ணப்ப புலங்களுக்கு வரைவு சுரங்கத்திட்டம் (Mining Plan) ஒப்புதல் பெற சமர்ப்பிக்கப்பட வேண்டும்.
8. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959, விதி எண்.42-ன்படி விண்ணப்பப் புலத்திற்கு மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் சுற்றுச்சூழல் ஒப்புதல் (Environment Clearance) பெற்று சமர்ப்பிக்கப்பட வேண்டும்.

எனவே, காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடிநிலக்கோட்டம், காஞ்சிபுரம் மற்றும் காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் ஆகியோரின் பரிந்துரையின் அடிப்படையில், காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண்.700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் பரப்பளவில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க ஐந்து வருட காலத்திற்கு குத்தகை உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக திரு.S. ரத்தினவேலு, த/பெ.ர. சிவசுவாமி, என்பவருக்கு பார்வை 3-ல் கண்ட தெரிவிக்கப்பட்டது அதன்படி சுரங்க திட்டமும் பார்வை 4-ல் கண்டபடி ஒப்புதலளிக்கப்பட்டது



பார்வை 5ல் கண்ட மனுதாரரின் கடிதத்தில் தான் ஏற்கனவே 2.34.5 எக்டேர் பரப்பில் நடத்தி வரும் குவாரி மற்றும் புதிதாக விண்ணப்பித்துள்ள 0.89.5 எக்டேர் பரப்பிற்கான குவாரி, ஆக இரண்டிற்கும் உள்ள பொது எல்லைகளை ஒருங்கிணைத்து சுரங்க பணி செய்ய அனுமதி கோரியுள்ளார்.

எனவே குவாரி அனுமதி வழங்குவது தொடர்பாக விண்ணப்பதாரருக்கு ஏற்கனவே 2.34.5 எக்டேர் பரப்பில் நடத்தி வரும் குவாரி மற்றும் புதிதாக விண்ணப்பித்துள்ள 0.89.5 எக்டேர் பரப்பிற்கான குவாரி, ஆக இரண்டிற்கும் உள்ள பொது எல்லைகளை ஒருங்கிணைத்து சுரங்க பணி செய்யும் விதமாக மாற்றி அமைக்கப்பட்ட வரைவு சுரங்க திட்டத்தை (modified mining plan) மூன்று மாத காலத்திற்குள் உதவி இயக்குநர் முன்பு சமர்ப்பித்து ஒப்புதல் பெறவும் குவாரி உரிமம் பெறுவது தொடர்பாக மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) இசைவினை பெற்று சமர்ப்பிக்கவும் அறிவுறுத்தப்படுகிறது.


உதவி இயக்குநர் (பொ),
புவியியல் மற்றும் சுரங்கத்துறை,
காஞ்சிபுரம்.

பெறுநர்



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அறிவிக்கை

பொருள் : கனிமங்களும் குவாரிகளும் - சாதாரண கற்கள் மற்றும் கிராவல் மண் - காஞ்சிபுரம் மாவட்டம் - வாலாஜாபாத் வட்டம் - மாகரல் "ஆ" கிராமம் - புல எண்.700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க ஐந்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி -திரு. S.ரத்தினவேலு த/பெ. சிவசுவாமி என்பவர் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண். 19(1) - ன் கீழ் மனு செய்தது - தகுதி வாய்ந்த நிலப்பரப்பாக தெரிவித்தல் - தொடர்பாக.

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காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண். 700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி என்பவர் ஐந்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரி விண்ணப்பித்துள்ளார்.

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராம புல எண்கள்.700/1(P) (1.29.00), 700/2 (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 23.01.2019 முதல் 22.01.2024 வரை ஐந்து ஆண்டுகள் அனுமதி வழங்கப்பட்டு அதனடிப்படையில் குவாரிப்பணி செய்து வருகின்றனர். இந்நிலையில் மேற்படி புல எண்.700/1(P) - ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் 1.29.00 ஹெக்டேர் பரப்பில் குவாரிப்பணி செய்ய அனுமதி வழங்கியது போக மீதமுள்ள 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க மூன்று ஆண்டுகளுக்கு அனுமதி கோரி பார்வை 4-ல் காணும் கடிதத்தில் விண்ணப்பதாரர் மனு செய்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக காஞ்சிபுரம் வருவாய் கேள்டாட்சியர், செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடநிலக்கோட்டம், காஞ்சிபுரம் மற்றும் காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் மேற்காணும் விண்ணப்ப புலத்தில் தணிக்கை மேற்கொண்டு, காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண். 700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பளவில் குவாரி அனுமதி வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்பப் புலங்களுக்கு அருகிலுள்ள அரசு புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-ல் 10 மீட்டர் இடைவெளிவிடவேண்டும்.
4. விண்ணப்பப் புலங்களுக்கு வடகிழக்கு பகுதியில் உள்ள தாழ்மின்னழுத்த கம்பியை அகற்ற வேண்டும் (அ) உரிய பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி செய்ய வேண்டும்.
5. மேய்க்கால் அரசு புறம்போக்கு புல எண்.695 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.
6. செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடநிலக்கோட்டம், காஞ்சிபுரம் அவர்களின் நிபந்தனைகளை தவறாது கடைபிடிக்க வேண்டும்.



7. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்.41-ன்படி விண்ணப்ப புலங்களுக்கு வரைவு சுரங்கத்திட்டம் (Mining Plan) ஒப்புதல் பெற சமர்ப்பிக்கப்பட வேண்டும்.
8. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்.42-ன்படி விண்ணப்ப புலத்திற்கு மாநில அளவிலான சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் சுற்றுச்சூழல் ஒப்புதல் (Environment Clearance) பெற்று சமர்ப்பிக்கப்பட வேண்டும்.

எனவே, காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடிநிலக்கோட்டம், காஞ்சிபுரம் மற்றும் காஞ்சிபுரம் புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் ஆகியோரின் பரிந்துரையின் அடிப்படையில் காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண். 700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பில் பரப்பளவில் சாதாரண சுற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க மூன்று வருட காலத்திற்கு குத்தகை உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி என்பவருக்கு தெரிவிக்கப்படுகிறது. மேலும் குவாரி அனுமதி வழங்குவது தொடர்பாக வரைவு சுரங்கத் திட்டத்தை (Mining Plan) மூன்று மாத காலத்திற்குள் உதவி இயக்குநர் முன்பு சமர்ப்பித்து ஒப்புதல் பெறவும் குவாரி உரிமம் பெறுவது தொடர்பாக மாநில சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) இசைவினை பெற்று சமர்ப்பிக்கவும் அறிவுறுத்தப்படுகிறது.


 உதவி இயக்குநர் (பொ),
 புவியியல் மற்றும் சுரங்கத்துறை,
 காஞ்சிபுரம்.

பெறுநர்

திரு. S.ரத்தினவேலு
 த/பெ. R. சிவசுவாமி, 45
 பழைய எண்.5, புதிய எண்.2/33,
 புலனேஸ்வரி நகர், 1வது தெரு,
 கௌரிவாக்கம், சென்னை - 73.

நகல்:-

- 1) தலைவர், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
- 2) ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை 600 032.



MODIFIED MINING



FOR MAGARAL-B VILLAGE ROUGH STONE AND GRAVEL MINING LEASE INCLUDING PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land/Opencast, Semi-Mechanized mining/non-forest/
Non-captive use 'B2' Category

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

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
DISTRICT : KANCHEEPURAM
TALUK : WALAJABAD
VILLAGE : MAGARAL-B
S.F. NO's : 700/1 (Part) and 700/1(Part) & 700/2
EXTENT : 3.24.0Hect (0.89.5Hect + 2.34.50Hect)

ADDRESS OF THE APPLICANTS

Mr.S.Rathnavelu,

S/o.R.Sivaswamy,
Old No.5, New No.2/33,
Bhuvaneswari Nagar, 1st Street,
Gowrivakkam,
Chennai District – 600 073.

PREPARED BY

Dr.S.KARUPPANNAN.M.Sc., Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO Certified Company)

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

Oddapatti, Collectorate Post office,

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Mob. : +91 9443937841, +917010076633,

E-mail: info.gtmsdpi@gmail.com ,

Website: www.gtmsind.com



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ANNEXURES

Sl. No.	Description	Annexure No.
1.	Copy of Precise area Communication letter (Lease -I)	I
2.	Copy of previous lease particulars (Lease -II) a. Copy of Environmental clearance b. Copy of District Collector proceeding letter c. Copy of lease execution deed	
3.	Copy of WRD letter	II
4.	Copy of FMB (Field Measurement book)	III
5.	Copy of "A" registered	IV
6.	Copy of computer Chitta and Adangal	V
7.	Photocopy of the lease area	VI
8.	Copy of ID Proof of the authorized signature	VII
9.	Copy of RQP Certificate	VIII



LIST OF PLATES

Sl. No.	Description	Plate No.	Scale
1	Key Map	I	Not to scale
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7	Surface & Geological plan	III	1:1000
8	Geological Sections	IIIA	Section HOR 1:1000 VER 1:500
9	Year wise Development & Production plan	IV	1:1000
10	Year wise Development & Production Sections	IVA	Section HOR 1:1000 VER 1:500
11	Mine layout plan and land use pattern	V	1: 1000
12	Conceptual plan	VI	1:1000
13	Conceptual sections	VIA	Section HOR 1:1000 VER 1:500

[Signature]



Mr.S.Rathnavelu,
S/o.R.Sivaswamy,
Old No.5, New No.2/33,
Bhuvaneswari Nagar, 1st Street,
Gowrivakkam,
Chennai District – 600 073.

CONSENT LETTER FROM THE LESSEE

The Modified Mining Plan for amalgamation in respect of rough stone and gravel quarry lease in patta land at S.F.No's: 700/1 (Part) and 700/1(Part) & 700/2, over an extent of 3.24.0Hect (0.89.5Hect + 2.34.50hect) of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State has been prepared by

Dr.S.KARUPPANNAN. M.Sc., Ph.D. (Reg.No. RQP/MAS/263/2014/A)

I request the **Assistant Director (i/c), Department of Geology and Mining, Kancheepuram District** to make further correspondence regarding modifications of the scheme of mining with the said Recognized Qualified Person on this following address.

Dr. S. KARUPPANNAN. M.Sc., Ph.D.
(Regn. No. RQP/MAS/263/2014/A)
GEO TECHNICAL MINING SOLUTIONS
(A NABET accredited & ISO certified Company)
No: 1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office, Dharmapuri-636705
Ph: +91 9443937841, +91 7010076633
E-mail: info.gtmsdpi@gmail.com,
Website: www.gtmsind.com

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

Place: Kancheepuram, TN

Date:


Signature of the applicant
(S.Rathnavelu)





Mr.S.Rathnavelu,
S/o.R.Sivaswamy,
Old No.5, New No.2/33,
Bhuvaneswari Nagar, 1st Street,
Gowrivakkam,
Chennai District – 600 073.

DECLARATION

The Modified Mining Plan for amalgamation in respect of rough stone and gravel quarry lease in patta land at S.F.No's: 700/1(Part) and 700/1(Part) & 700/2, over an extent of 3.24.0Hect (0.89.5Hect + 2.34.50hect) of Magaral-B Village, Walajabad Taluk, Kancheepuram 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: Kancheepuram, TN

Date:

Signature of the applicant
(S.Rathnavelu)



Dr. S. KARUPPANNAN, M.Sc., Ph.D.

(Regn. No. RQP/MAS/263/2014/A)

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E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com

CERTIFICATE

This is to certify that, the provisions of 19(1) of Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Modified Mining Plan for amalgamation of rough stone and gravel quarry lease in patta land at S.F.No's: 700/1 (Part) and 700/1(Part) & 700/2 over an extent of 3.24.0Hect (0.89.5Hect + 2.34.50hect) of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State prepared to **Mr.S.Rathnavelu**, Kancheepuram.

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: Dharmapuri, TN

Date:

Signature of the Recognized Qualified Person

DR. S. KARUPPANNAN, M.Sc. Ph.D.

Regn. No. RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

1/213-B, Ground Floor, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri

Kancheepuram District, Tamil Nadu State

Dr. S. KARUPPANNAN. M.Sc., Ph.D.

(Regn. No. RQP/MAS/263/2014/A)

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E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com



CERTIFICATE

Certified that, in preparation of Modified Mining Plan for amalgamation of rough stone and gravel quarry lease in patta land at S.F.No's: 700/1 (Part) and 700/1(Part) & 700/2, over an extent of 3.24.0Hect (0.89.5Hect + 2.34.50hect) of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State prepared to **Mr. S.Rathnavelu** Kancheepuram, 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: Dharmapuri, TN

Date:

Signature of the Recognized Qualified Person

Dr. S. KARUPPANNAN, M.Sc., Ph.D.

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

1/213-B, Ground Floor, Natesan Complex

Collectorate Post Office, Oddapatti,

Dharmapuri-636705, Tamil Nadu, India

MODIFIED MINING



FOR MAGARAL-B VILLAGE ROUGH STONE AND GRAVEL MINING LEASE INCLUDING PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land / Opencast, Semi-Mechanized mining / non-forest /
Non-captive use 'B2' Category

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

INTRODUCTORY NOTES:

- a) **Lease particulars:** The applicant Mr. S.Rathnavelu S/o. R.Sivaswamy residing at Old No.5, New No.2/33, Bhuvaneswari Nagar, , 1st Street, Gowrivakkam, Chennai District – 600 073, Tamil Nadu State and the District Collector, Kancheepuram, has granted a quarry lease for a period of 5 years from 23.01.2019 - 22.01.2024 in favor of Mr.S.Rathnavelu to quarrying rough stone and gravel in patta land at S.F.No's: 700/1(Part) & 700/2 over an extent of 2.34.50hectares of Magaral-B Village, Walajabad Taluk, Kacheepuram District, Tamil Nadu State vide the District Collector, Kacheepuram proceedings Rc.No.195/Q3/2018 dated: 23.01.2019.
- The applicant filed an application for new proposals has submitted to the Assistant Director (i/c)", Department of Geology and Mining, Kancheepuram dated 16.08.2023 had requested to grant the quarry lease for rough stone and gravel in S.F.No's: 700/1(Part), over an extent of 0.89.5hectares of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State and his precise area communication letter Roc. No. 311/Q3/2023 Dated: 09.11.2023.
- b) **Previous mining plan approved & EC:** The Mining plan was prepared as per precise area communication letter Rc.No.195/Q3/2018 Dated: 31.07.2018 and got approved by the Assistant Director, Department of Geology and Mining, Kancheepuram letter vide Roc.No.195/Q3/2018 dated 21.08.2018 and Environmental Clearance was obtained from the District level Environmental Impact Assessment Authority (DEIAA), Tamilnadu vide Lr.No.DEIAA-DIA/TN/MIN/195/Q3/2018-KPM, Ec.No.27-2018, Dated:03.10.2018 (Ref. Annexure- I). The mining lease deed was executed on 23.01.2019 and the lease will be expiry on 22.01.2024 (Five years plan period).
- c) **Application to the proposed by the lessee for extension of lease period:** In order to prepare application for extension of quarry lease period as per G.O.(Ms). No.208, Industries (MMC-1) Department dated 21.09.2020 (Appendix-V) for the scheme



of mining has been prepared for the such lease granted area in as per District Collector, Kancheepuram proceeding letter no. **Rc.No.195/Q3/2018** dated: **23.01.2019**

- d) **Previous & Present existing pit dimensions:** During this, previous mining period the rough stone and gravel was exploited and there is existing pit was noticed with an average pit dimension as given under the table and the existing pit level marked in the surface, Geological plan (Ref Plate No: III). The gravel of 9288m³ was dumped in southwestern side.

Pit Level	Length in (m)	Width in (m)	Depth in (m)
Pit-I	170	6	3
Pit-II	114	5	5
Pit-III	30	23	5
Pit-IV	43	44	8
Pit-V	13	85	10
Pit-VI	87	14	15
Pit-VII	15	71	25
Pit-VIII	55	23	30
Pit-IX	78	80	35

- e) **Previous approved quantity and achieved quantity:** As per the previous approved Mining plan, the proposed quantity was at 395712m³ of rough stone and 56088m³ of gravel up to a depth of 50m below ground level. The details of approved and achieved production in the below,

S.No	Year	Approved Quantity (m ³)		Achieved Quantity (m ³)	
		Rough stone	Gravel	Rough stone	Gravel
1	2018-2019	37392	56088	291600 as on date 15.11.2023	46800 as on date 15.11.2023
2	2019-2020	80080	---		
3	2020-2021	123960	---		
4	2021-2022	82360	---		
5	2022-2023	71920	---		
	Total	395712	56088	291600	46800

- f) **Preparation and submission of Modified mining:**

Accordingly, the Modified mining prepared under the rule 56 act of Mineral Concession, rules 2016 and MM(D&R) act, 1956 to amalgamation of two mining leases held by Mr.S.Rathnavelu S/o.Sivasamy as per rule 19(1) of TNMMCR, 1959 for a grant of quarrying of rough stone and gravel in patta land at S.F.No's: 700/1(Part) & 700/2, over an extent of 2.34.50hectares and S.F.No's: 700/1 (Part) over an extent of 0.89.5hectares of Magaral-B Village, Walajabad Taluk, Kancheepuram District, Tamil Nadu State vide the Assistant Director (i/c), Department of Geology and Mining, Kancheepuram.



g) **Geological resources and Mineable reserves:**

The above table said that the area was quarried by the same applicant in the previous lease period. Now, he does be continued for five years on the same area quarrying of further 50m depth for the lease area.

The updated 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 to calculate the volume of material up to the depth of 50m (R.L.74m-24m) below the ground level. The longitudinal and transverse cross sections were assigned by XY-AB & XY-CD, as respectively. Using the cross-sectional method, total reserve is estimated to be 889400m³ including the resources of safety zone, and gravel. Of which, rough stone is about 864248m³ and gravel is about 25152m³ (Refer Plate No. IIIA).

The updated mineable reserve is estimated to be 250628m³ by deducting the reserve safety zone, block in benches from the total Geological resources. Of which, rough stone is about 232619m³ and gravel is 18009m³ up to a depth of 50m below the ground level (R.L.74m-24m) (Refer Plate No.VIA) after leaving necessary safety distance from the lease boundary.

h) **Proposed Production Schedule:** Total proposed production of 250628m³. Of which, rough stone is about 232619m³ and gravel is about 18009m³ up to a depth of 50m below the ground level (R.L.74m-24m) for five years plan period. Average production is 46524m³ of rough stone per year (Refer Plate No. IVA)

i) **Environmental Sensitivity of the periphery of proposed lease area: -**

1. **Interstate Boundary:** No interstate boundary around 10Km radius periphery of proposed lease area.
2. **Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.
3. **Indian Reserve Forest Act, 1980:** There is no reserve forest within the radius of 1.0km. The Nearest Reserve Forest Marudham R.F- 7.16Km – Southeast Side.
4. **CRZ Notification, 2019:** There is no Sea coastal zone found around 10km radius and this project site doesn't attract CRZ Notification, 2019.



5. Solid Waste Management Rules, 2016: The Bay of Bengal is situated about 51.7km away on the Eastern side and this project site doesn't attract Notification, 2019.

6. Explosive Rule, 2008: No storage of explosives proposed in the lease area.

7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958:
No archeological monuments within 1km radius from the lease area.

1.0 GENERAL:

a.	Name of the Applicant	Mr.S.Rathnavelu,
	Applicant address	: S/o.R.Sivaswamy, Old No.5, New No.2/33, Bhuvaneswari Nagar, 1st Street, Gowrivakkam,
	District	: Chennai
	State	: Tamil Nadu
	Pin code	: 600 073
	Phone	:
	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	: Lessee have requested to the Assistant Director (i/c), Department of Geology and Mining, Kancheepuram for deemed extend the lease period as per G.O.(Ms). No.208, Industries (MMC-1) Department dated 21.09.2020 for a period of another 5 years from the date of execution of lease deed.
e.	Name of the QP preparing the Mining Plan/Scheme of mining	: Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,
	Address	: GEO TECHNICAL MINING SOLUTIONS (A NABET Accredited & ISO Certified Company) No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti,



		Collectorate Post office, Dharmapuri-636705 Website: www.gtmsind.com
	Phone	: +91 9443937841, 7010076633
	Fax	: Nil
	e-mail	: info.gtmsdpi@gmail.com
	Telex	: Nil
	Certificate Number	: RQP/MAS/263/2014/A
	Date of grant/renewal	: 16.12.2014
	Valid upto	: 15.12.2024
f.	Name of the prospecting agency	Geo Technical Mining Solutions GSR 286(E) No:272, Ministry of Mines Notification 7th April 2022.
	Address	No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Web site: www.gtmsind.com Phone: +91 9443937841, 7010076633
g.	Reference No. and date of consent letter from the state government	The precise area communication letter issued by the Assistant Director (i/c), Department Geology and Mining, Kancheepuram was received vide Roc. No. 311/Q3/2023 Dated: 09.11.2023 District Collector, Kancheepuram proceeding letter no. Rc.No.195/Q3/2018 dated: 23.01.2019

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:		:	Refer plate no: IA & IB		
	District & State		:	Kancheepuram, Tamil Nadu		
	Taluk		:	Walajabad		
	Village		:	Magarai-B		
	Khasra No./ Plot No./ Block Range /Felling Series etc.					
Survey No.	Sub division	Total Extent in Hect	Patta No.	Name of the Land Owner	Mine lease Applied S.F. No.	Mine lease Applied Area out of total area in hect.
700	1	2.18.50	545	Mr.S.Rathnavelu S/o.R.Sivaswamy	700/1(Part)	0.89.5
					700/1(Part)	1.29.00
700	2	1.05.50	546		700/2	1.05.50
Total Extent		3.24.00		Applied lease area extent		3.24.0
Lease area (hectares)				:	3.24.0 Hectares	
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)				:	It is a Patta land	
Ownership / Occupancy				:	This is a Patta land S.F.No. 700/1(Part)	



		& 700/2 is registered on the name of Mr.S.Rathnavelu S/o.R.Sivaswamy as Patta no. 545 & 546. Hence the pattadhar given consent to the applicant. (Ref. Annex. No: IV & V).																								
Existence of Public Road / Railway line if any nearby and approximate distance		✓ Exploited rough stone and gravel materials will be transported to Southern side of the lease applied area. ✓ SH-118A road is situated at 2.20km away on eastern side of the lease area which is connecting Kancheepuram – Uthiramerur. ✓ There is no NH road situated around 5km radius from the site. ✓ No Railway line situated around 5km radius.																								
Toposheet No. with latitude and longitude		Toposheet No. 57 P/10 Latitude : From 12°43'32.72"N to 12°43'41.11"N longitude: From 79°43'55.53"E to 79°44'1.13"E																								
Geo-Coordinates of the lease boundary:																										
	<table border="1"> <thead> <tr> <th>S.No</th><th>LATITUDE</th><th>LONGITUDE</th></tr> </thead> <tbody> <tr><td>1</td><td>12°43'41.11"N</td><td>79°44'1.07"E</td></tr> <tr><td>2</td><td>12°43'32.72"N</td><td>79°44'1.13"E</td></tr> <tr><td>3</td><td>12°43'33.87"N</td><td>79°43'57.61"E</td></tr> <tr><td>4</td><td>12°43'34.77"N</td><td>79°43'55.53"E</td></tr> <tr><td>5</td><td>12°43'36.86"N</td><td>79°43'55.98"E</td></tr> <tr><td>6</td><td>12°43'38.51"N</td><td>79°43'56.34"E</td></tr> <tr><td>7</td><td>12°43'40.43"N</td><td>79°43'56.89"E</td></tr> </tbody> </table>	S.No	LATITUDE	LONGITUDE	1	12°43'41.11"N	79°44'1.07"E	2	12°43'32.72"N	79°44'1.13"E	3	12°43'33.87"N	79°43'57.61"E	4	12°43'34.77"N	79°43'55.53"E	5	12°43'36.86"N	79°43'55.98"E	6	12°43'38.51"N	79°43'56.34"E	7	12°43'40.43"N	79°43'56.89"E	
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Land use pattern (Forest, Agricultural, Grazing, Barren etc.)		It is an barren land not fit for cultivation																								
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</i>	Refer plate no-IA & IB																								



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) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance	Direction
a.	Nearest post office	Magaral	2.36Km	East
b.	Nearest police station	Magaral	2.32km	East
c.	Nearest fire station	Uthiramerur	14.04km	South
d.	Nearest medical facility	Chinna Elacheri	2.32km	West
e.	Nearest school	Magaral	1.96Km	East
f.	Nearest railway station	Walajabad	10.9km	Northeast
g.	Nearest port facility	Chennai	72.5km	Northeast
h.	Nearest airport	Chennai	55.9km	Northeast
i.	Nearest DSP office	Kancheepuram	11.25km	North
j.	Nearest villages	Suruttal	1.21km	North
		Magaral	2.2km	Southeast
		Sithalapakkam	0.95km	South
		Periya Elacheri	2.07km	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 applied lease area exhibits an almost flat topography and the maximum elevation (74m) north-south side of the site. There is previously partly exploited in this lease area with a reached depth of level is 35m. The slope is towards southeastern side and falls in Toposheet no. 57 P/10
(ii)	General Geology of the district: a) Geomorphology: The Kancheepuram area is endowed with a complex geological set up with crystalline rocks occurring in the southern part of the area and the northern part of the area the crystalline rocks occur at depths covered by sedimentary formations ranging from gondwana to recent. The depth at which the crystalline rocks occur progressively increase towards north. The eastern part comprises unconsolidated sediments of fluvio-marine and marine origin. The precambrian crystalline rocks are represented by charnockites and contain several enclave's mafic granulite. Garnetiferous and biotite gneisses are also encountered as linear bands. b) Soils: The analysis of the soil type reveals that the proposed lease area is predominantly covered by river alluvium is transported and is seen in coastal area c) Lineaments: he general trend of the gneiss is NE-SW direction and the regional trend observed is NNE-SSW to NW-SE direction. The deposition of gondwana rocks, the sedimentary rocks, in faulted troughs and in the rugged topography of crystalline rocks took place during jurassic period. The insitu soils laterites and alluvial deposits were deposited along the palar and cheyyar rivers during the quaternary period. The data have been checked by field studies and survey of India topographical maps at the 1: 50,000 scales.		

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Order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent	Alluvium and beach sands	Sand, gravel, silt and clay
Pleistocene	Laterite, soils, talus	Laterites, sandy clay, silt
-----Unconformity-----		
Lower Cretaceous to Jurassic	Sandstones & Shales	Fine to medium grained sand stone with clay intercalations of greenish soft shale
-----Unconformity-----		
Archaean	Crystalline formations	Charnockites, granites and associated basic and ultra-basic intrusive

(iii) Local / Mine Geology of The Mineral Deposit:
Topography of the proposed lease area:

The applied lease area exhibits an almost flat topography and the maximum elevation (74m) was observed in north-south side of the site. The present mining lease area located in the southern sloping flank of the deposit and with covered by lateritic soil. There is previously partly exploited in this lease area with a reached depth of level is 35m. The rocks exhibits layered, medium to coarse grained hornblende biotite, orthopyroxene charnockite gneiss.

Gravel is obtained about 0 - 3.0m (R.L. 74 - 71m), and a rough stone starts from 3.0 to 50m (R.L. 71-24m) from the below the ground level. The Surface plan showing elevation, contour, accessibility road and Geological map was prepared the proposed lease area

b). 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.

c). Physiography of the rocks:

Dark colour and clouding of the feldspars are typical features of these rocks as bluish in quartz.

d). Chemical composition of rocks:

Charnockite, any member of a series of metamorphic rocks with variable



chemical composition, the term is often limited to the characteristic orthopyroxene granite of the series. The alkali feldspar may be intermediate between microcline and orthoclase, the fine micro perthitic texture being common.

Order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent to sub recent	----	Fine to medium grained clayey soil
Archaean	Charnockite group	Charnockite.

(iv)	Drainage Pattern	:	There is no major river located within 500m radius. The drainage in the area is 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:	:	No exploration carried out. The lease area was presently operated quarrying of rough stone and gravel, Mr.S.Rathnavelu, over an extent of 2.34.50hectares for a period of 5 years from 23.01.2019 to 22.01.2024 and the deemed extend the lease period as G.O.(Ms). No.208, Industries (MMC-1) Department dated 21.09.2020 for a period of another 5years from the date of execution of lease deed.
	b. Surface Plan	:	Surface plan showing elevation, contours, existing pit level 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.

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- (d) *Broadly indicate the Year wise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below :-*

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 updated 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 section and two transverse sections to calculate the volume of material up to the depth of 50m (R.L.74m-24m) below the ground level. The longitudinal and transverse cross sections were assigned by XY-AB & XY-CD as respectively. Using the cross-sectional method, total reserve is estimated to be **889400m³** including the resources of safety zone, and gravel. Of which, rough stone is about **864248m³** and gravel is about **25152m³** (Refer Plate No. IIIA). The gravel is obtained about 0-3m and a rough stone starts from 3m to 50 (R.L.74-24m) below the ground level as respectively. (Refer plate no. IIIA).

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
XY-AB	I	58	134	3	23316	-----	23316
	I	58	134	2	15544	15544	-----
	II	58	134	5	38860	38860	-----
	III	58	134	5	38860	38860	-----
	IV	58	134	5	38860	38860	-----
	V	58	134	5	38860	38860	-----
	VI	58	134	5	38860	38860	-----
	VII	58	134	5	38860	38860	-----
	VIII	58	134	5	38860	38860	-----
	IX	58	134	5	38860	38860	-----
	X	58	134	5	38860	38860	-----
TOTAL					388600	365284	23316
XY-CD	I	12	51	3	1836	-----	1836
	I	21	57	2	2394	2394	-----
	II	54	64	5	17280	17280	-----
	III	54	75	5	20250	20250	-----
	IV	54	76	5	20520	20520	-----
	V	54	76	5	20520	20520	-----
	VI	64	76	5	24320	24320	-----
	VII	64	76	5	24320	24320	-----
	VIII	162	152	5	123120	123120	-----
	IX	162	152	5	123120	123120	-----
	X	162	152	5	123120	123120	-----
TOTAL					500800	498964	1836
GRAND TOTAL					889400	864248	25152



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

The updated mineable reserves is estimated to be **250628m³** by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth 50m (R.L. 74-24m) from the below the ground level. Of which, rough stone is about **232619m³** and gravel is **18009m³**. 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. VIA).

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
XY-AB	I	48	117	3	16848	.....	16848
	I	48	117	2	11232	11232 ✓	.....
	II	43	107	5	23005	23005 ✓	.....
	III	38	97	5	18430	18430 ✓	.....
	IV	33	87	5	14355	14355 ✓	.....
	V	28	77	5	10780	10780 ✓	.....
	VI	23	67	5	7705	7705 ✓	.....
	VII	18	57	5	5130	5130 ✓	.....
	VIII	13	47	5	3055	3055 ✓	.....
	IX	8	37	5	1480	1480 ✓	.....
	X	3	27	5	405	405 ✓	.....
TOTAL					112425	95577 ✓	16848 ✓
XY-CD	I	9	43	3	1161	.....	1161
	I	9	49	2	882	882 ✓	.....
	II	42	45	5	9450	9450 ✓	.....
	III	42	39	5	8190	8190 ✓	.....
	IV	42	34	5	7140	7140 ✓	.....
	V	42	29	5	6090	6090 ✓	.....
	VI	42	24	5	5040	5040 ✓	.....
	VII	42	19	5	3990	3990 ✓	.....
	VIII	117	67	5	39195	39195 ✓	.....
	IX	112	57	5	31920	31920 ✓	.....
	X	107	47	5	25145	25145 ✓	.....
TOTAL					138203	137042 ✓	1161
GRAND TOTAL					250628	232619 ✓	18009 ✓

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 methods 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 5m 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 of **250628m³**. Of which, rough stone is about **232619m³** and gravel is about **18009m³** up to a depth of 50m below the ground level (R.L. 74m-24m) for five years plan period. Average production is **46524m³** of rough stone per year (Refer Plate No. IVA)

Year	Pit No.(s)	Topsoll/Overburden (m ³)	ROM (m ³)	Saleable rough stone (m ³) @ 100%	Rough stone rejects(m ³)	Sub grade/ Weathered rock in (m ³)	Saleable Gravel (m ³)	Overburden / Rough stone ratio
I-Year	I	---	70768	52759	---	---	18009	---
II-Year	I	---	46015	46015	---	---	---	---
III-Year	I	---	45750	45750	---	---	---	---
IV-Year	I	---	44820	44820	---	---	---	---
V-Year	I	---	43275	43275	---	---	---	---
Total	---	---	250628	232619	---	---	18009	---

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

Composite plans and Yearwise sections (In case of 'B2' class quarry lease):

YEARWISE PRODUCTIONS								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volum e In M ³	Rough Stone in M ³	Gravel in M ³
I- YEAR	XY-AB	I	48	117	3	16848	.....	16848
		I	48	117	2	11232	11232	.....
		II	43	107	5	23005	23005	.....
	XY-CD	I	9	43	3	1161	.....	1161
		I	9	49	2	882	882	.....
		II	42	45	5	9450	9450	.....
		III	42	39	5	8190	8190	.....
TOTAL						70768	52759	18009
II- YEAR	XY-AB	III	38	97	5	18430	18430	.....
		IV	33	87	5	14355	14355	
	XY-CD	IV	42	34	5	7140	7140	
		V	42	29	5	6090	6090	
TOTAL						46015	46015	0

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	III- YEAR	XY-AB	V	28	77	5	10780	10780	
			VI	23	67	5	7705	7705	
		XY-CD	VI	42	24	5	5040	5040	
			VII	42	19	5	3990	3990	.....
		XY-AB	VII	18	57	5	5130	5130	.....
			VIII	13	47	5	3055	3055	.....
	XY-CD	VIII	30	67	5	10050	10050	.....	
	TOTAL						45750	45750	0
	IV- YEAR	XY-CD	VIII	87	67	5	29145	29145	.....
			IX	55	57	5	15675	15675	.....
	TOTAL						44820	44820	0
	V- YEAR	XY-CD	IX	57	57	5	16245	16245	.....
			IX	8	37	5	1480	1480	.....
		XY-AB	X	3	27	5	405	405	.....
XY-CD			X	107	47	5	25145	25145	.....
TOTAL						43275	43275	0	
GRAND TOTAL						250628	232619	18009	

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. . It is "B ₂ " category of mine.
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 for periods and production details are given as below: - <u>Rough stone:</u> Mineable reserves of rough stone = 232619m³ ✓ Production per Year = 46524m³ Monthly production of rough stone = 3877m³ Life of Mine (232619/3877) = 5 years <u>Gravel:</u> Mineable reserves of Gravel = 18009m³ ✓ The regular working of the quarry and its production depends upon the demand from the market. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated the life of quarry etc., are only a tentative figure.		
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 depth of 50m below the ground level (R.L.74-24m) 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.																																																																																																																																																																								
(ii)	Whether ultimate pit limit has been determined and demarcated on surface and geological plan:- The ultimate pit limit has been determined and demarcated at end of five years plan periods as given below	<table><tr><th colspan="6">ULTIMATE PIT – SECTION (XY-AB)</th></tr><tr><th>Bench</th><th>Bench R.L</th><th>Overburden/ Mineral</th><th>L (m)</th><th>W (m)</th><th>D (m)</th></tr><tr><td>I</td><td>R.L.74-71m</td><td>Gravel</td><td>48</td><td>117</td><td>3</td></tr><tr><td>I</td><td>R.L.77-69m</td><td>Rough stone</td><td>48</td><td>117</td><td>2</td></tr><tr><td>II</td><td>R.L.69-64m</td><td>Rough stone</td><td>43</td><td>107</td><td>5</td></tr><tr><td>III</td><td>R.L.64-59m</td><td>Rough stone</td><td>38</td><td>97</td><td>5</td></tr><tr><td>IV</td><td>R.L.59-54m</td><td>Rough stone</td><td>33</td><td>87</td><td>5</td></tr><tr><td>V</td><td>R.L.54-49m</td><td>Rough stone</td><td>28</td><td>77</td><td>5</td></tr><tr><td>VI</td><td>R.L.49-44m</td><td>Rough stone</td><td>23</td><td>67</td><td>5</td></tr><tr><td>VII</td><td>R.L.44-39m</td><td>Rough stone</td><td>18</td><td>57</td><td>5</td></tr><tr><td>VIII</td><td>R.L.39-34m</td><td>Rough stone</td><td>13</td><td>47</td><td>5</td></tr><tr><td>IX</td><td>R.L.34-29m</td><td>Rough stone</td><td>8</td><td>37</td><td>5</td></tr><tr><td>X</td><td>R.L.29-24m</td><td>Rough stone</td><td>3</td><td>27</td><td>5</td></tr><tr><td colspan="5">Total depth</td><td>50m</td></tr><tr><th colspan="6">ULTIMATE PIT – SECTION (XY-CD)</th></tr><tr><th>Bench</th><th>Bench R.L</th><th>Overburden/ Mineral</th><th>L (m)</th><th>W (m)</th><th>D (m)</th></tr><tr><td>I</td><td>R.L.74-71m</td><td>Gravel</td><td>9</td><td>43</td><td>3</td></tr><tr><td>I</td><td>R.L.77-69m</td><td>Rough stone</td><td>9</td><td>49</td><td>2</td></tr><tr><td>II</td><td>R.L.69-64m</td><td>Rough stone</td><td>42</td><td>45</td><td>5</td></tr><tr><td>III</td><td>R.L.64-59m</td><td>Rough stone</td><td>42</td><td>39</td><td>5</td></tr><tr><td>IV</td><td>R.L.59-54m</td><td>Rough stone</td><td>42</td><td>34</td><td>5</td></tr><tr><td>V</td><td>R.L.54-49m</td><td>Rough stone</td><td>42</td><td>29</td><td>5</td></tr><tr><td>VI</td><td>R.L.49-44m</td><td>Rough stone</td><td>42</td><td>24</td><td>5</td></tr><tr><td>VII</td><td>R.L.44-39m</td><td>Rough stone</td><td>42</td><td>19</td><td>5</td></tr><tr><td>VIII</td><td>R.L.39-34m</td><td>Rough stone</td><td>117</td><td>67</td><td>5</td></tr><tr><td>IX</td><td>R.L.34-29m</td><td>Rough stone</td><td>112</td><td>57</td><td>5</td></tr><tr><td>X</td><td>R.L.29-24m</td><td>Rough stone</td><td>107</td><td>47</td><td>5</td></tr><tr><td colspan="5">Total depth</td><td>50m</td></tr></table>	ULTIMATE PIT – SECTION (XY-AB)						Bench	Bench R.L	Overburden/ Mineral	L (m)	W (m)	D (m)	I	R.L.74-71m	Gravel	48	117	3	I	R.L.77-69m	Rough stone	48	117	2	II	R.L.69-64m	Rough stone	43	107	5	III	R.L.64-59m	Rough stone	38	97	5	IV	R.L.59-54m	Rough stone	33	87	5	V	R.L.54-49m	Rough stone	28	77	5	VI	R.L.49-44m	Rough stone	23	67	5	VII	R.L.44-39m	Rough stone	18	57	5	VIII	R.L.39-34m	Rough stone	13	47	5	IX	R.L.34-29m	Rough stone	8	37	5	X	R.L.29-24m	Rough stone	3	27	5	Total depth					50m	ULTIMATE PIT – SECTION (XY-CD)						Bench	Bench R.L	Overburden/ Mineral	L (m)	W (m)	D (m)	I	R.L.74-71m	Gravel	9	43	3	I	R.L.77-69m	Rough stone	9	49	2	II	R.L.69-64m	Rough stone	42	45	5	III	R.L.64-59m	Rough stone	42	39	5	IV	R.L.59-54m	Rough stone	42	34	5	V	R.L.54-49m	Rough stone	42	29	5	VI	R.L.49-44m	Rough stone	42	24	5	VII	R.L.44-39m	Rough stone	42	19	5	VIII	R.L.39-34m	Rough stone	117	67	5	IX	R.L.34-29m	Rough stone	112	57	5	X	R.L.29-24m	Rough stone	107	47	5	Total depth					50m
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VII	R.L.44-39m	Rough stone	18	57	5																																																																																																																																																																					
VIII	R.L.39-34m	Rough stone	13	47	5																																																																																																																																																																					
IX	R.L.34-29m	Rough stone	8	37	5																																																																																																																																																																					
X	R.L.29-24m	Rough stone	3	27	5																																																																																																																																																																					
Total depth					50m																																																																																																																																																																					
ULTIMATE PIT – SECTION (XY-CD)																																																																																																																																																																										
Bench	Bench R.L	Overburden/ Mineral	L (m)	W (m)	D (m)																																																																																																																																																																					
I	R.L.74-71m	Gravel	9	43	3																																																																																																																																																																					
I	R.L.77-69m	Rough stone	9	49	2																																																																																																																																																																					
II	R.L.69-64m	Rough stone	42	45	5																																																																																																																																																																					
III	R.L.64-59m	Rough stone	42	39	5																																																																																																																																																																					
IV	R.L.59-54m	Rough stone	42	34	5																																																																																																																																																																					
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VIII	R.L.39-34m	Rough stone	117	67	5																																																																																																																																																																					
IX	R.L.34-29m	Rough stone	112	57	5																																																																																																																																																																					
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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: -	: There is no waste rock will be proposed in this lease area.																																																																																																																																																																								

S. A. Ravi



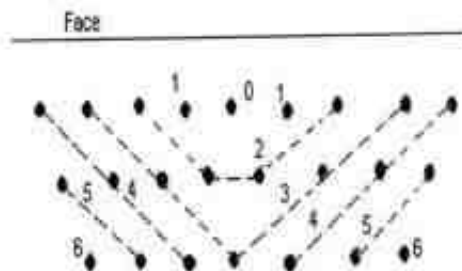
(iv)	Whether back filling of pits after recovery of mineral upto techno-economically feasible depth envisaged. If so, describe the broad features of the proposal: -	: As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.
(v)	Whether post mining land use envisaged: -	: At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.
g.	Open cast Mines:	
(i)	Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cost workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal. Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.
(ii)	Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice	: The rough stone is proposed to quarry at 5m bench height & width conventional opencast semi-mechanized method. It is a semi mechanized quarrying operation using 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	:	No separate of topsoil will be removed.																																														
b. Rough Stone waste and side burden waste: -	:	There is no waste or side burden shall be proposed.																																														
h. Underground Mines:	:	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. Depth of holes shall be 1.5m bench height and spacing shall be 1.2m and burden shall be 1.0m from the preface. Details of drilling equipment's are given below. <table border="1"> <thead> <tr> <th>Type</th> <th>No</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>3</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> (2) Loading 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>Hydraulic Excavator</td> <td>1</td> <td>2.9 - 4.3m³</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table> (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>7</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 dumper is not used in this quarry area (b) Transport from mine head to the destination :		Type	No	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.	Jack Hammer	3	32 mm	Hand held	---	Diesel	--	Compressor	2	---	Air	---	Diesel	--	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Hydraulic Excavator	1	2.9 - 4.3m ³	--	Diesel	--	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	7	--	---	Diesel	--	Transport from the mine head to customers crusher area.
Type	No	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.																																										
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Tipper	7	--	---	Diesel	--																																											
c. Describe briefly the transport system (please specify)	:	Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customers crusher area.																																														
d. Ore transported by: own trucks / hired trucks	:	Hired tippers and hydraulic excavator																																														



6	Output per hole = $1.8 \times 2.8 = 5$ T	5 T
7	Production per annum $46524\text{m}^3 \times 2.8 = 130267$ T	130267 T
8	Total handling per day (280 working day)	465T
9	Nos. of holes per day ($465/5.04 = 92$)	92holes.
10	Meterage required per day ($92 \times 5.5 = 506$)	506meters
11	Charge per hole	0.375 kg
12	Powder factor ($92\text{holes} \times 0.375 \text{ kg} = 34$)	34 kg
13	Sequence of blasting = Cord relay with electric detonators / Nonel	--



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 jackhammer 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	:	92holes
	Yield	:	465tons
	Total explosive required	:	34kg-Slurry explosives
	Charge per hole	:	0.5kg
	Blasting at day time only	:	12.00-1.00p.m
	c) Powder factor in ore and overburden / waste / development heading / stope	:	Powder factor is proposed as 0.375kg per holes of explosives
	d) Whether secondary blasting is needed, if so describe it briefly	:	Irrespective of the method of primary blasting employed, it may be necessary to re-blast a proportion of the rock on the quarry floor so as to reduce it to a size suitable for handling by the excavators and crushers.
	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 61m in summer and 56m in rainy season from the general ground level in the adjacent bore wells of the area.
	b) Workings expected to be _____ m. above / reach below water table by the year _____	:	Proposed 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	:	The ground water may not rise immediately in this type of mining. However, the rain water percolation and



mine water is finally proposed to be discharged	collection of water from the seepage shall be less than 300 Lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor.																												
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 next five years:																													
<table border="1"> <thead> <tr> <th>Year</th> <th>Topsoil/ Overburden (m³)</th> <th>Weathered rock/ Side burden (m³)</th> <th>Mineral rejects/Waste</th> </tr> </thead> <tbody> <tr><td>I-Year</td><td>---</td><td>---</td><td>---</td></tr> <tr><td>II-Year</td><td>---</td><td>---</td><td>---</td></tr> <tr><td>III-Year</td><td>---</td><td>---</td><td>---</td></tr> <tr><td>IV-Year</td><td>---</td><td>---</td><td>---</td></tr> <tr><td>V-Year</td><td>---</td><td>---</td><td>---</td></tr> <tr><td>Total</td><td>---</td><td>---</td><td>---</td></tr> </tbody> </table>	Year	Topsoil/ Overburden (m ³)	Weathered rock/ Side burden (m ³)	Mineral rejects/Waste	I-Year	---	---	---	II-Year	---	---	---	III-Year	---	---	---	IV-Year	---	---	---	V-Year	---	---	---	Total	---	---	---	
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V-Year	---	---	---																										
Total	---	---	---																										
(b) Land chosen for disposal of waste with proposed justification	: There is no waste are proposed.																												
(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 Yearwise.	: There is no waste rock will be proposed in this lease area.																												
8. USES OF MINERAL:																													
(a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	: The Charnockite is quarried as rough stone/blue metal and used for road material and construction purpose, used as raw material to produce M-Sand, P-Sand, etc. Charnockite is a hard Black with Blue tinges bearing rock, hence it is called as "Blue Metal". It is mainly used in Stone crushing units and size reduced in to ½, ¾ and 1½ inches Jelly which are mainly used in road and building construction purpose.																												



		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 and the same are used for building stone, sized stone materials only, so there are 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.																								
9.	OTHERS																									
(a)	Describe briefly the following 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 Regulations, 1961 and 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 five 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>18 No's</td> </tr> <tr> <td colspan="3">Total =</td> <td>22 No's</td> </tr> </table>		1.	Highly Skilled	Mines Manager	1No.			Mine Engineer	1No.			Mine Geologist	1No.			Blaster	1No.	2.	Unskilled	Musdoor / Labours	18 No's	Total =			22 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 in his own crusher for required size (i.e 1/4", 1/2", 1/3" and 1") 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 (KLD per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.	: Drinking is 1.0KLD, utilized water is 1.0KLD, Dust suppression is 1.5KLD and Green Belt is 1.5KLD. Minimum quantity of water 5.0KLD per day. It is proposed to make an own borewell for providing uninterrupted supply of RO drinking water, dust suppression and green belt development. The sewage water to a tune of 0.6KLD 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 statuts of Baseline information with regard to the Following :

11.1	Existing 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.																						
	<table><tr><th>S. No.</th><th>Land Use</th><th>Present area (Hect.)</th></tr><tr><td>1.</td><td>Area under quarrying</td><td>1.31.87</td></tr><tr><td>2</td><td>Infrastructure</td><td>Nil</td></tr><tr><td>3</td><td>Roads</td><td>0.03.0</td></tr><tr><td>4</td><td>Green belt & Earth Bund</td><td>Nil</td></tr><tr><td>5</td><td>Un-utilized area</td><td>1.89.13</td></tr><tr><td colspan="2">Total =</td><td>3.24.0</td></tr></table>	S. No.	Land Use	Present area (Hect.)	1.	Area under quarrying	1.31.87	2	Infrastructure	Nil	3	Roads	0.03.0	4	Green belt & Earth Bund	Nil	5	Un-utilized area	1.89.13	Total =		3.24.0	
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Total =		3.24.0																					
11.2	Water Regime	: Water table in this area is noticed at a depth of 61m in summer and 56m in rainy season from the general ground level and ultimate depth is 50m below the ground level and above the water table and hence, quarrying may not affect the ground water.																					
11.3	Flora and Fauna	: There is no major flora found in this area and except acacia bushes, 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.																					

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11.5 Climatic conditions:
Climate:
Rainfall: - The district receives rainfall Rainfall of this area is southwest monsoon, with an onset in June and lasting up to September, brings rainfall of 517.1 mm, with September being the rainiest month.
Climatic Conditions: - The temperature ranges from a maximum of 37 °C to a minimum of 25°C. Like the rest of the state, April to June is the hottest months and December to January are the coldest.

11.6 Human Settlement:
 The nearest villages are found in the buffer zone with population as per 2011 census.

S.No	Village	Direction	Distance in Kms	Population
1	Suruttal	North	1.21km	1543
2	Magaral	Southeast	2.2km	2934
3	Sithalapakkam	South	0.95km	631
4	Periya Elacheri	West	2.07km	1749

11.7 Public buildings, places of worship and monuments : No infrastructure like residential building, 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



a) *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)	Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:																									
	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>S. 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 quarrying</td><td>1.81.0</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>0.43.45</td></tr> <tr> <td>5</td><td>Drainage & Settling Tank</td><td>0.05.2</td></tr> <tr> <td>6</td><td>Unutilized</td><td>0.87.35</td></tr> <tr> <td colspan="2">Total</td><td>3.24.0</td></tr> </tbody> </table>	S. No.	Land Use	Area in use during the quarrying period (Hect.)	1	Area under quarrying	1.81.0	2	Infrastructure	0.02.0	3	Roads	0.05.0	4	Green belt	0.43.45	5	Drainage & Settling Tank	0.05.2	6	Unutilized	0.87.35	Total		3.24.0	
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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 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 recoded using mini seismograph devises as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.																								
vi).	Water regime	No major water bodies like rivers, pond, lake																								



		etc., located within a radius of 500m.
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 1km 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 first five 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 present mining is proposed to a depth of 50m below ground level (R.L. 74-24m) 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. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the rough stone persist still at deeper level.

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iii). *Programme of afforestation, Yearwise for the initial five 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.*

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	4345	480	80%	@100 Rs Per sapling	48,000/-
Second	Approach road, school and Nearby Village Road	--	520	80%		52,000/-
Total						1,00,000/-

iv). Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and up to 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 are no major dumps are stabilized 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 B2 category open cost, 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 : No historical monuments and for



	historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	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 B2 category quarry

12.0 PROGRESSIVE MINE CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	The present mining is proposed to depth of 50m below ground level The mined-out area will be fenced on top of open cast working 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. Green belt development at the rate of 480 trees will be proposed in quarry lease 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 an existing quarry lease to be continued the same applicant
12.4	Mine closure activity	:	The present mining plan is proposed to depth of 50m bgl 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 semi mechanized method of mining 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 five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 19 labors will be improved. During the next five-year compensations will be given as per rules.

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

A	Fixed Asset Cost:	
	1. Land Cost (https://tnreginet.gov.in/portal/)	: Rs. 89,44,577/-
	2. Labour Shed	Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 3,00,000/-
	4. Fencing	: Rs. 3,00,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 3,00,000/-
	Total	: Rs. 99,94,577/-
B	B. Machinery cost	: Rs. 25,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for Five years)	
	1. Drinking Water Facility	: Rs. 2,00,000/-
	2. Sanitary facility & Maintenance	: Rs. 1,50,000/-

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	3. Permanent water sprinkler	: Rs. 1,50,000/-
	4. Afforestation and its maintenance	: Rs. 1,00,000/-
	5. Safety Kits	: Rs. 1,00,000/-
	6. Provision of tyre washing facility	: Rs. 1,00,000/-
	7. Surface runoff management structures like garland drain, settling pond & Bund (0.05.2Hect or 520Sq.m X 400	: Rs. 2,08,000/-
	8. Blasting materials with blast mat cost	: Rs. 20,00,000/-
	9. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 35,08,000/-
D	Total Project Cost (A+B+C)	: Rs. 1,60,02,577/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small B2 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) Accordingly, the Modified mining prepared for a grant of quarrying of rough stone and gravel as per the District Collector, Kancheepuram proceedings **Rc.No.195/Q3/2018 dated: 23.01.2019.**
- (iv) Total proposed production of **250628m³**. Of which, rough stone is about **232619m³** and gravel is about **18009m³** up to a depth of 50m below the ground level (R.L.74m-24m) for five years plan period. Average production is **46524m³** of rough stone per year.



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 five 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: Dharmapuri, TN

Date:

Signature of the Recognized Qualified Person

Dr. S. KARUPPANNAN, M.Sc. Ph.D.
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri - 646705, Tamil Nadu, India

This Mining Plan is approved subject
to the conditions / stipulations
indicated in the Mining Plan approval
Letter No: 311/93/2023
Dated, 27.11.2023

This Mining Plan is approved as per the
Mineral Conferred Under Rule 41 (3) of
the Mines and Minerals Act, 1951
13, 1951

Assistant Director of Geology and Mining,
Kanchipuram District.

6/9
27/11/23



காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராம புல எண்கள்.700/1(P) (1.29.00), 700/2 (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க 23.01.2019 முதல் 22.01.2024 வரை ஐந்து ஆண்டுகள் அனுமதி வழங்கப்பட்டு அதனடிப்படையில் குவாரிப்பணி செய்து வருகின்றனர். இந்நிலையில் மேற்படி புல எண்.700/1(P) - ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் 1.29.00 ஹெக்டேர் பரப்பில் குவாரிப்பணி செய்ய அனுமதி வழங்கியது போக மீதமுள்ள 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க மூன்று ஆண்டுகளுக்கு அனுமதி கோரி பார்வை 4-ல் காணும் கடிதத்தில் விண்ணப்பதாரர் மனு செய்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக காஞ்சிபுரம் வருவாய் கோட்டாட்சியர், செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடநிலக்கோட்டம், காஞ்சிபுரம் மற்றும் காஞ்சிபுரம் புவியியல் மற்றும் கரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் மேற்காணும் விண்ணப்ப புலத்தில் தணிக்கை மேற்கொண்டு, காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண். 700/1(P)-ல் மொத்த பரப்பு 2.18.50 ஹெக்டேர் பரப்பில் அனுமதி கோரும் பரப்பு 0.89.5 ஹெக்டேர் பரப்பளவில் குவாரி அனுமதி வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்பப் புலங்களுக்கு அருகிலுள்ள அரசு புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யப்பட வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-ல் 10 மீட்டர் இடைவெளிவிட வேண்டும்.
4. விண்ணப்பப் புலங்களுக்கு வடகிழக்கு பகுதியில் உள்ள தாழ்மின்னழுத்த சாம்பியை அகற்ற வேண்டும் (அ) உரிய பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி செய்ய வேண்டும்.
5. மேய்க்கால் அரசு புறம்போக்கு புல எண்.595 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.
6. செயற்பொறியாளர், நீர்வள ஆதாரத்துறை, கீழ்பாலாறு வடநிலக்கோட்டம், காஞ்சிபுரம் அலுவலகின் நிபந்தனைகளை தவறாது கடைபிடிக்க வேண்டும்.

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THIRU. P. PONNIAH, I.A.S.,
CHAIRMAN/
DISTRICT COLLECTOR.



Kancheepuram District
Environment Impact
Assessment Authority
Kancheepuram



ENVIRONMENTAL CLEARANCE (ERRATA)

LE.No.DEIAA-DIA/TN/MIN/195/Q3/2018-KPM, EC.No.27-2018, Dated: 23.01.2019

To,
S. Rathnavelu,
S/o. R. Sivaswamy,
Old No. 44 new no.2/33, Bhuvaneswari Nagar,
1st street, Gownvakkam,
Chennai - 73

Sir,

Sub: DEIAA - Proposed Roughstone / Gravel quarry -
S.F.Nos. 700/1(P) (1.29.00), 700/2 (1.05.50) over an
extent of 2.34.50 hect. of Magaral 'B' Village,
Watajabad Taluk - Kancheepuram District by Thiru.
S. Rathnavelu - Grant of Environmental Clearance -
Reg.

Ref: 1. Your Application for Environment Clearance DEIAA
/ TN / Kpm Dist / 2018 Dated 28.08.2018
2. Minutes of the DEAC meeting No.5, held on DEAC
meeting date 28.09.2018
3. Minutes of the DEIAA meeting held on DEIAA
meeting date 03.10.2018.

Details of Minor mineral Activity:-

This has reference to your application in the reference 1st cited. The proposal is for obtaining Environmental Clearance for minor minerals mining / quarrying projects falling under category 'B2' based on the particulars furnished in your application as shown below.

for
CHAIRMAN
DEIAA



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1.	Name of Project Proponent and address	S. Ratnavelu, S/o.R. Sivaswamy, Old No. 44 new no.2/33, Bhuvaneswari Nagar, 1st street, Gowrvakkam, Chennai - 73.
2.	Location of the Proposed Activity	
	Survey Number	: 700/1(P) (1.29.00), 700/2 (1.05.50)
	Latitude and Longitude	: 12°43'32.73"N to 12°43'39.38"N 79°43'58.25"E to 79°44'1.10"E
	S.O.I. Topo Sheet No.	: 57-P/10
	Village	: Magaral -B
	Taluk	: Walajabad
	District	: Kancheepuram
3.	Proposed Activity	
i.	Minor mineral	: Roughstone / Gravel
ii.	Mining Lease Area	: 2.34.50 Hects.
iii.	Approved quantity	: Roughstone = 3,95,712M ³ Gravel = 56,088M ³
iv.	Depth of quarrying	: 56 mtrs. below ground level
v.	Type of quarrying	: Open cast semi-mechanized
vi.	Category (B1/B2)	: "B2" category.
vii.	Precise Area Communication	: District Collector, Kancheepuram Rc. No.195/Q3/2018 dated.31.07.2018.
viii.	Mining Plan approval	: Assistant Director, Geology and Mining, letter Rc.No.195/Q3/2018, dated. 21.08.2018.
ix.	Quarrying lease period	: 5 Years
4.	Whether Project area attracts any general conditions specified in the EIA notification, 2006. as amended:-	

CHAIRMAN
DEIAA



5.	Man Power requirement per day	: 18 Nos.
6.	Utilities	
i.	Source of Water	: Water vendors / Existing borehole
ii.	Quantity of Water Requirement in KLD:	
	a. Domestic	: 0.250 KLD
	b. Industrial	: -
	c. Green Belt & Dust Suppression	: 2.250 KLD
iii.	Power requirement	
	a. Domestic purpose	: Petroleum Fuel is to be used for operating machineries and vehicles during quarrying process. Electricity will be used only for mine lighting and office purposes.
	b. Industrial purpose	
7.	Cost	
i.	Project Cost	: Rs.66,50,000/-
ii.	EMP Cost	: Rs. 7,00,000/-
8.	Public Consultation:-	: Not required as per O.M dated 24.12.2013 of MoEF, GOI
9.	Date of Appraisal by DEAC:	: 28.09.2018 5 th Meeting
10.	Date of review / discussion by DEIAA and the Remarks:-	
	The proposal was placed before the DEIAA in its DEIAA meeting No.5 held on 28.09.2018 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project for Mining of "Rough stone and Gravel" subject to the terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	

CHAIRMAN
DEIAA



11. Validity:

This Environmental Clearance is granted for Mining of "Rough stone and Gravel" for the proposed quantum of 3,95,712 M³ Roughstone & 56,088 M³ Gravel a period of "Five years" from the date of execution of Lease Deed.

Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the DETAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the DETAA.
2. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
3. The project proponent shall comply the conditions laid down in the sub rule V of Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
4. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
5. Quarry lease area should be demarcated on the ground with barbed wire fencing on all sides depicting the boundary of the lease area. All the boundary pillars shall be erected and red flagged before commencement of quarrying.

CHAIRMAN
DETAA



6. The proponent shall ensure that First Aid Box is available at site.
7. The excavation activity shall not alter the natural drainage pattern of the area.
8. The excavated pit shall be restored by the project proponent for useful purposes.
9. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
10. The quarrying operation shall be restricted between 7AM and 5 PM.
11. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
12. A minimum distance of 15 mts. from any civil structure shall be kept from the periphery of any excavation area.
13. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.


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DELM





18. Blasting shall be carried out after adequately cautioning the public through public address system to avoid any accident.
19. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
20. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
21. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust.
22. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
23. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
24. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
25. Permission from the competent authority should be obtained for drawing of ground water, if any, required for this project.


CHAIRMAN
DEIAA





26. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
27. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.

for
CHAIRMAN
DEIAA



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34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
37. Ground water quality monitoring should be conducted once in 3 Months
38. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
39. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
41. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place and progress report shall be submitted once in 3 months.
42. At least 10 Neem trees should be planted around the boundary of the quarry site.
43. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
44. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.

for
CHAIRMAN
DEIAA



45. The Project Proponent shall provide solar lighting system to the villages.
46. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
47. Rainwater shall be pumped out Via Settling Tank only.
48. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
49. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
50. Safety equipments to be provided to all the employees.
51. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai.
52. The Deputy Superintendent of Police, Revenue Divisional Officer, and the Tahsildar concerned shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
53. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
54. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
55. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
56. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
57. Heavy earth machinery equipments if utilized, after getting approval from


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the competent authority.

58. Blasting shall be carried out after announcing to the public through adequate public address system to avoid any accident.
59. Proper sanitation measures, first aid kit and protected drinking water should be provided to the labourers.
60. The Environmental norms shall be monitored by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Kancheepuram.
61. Periodical medical examination of the quarry workers should be carried out by a registered medical practitioner and the report should be filed in the quarry office in a separate file and copy should be sent to the Deputy Director, Health Services, Kancheepuram.

General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the DEIAA, Kancheepuram District, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

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6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
13. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
14. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.

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15. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
16. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
17. The DEIAA, Kancheepuram District may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
18. The DEIAA, Kancheepuram District may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this DEIAA, Kancheepuram District that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
19. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
20. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

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21. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
22. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
23. The District Forest Officer had put forth the below mentioned conditions for strict compliance.
 - i. The Project areas shall not abut Reserve Forest Boundaries at any cost incase of Reserve Forest abutting to project areas, 60M safety distance shall be left and maintained.
 - ii. The quarry vehicles shall not use forest land as pathway
 - iii. Incase of Breach of conditions, the quarry operations should be suspended immediately.


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Copy to:-

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (S2), 34, HEPC Building 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai-34.
5. The Chairman, Tamil Nadu Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex East Arjun Nagar, New Delhi-110 032.
6. The Chairman Tamil Nadu Pollution Control Board, 76 Mount Salai Guindy, Chennai-32.
7. The Chairman, SEIAA, Panagal Building, Chennai.
8. The Commissioner of Geology and Mining, Guindy, Chennai-32.
9. Et Division, Ministry of Environment and Forests Pariyavaran Bhawan, New Delhi.
10. Spare.





**காஞ்சிபுரம் மாவட்ட ஆட்சியர் அவர்களின் செயல்முறைகள்
முன்னினை திரு. பா. பொன்னையா, இ.ஆ.ப.**

ந.க. எண். 195 / க்யூ 3 / 2018

நாள். 23.01.2019

பொருள்- கனிமங்களும் குவாரிகளும் - சாதாரண கற்கள் மற்றும் கிராவல் மண் - காஞ்சிபுரம் மாவட்டம் - வாலாஜாபாட் வட்டம் - மாகாள் "ஆ" கிராமம் - புல எண்கள். 700/1(P) (1.29.00), 700/2. (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் - பட்டா நிலத்தில் சாதாரண கற்கள் / கிராவல் மண் வெட்டியெடுக்க ஐந்து ஆண்டுகளுக்கு குவாரி குத்தகை உரிமம் கோரிய திரு. S.ரத்தினவேலு த/பெ. சிவசுவாமி என்பவருக்கு அனுமதி வழங்கி - உத்தரவிடப்படுகிறது.

- பார்வை -**
1. தி.ந. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி, பழைய எண்.5, புதிய எண்.2/33, புவனேஸ்வரி நகர், 1வது தெரு, கௌரிவாக்கம், சென்னை - 73 என்பவரின் மனு நாள். 09.04.2018.
 2. இவ்வலுவலக ந.க.195/க்யூ3/2018 நாள்.09.04.2018.
 3. காஞ்சிபுரம் வருவாய் கோட்ட அலுவலர் அறிக்கை எண். ந.க.971/2018/அ1 நாள்.05.06.2018.
 4. உதவி இயக்குனர், புலியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் அவர்களின் இடப்பார்வை அறிக்கை நாள் : 22.07.2018.
 5. அச்சாணை எண்.M.579, தொழில் (எம்.எம்.சி.) துறை, நாள். 06.04.2015.
 6. மாவட்ட ஆட்சியர் அறிவிக்கை எண். (Precise Area Communication letter) எண். 195 / க்யூ 3 / 2018. நாள்.31.07.2018.
 7. உதவி இயக்குனர் புலியியல் மற்றும் சுரங்கத்துறை காஞ்சிபுரம் ஏற்பாடுகப்பட்ட சுரங்கத்திட்டம் நாள். 21.08.2018
 8. மாவட்ட அளவிலான கற்றுச்சூழல் தாக்க மதீப்பிட்டு ஆணையத்தின் ஒப்புதல் ஆணை எண். DEIAA-DIA/ TN/ MIN/ 195 / Q3 / 2018-KPM, EC.No.27-2018, Dated: 03.10.2018.
 9. மற்றும் தொடர்புடைய இதர ஆவணங்கள்.

உத்தரவு:

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாட் வட்டம், மாகாள் "ஆ" கிராமம், புல எண்கள். 700/1(P) (1.45.50), 700/2 (1.05.50) மொத்தம் 2.51.00 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் மற்றும் கிராவல்மண் வெட்டியெடுக்க ஐந்து ஆண்டுகளுக்கு திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி, பழைய எண்.5, புதிய எண்.2/33, புவனேஸ்வரி நகர், 1வது தெரு, கௌரிவாக்கம், சென்னை - 73 குவாரி குத்தகை உரிமம் கோரி பார்வை 1-ல் கண்டவாறு மனு செய்துள்ளார்.



மனுதாரர் உரிய படிவத்தில் மனு செய்திருப்பதுடன், விண்ணப்பக் கட்டணம் மற்றும் ஆப்பிபைட் செலவினங்களுக்காக ரூ.1,500/- ஐ சலான் எண். 93, நாள். 09.04.2018-ன்படி காஞ்சிபுரம் பாரத மாநில வங்கியில் செலுத்தியுள்ளார். மேலும் மனுதாரர் செலுத்த வேண்டிய வருமான வரி மற்றும் கனிம வரி எதுவும் நிலுவையில் இல்லை என்பதற்கான சான்றுறுதி ஆவணம் மற்றும் கிராம கணக்கு நகல்களையும் சமர்ப்பித்துள்ளார்.

மனுதாரர் சாதாரண கற்கள் வெட்டியெடுக்க உரிமம் கோரிய பிரஸ்தாப புலத்தை வருவாய் கோட்டாட்சியர், மதுராந்தகம் மற்றும் உதவி இயக்குநர், புனிபியல் மற்றும் கரங்கத்தூறை, காஞ்சிபுரம் ஆகியோர் இடப்பார்வை செய்து அறிக்கை சமர்ப்பித்துள்ளனர்.

பார்வை 2-ல் காணும் இவ்வலுவலக கடிதத்தில் அறிக்கை கோரியதின்பேரில் பார்வை 3-ல் காணும் வருவாய் கோட்ட அலுவலர், காஞ்சிபுரம் அலுவலகரின் அறிக்கையில்

மனுதாரர் சாதாரண கற்கள் / கிராவல் வெட்டி எடுக்க குத்தகை உரிமம் வழங்க கோரும் புலம் மாகரல் "ஆ" கிராம பதிவேட்டில் பின்வருமாறு தாக்கலாகியுள்ளது.

வ. எண்	புல எண்	பரப்பு (ஹெக்டேர்)	வகைபாடு	பட்டா எண் மற்றும் பட்டாதாரர் பெயர்
1	700/1	2.18.5	புன்செய்	545. சிவசுவாமி மகன் ரத்தினவேலு
2	700/2	1.05.5	புன்செய்	546. சிவசுவாமி மகன் ரத்தினவேலு
மொத்தம்		3.24.0		

மேற்படி புலத்தின் உரிமையாளர் திரு. ரத்தினவேலு என்பவர் புல எண்.700/1 மொத்தம் பரப்பு 2.18.5 ஹெக்டேர் நிலத்தினை திரு. வரதராஜ நாயக்கன் என்பவரின் மகன்கள் திரு. மகாதேவன் மற்றும் திரு. முத்து ஆகியோரிடமிருந்து காஞ்சிபுரம் எண்.2, இணை சார்பதிவாளர் அலுவலக ஆவண எண்.4838/2017, நாள்.06.12.2017-ன் படியும், புல எண். 700/2 மொத்தம் பரப்பு 1.05.5 ஹெக்டேர் நிலத்தினை காலஞ்சென்று திரு. ராஜேந்திரன் என்பவரின் மனைவி திருமதி. ஸயதிலி, மகன்கள் திரு. வேதாசலம் மற்றும் திரு. தனிகாசலம் மற்றும் மகள் திருமதி. துமிழ்செல்வி ஆகியோரிடமிருந்து காஞ்சிபுரம் எண்.2 இணை சார்பதிவாளர் அலுவலக ஆவண எண்.4837/2017, நாள்.06.12.2017-ன் படியும் கிரையம் பெற்றுள்ளார். மனுதாரர் மேற்படி புல எண்.700/1 மொத்தப்பரப்பு 2.18.5 ஹெக்டேரில் 1.45.5 ஹெக்டேர் மற்றும் புல எண். 700/2 மொத்தப் பரப்பு 1.05.5 ஹெக்டேர் (முழுவதும்) ஆக மொத்தம் 2.51.0 ஹெக்டேர் நிலப்பரப்பில் சாதாரண கற்கள் / கிராவல் வெட்டி எடுக்க குத்தகை உரிமம் வழங்க கோரி மனு செய்துள்ளார்.



மனுதாரர் குத்தகை உரிமம் பெற ரூ. 1500/- ஐ உரிம அரக கணக்கு தலைப்பில் Sate Bank of India காஞ்சிபுரம் கிளையில் 09.04.2018 அன்று செலுத்தியுள்ளார். மேலும் கனிமலரி நிலுவை மற்றும் வருமான வரி நிலுவை இல்லை எனவும், கனிம குத்தகை உரிமம் வழங்கக் கோரி உறுதிமொழி ஆவணம் தரக்கூல் செய்துள்ளார் என்றும்,

பிரஸ்தாப புலத்தின் நான்கு எல்லைகள்.

- வடக்கு - புல எண். 706 வாய்க்கால்
- தெற்கு - புல எண். 695 மேய்க்கால் அரக புறம்போக்கு நிலம் மற்றும் புல எண். 701 பட்டாதாரர் நிலம்
- கிழக்கு - புல எண். 699/2 பட்டாதாரர் நிலம்
- மேற்கு - புல எண். 706 வாய்க்கால் மற்றும் புல எண். 701 பட்டாதாரர் நிலம்

மனுதாரர் குத்தகை உரிமம் வழங்க கோரும் புலத்தின் எல்லைகள் வரையறுக்கப்பட்டு எல்லைக்கற்கள் நடப்பட்டுள்ளது. மாகரல் கிராமத்தில் மேற்படி பொருள் குறித்து 10.04.2018 அன்று ஏ1 நோட்டீஸ் பிரகாரம் செய்யப்பட்டது. ஆட்சேபணை ஏதும் வரப்பெறவில்லை. குத்தகை உரிமம் வழங்க கோரும் புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் கிராம நத்தம், அங்கீகரிக்கப்பட்ட குடியிருப்பு மனைகள் மற்றும் கட்டுமானங்கள் ஏதும் இல்லை. அணுகுபாதையாக மாகரல் கிராமத்திலிருந்து சித்தலவடாக்கம் கிராமம் வழியாக கருட்டல் கிராமம் செல்லும் கிழக்கு மேற்காக (மேய்க்கால் புல எண்.687) அமைந்த தார் சாலையிலிருந்து வடக்கு நோக்கி கருட்டல் கிராமம் செல்லும் (மேய்க்கால் புல எண்.691 வழியாக) மற்றொரு தார்சாலை உள்ளது. இந்த தார் சாலையிலிருந்து புல எண்.701 வழியாக பிரஸ்தாப புலத்திற்கு செல்ல அதன் பட்டாதாரரிடமிருந்து அனுமதியினை மனுதாரர் பெற்று சாலை அமைத்துக்கொள்ள வேண்டும் என்ற நிபந்தனை விதிக்கப்பட்டேண்டும். பிரஸ்தாப புலத்திற்கு பயிர் ஏதும் செய்யப்படாமல் கரம்பாக உள்ளது. பிரஸ்தாப புலத்தில் பாதுகாப்பு இடைவெளியில் மட்டும் பணைமரங்கள் அமைந்துள்ளது. பிரஸ்தாப புலத்தில் வடக்கு - தெற்காக வடகிழக்கு ஓரத்தில் தாழ் அழுத்த மின்கம்பி செல்கிறது. இந்த தாழ்மின்னழுத்த கம்பியை மாற்றி அமைக்க மின்வாரிய அலுவலகத்தில் மனு செய்துள்ளார். பின்வரும் நிபந்தனைகள் நிறைவு செய்யப்பட்டதில் புல எண்.700/1, மொத்தப் பரப்பு 2.18.5 ஹெக்டேரில் இந்த புலத்தின் வடக்கு மற்றும் மேற்கு திசைகளில் செல்லும் வாய்க்காலுக்கு 50 மீட்டர் இடைவெளி (0.89.0 ஏர்ஸ்) போக மீதமுள்ள பரப்பு 1.29.0 ஹெக்டேர் மற்றும் புல எண். 700/2 மொத்தப் பரப்பு 1.05.5 ஹெக்டேர் (முழுவதும்) ஆக மொத்தம் 2.34.5 ஹெக்டேர் நிலப்பரப்பில் சாதாரண கற்கள் / கிராவல் வெட்டி எடுக்க குத்தகை உரிமம் வழங்க பரிந்துரை செய்கிறேன் என வட்டாட்சியர் தனது அறிக்கையில் தெரிவித்துள்ளார்.



நிபந்தனைகள்

- 1) பிரஸ்தாப புலத்தில் மனுதாரர் சாதாரண கற்கள் / கிராவல் வெட்டி எடுக்க குத்தகை உரிமம் வழங்கும்பட்சத்தில் பிரஸ்தாப புலத்திலிருந்து அருகில் உள்ள பட்டாதாரர் நிலத்திற்கு 7 மீட்டரும், அரசு புறம்போக்கு நிலத்திற்கு 10 மீட்டர் இடைவெளியும் விடவேண்டும். மேலும் சாதாரண கற்கள் / கிராவல் வெட்டி எடுக்க குத்தகை உரிமம் வழங்க விதிக்கப்படும் பிற நிபந்தனைகளை தொடர்ந்து கடைபிடிக்க வேண்டும்.
- 2) பிரஸ்தாப புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-ல் 50 மீட்டர் இடைவெளி விடவேண்டும்.
- 3) மேய்க்கால் அரசு புறம்போக்கு புல எண்.695 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.
- 4) மேய்க்கால் புறம்போக்கு புல எண்.691-ல் செல்லும் தூர் சாலையிலிருந்து பிரஸ்தாப புலத்திற்கு புல எண்.695 மேய்க்கால் புறம்போக்கு வழியாக செல்ல அரசின் அனுமதியோ அல்லது மேற்படி தூர் சாலையிலிருந்து பட்டாதாரர் புல எண்.701 வழியாக பிரஸ்தாப புலத்திற்கு செல்ல பட்டாதாரர் அனுமதியை தனியே பெற்று சமர்ப்பிக்க வேண்டும்.
- 5) பிரஸ்தாப புலத்தில் வடக்கு - தெற்காக வடகிழக்கு ஓரத்தில் நாய்ந்த அழுத்தம் கொண்ட மின்கம்பி செல்கிறது, அதனை சம்மந்தப்பட்ட துறையினரை கொண்டு மாற்றி அமைத்திட வேண்டும்.

வட்டாட்சியர் அறிக்கையின்பேரில் மேற்படி புலம் 29.05.2018 அன்று புலத்தணிக்கை மேற்கொள்ளப்பட்டது.

கனிமம் வெட்டியெடுக்க குத்தகை உரிமம் கோரப்பட்ட புலங்கள் விவசாய செய்யப்படாமல் கரம்பாக உள்ளது. இதன் 300 மீட்டர் சுற்றளவிற்குள் கிராம நத்தம் / குடியிருப்புகள் ஏதுமில்லை. இப்புலங்களின் ஓரத்தில் எல்லை சுற்கள் போன்று பணை மரங்கள் உள்ளது. புலத்தின் வடக்கு - தெற்காக வடகிழக்கு ஓரத்தில் தாழ்வழுத்த மின்கம்பி தடம் செல்கிறது. இப்புலங்களில் புராதன சின்னங்களோ, மதசார்பான கட்டிடங்களோ இல்லை. உரிமம் கோரும் புலங்களிலிருந்து எடுத்துவரும் கனிமங்கள் புல எண்.701 (பட்டா நிலம்) வழியாக எடுத்து கிராம தூர்சாலைக்கு செல்ல வேண்டும். எனவே, மனுதாரர் சம்மந்தப்பட்ட பட்டாநாரிடம் உரிய ஒப்பந்தம் செய்து கொள்ள கேண்டும் அல்லது மேய்க்கால் புல எண்.695 வழியாக சென்று புல எண்.691-ல் தூர்சாலைக்கு செல்ல தக்க அனுமதி பெற வேண்டும்.

உரிமம் கோரும் புலங்களுக்கு வடக்கு மற்றும் மேற்கு பகுதி வாய்க்கால் பகுதிகளில் ஆக்கிரமணம் செய்யக்கூடாது என்றும் உரிய மாதிரியான இடைவெளி ஏற்படுத்த வேண்டும் என்றும், அரசு நிலங்களில் வாகனங்கள் செல்ல தக்க அனுமதி பெற வேண்டும் என்றும்



நிபந்தனைகள் விதித்து மேற்கண்ட புலங்களில் கனிம குவாரி செய்ய குத்தகை உரிமம் வழங்கலாம் என்று பரிந்துரை செய்துள்ளார்.

பார்வை 4-ல் காணும் உதவி இயக்குனர், புதியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் தனது புலத்தனிக்கை துறிகளையில் காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் கிராம கணக்கு பட்டா எண். 545, 546- என்பது விண்ணப்ப புலங்கள், 700/1 (2.18.50), 700/2 (1.05.50) திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி என்பவர் பெயரில் தரக்கலாகியுள்ளது. எனவே மேற்படி விண்ணப்பபுலங்களில் கங்குவாரி பணி செய்ய விண்ணப்பதாரர் திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி என்பவருக்கு ஸ்தல மாத்தியம் உள்ளது. இதற்குமுன் குவாரி பணிகள் ஏதும் செய்யப்படாத புதிய இனம் (Virgin Quarry) என்றும்,

விண்ணப்ப புலம் சுமதளமாக உள்ளது. மேற்பரப்பு முழுவதும் கனமான மண்ணால் மூடப்பட்டுள்ளது. ஆங்காங்கே மேற்பரப்பில் குண்டுப் பாறைபடிவுகள் காணப்படுகிறது. இந்த பாறைபடிவுகள் சரங்கோண்ட வகை பாறைகளாகும். இவ்வகை பாறைகள் சாதாரண கற்கள் மற்றும் சாலை பணிக்கு பயன்படும் ஜல்லிகற்கள் உற்பத்தி செய்ய ஏற்றதாகும் என்றும், வரையறுக்கப்பட்ட 7.5 மீ, 10 மீ, மற்றும் 300 மீட்டர் சுற்றளவில் ஆட்சேபனைக்குரிய நில வகைபாடுகள் மற்றும் கட்டுமானங்கள் ஏதும் இல்லை என்றும், 50 மீட்டர் சுற்றளவிற்குள் புல எண். 706-ல் வாய்க்கால் உள்ளது. இதற்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விடும் பட்சத்தில் புல எண். 700/1(P) (2.18.50)-ல் விஞ்ஞான ரீதியாக குவாரி பணி செய்ய இயலாத பகுதியை தவிர்த்து (0.89.0) நீதமுள்ள பரப்பு 1.29.00 ஹெக்டேர் மட்டுமே குவாரிப்பணி செய்ய இயலும். மேலும் 700/1 (P)(0.89.00) குவாரிப் பணி செய்ய இயலாது என்பதால் மேற்கண்ட புலத்தின் ஒரு பகுதியை குவாரி அனுமதி வழங்குவதில் இருந்து நீக்கம் செய்யலாம்.

நான்கெல்லைகள் விவரம்

வடக்கில்	புல எண். 700/1-ன் மிகை நிலம்
தெற்கில்	புல எண். 695 மேய்க்கால் பட்டா புல எண். 700/2
கிழக்கில்	பட்டா புல எண். 699/2
மேற்கில்	புல எண். 706 வாய்க்கால், பட்டா புல எண். 701

மேற்படி விண்ணப்பப் புலங்களுக்கு அருகிலுள்ள அரக ஸ்தம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளியிட்டு குவாரிப்பணி செய்யப்பட வேண்டும். விண்ணப்பிக்கப்பட்ட புலத்திற்கு வடக்கு தெற்காக வடகிழக்கு ஓரத்தில் தாழ்வழுத்த மின்கம்பியை மாற்றியமைக்க வேண்டும்.



எனவே காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண்கள். 700/1 (P) (1.29.50), 700/2 (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் பட்டா நிலத்தில் இருந்து சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுத்து குவாரி புணி செய்ய திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி, என்பவருக்கு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண். 19(1), 20 & 41A, 42-ன் கீழ் ஐந்து ஆண்டுகளுக்கு கல் குவாரி குத்தகை உரிம அனுமதி வழங்க பின்வரும் நிபந்தனைகளுக்குப்பட்டு வழங்க பரிந்துரை செய்துள்ளார்.

1. விண்ணப்ப புலங்களுக்கு ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் மாவட்ட கற்றுச்சூழல் ஒப்புதல் பெற்றளிக்கப்பட வேண்டும்.
2. மேற்படி விண்ணப்ப புலங்களுக்கு அருகிலுள்ள அரக புறம்போக்கு மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்புணி செய்யப்பட வேண்டும்.
3. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-ல் 50 மீட்டர் இடைவெளிவிடவேண்டும்.
4. வாய்க்கால் அரக புறம்போக்கு புல எண்.595 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.

இவ்வழுவலகத்தில் பராமரிக்கப்படும் ஆவணங்களின் அடிப்படையில் மனுதாரர் செலுத்த வேண்டிய கலியா வரி ஏதும் நிதியுதையில் இல்லை என கண்டறியப்பட்டது.

பார்வை 6-ல் கண்ட மாவட்ட ஆட்சித்தலைவர் அலுவலரின் அறிமுகத்தில் தெரிவித்துள்ளவாறு மனுதாரர் மாவட்ட கற்றுச்சூழல் மற்றும் தூக்க மதிப்பீட்டு ஆணையத்தின் கற்றுச்சூழல் ஒப்புதலை பார்வை 8-ல் கண்டவாறு பெற்று இவ்வழுவலகத்தில் சமர்ப்பித்துள்ளார்.

மனுதாரர் விதிகளின்படி காப்புத் தொகையாக ரூ.10,000/-ஐ பாரத மாநில வங்கி, காஞ்சிபுரம் கலான் எண். 108, நாள்.30.11.2018 -ன்படி செலுத்தி அசல் சலாணையும், 1959-ம் தமிழ்நாடு சிறுகனிம சலுகை விதிகளின் பின் இணைப்பு-IV ல் கண்டுள்ள படிவத்தில் உரிய முத்திரைத்தாளில் குத்தகை ஒப்பந்தப் பத்திரம் தயார் செய்து அளித்துள்ளார்.

இந்நேரவில் வருவாய் கோட்ட அலுவலர், காஞ்சிபுரம் மற்றும் உதனி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் ஆகியோரது பரிந்துரையின் பேரில் காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் "ஆ" கிராமம், புல எண்கள். 700/1 (P) (1.29.50), 700/2 (1.05.50) மொத்தம் 2.34.50 ஹெக்டேர் பட்டா நிலத்தில் இருந்து சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுத்து குவாரி புணி செய்ய திரு. S.ரத்தினவேலு த/பெ. R. சிவசுவாமி, பஸ்ரய எண்.5, புதிய எண்.2/33 புலனேஸ்வரி நகர், ஸ்ரீ தெரு, கௌரிவாக்கம்,



சென்னை - 73 என்பவருக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குத்தகை ஒப்பந்தப் பத்திரம் நிறைவேற்றிய நாளான 23.01.2019 முதல் 22.01.2024 வரை ஐந்து ஆண்டுகளுக்கு, தமிழ்நாடு சிறுகவிம சலுகை விதிகள் 1959 விதி எண் 19(1), 20, 41A மற்றும் 42, மற்றும் குத்தகை ஒப்பந்தப் பத்திரத்தில் கண்டுள்ள நிபந்தனைகள் மற்றும் தமிழ்நாடு சிறுகவிம சலுகை விதிகளின் பேரிலும், சிறப்பு நிபந்தனைகள் பேரிலும் குவாரி குத்தகை உரிமம் வழங்க ஆணைக்காக கோப்பு சமர்ப்பிக்கப்படுகிறது.

நிபந்தனைகள் :

1. குத்தகை புலத்தினை அடுத்துள்ள பட்டா மற்றும் அரசு நிலங்களுக்கு முறையே 7.5 மீட்டர் மற்றும் 10 மீட்டர் இடைவெளி அளித்து குவாரிப்பணி புரிய வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
3. பொதுமக்களின் நலன் கருதி பாதுகாப்பான முறையில் குறைந்த அழுத்தமுள்ள வெடிபொருட்கள் பயன்படுத்தியும், கைத்துறைப்பான் கருவி கொண்டு துளையிட்டும், தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய பாதுகாப்பானதும், அகலமான Benches அமைத்து குவாரிப்பணி செய்ய வேண்டும்.
4. மாவட்ட சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் பரிந்துரை கடித எண். DEIAA-DIA/TN/MIN/195/Q3/2018-KPM, EC.No.27-2018, Dated:03.10.18-ல் காணும் நிபந்தனைகளை முறையாக கடைபிடித்து குவாரிப்பணி செய்வதுடன், பொது நிபந்தனை எண்.2-ல் கண்டவாறு குவாரிப்பணி ஆரம்பிப்பதற்கு முன்பாக தமிழ்நாடு மாகாணப் பொது நிபந்தனை வாரியத்தின் தடையின்மை சான்று பெற்று அதன் பின்னரே குவாரிப்பணி துவங்க வேண்டும்.
5. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெளிவாக காட்டும் வகையில் கல் நட்டு வண்ணம் இட்டு குத்தகை காலம் முழுமைக்கும் பராமரிக்க வேண்டும்.
6. குத்தகைதாரர் குவாரியின் அருகே குத்தகைதாரர் பெயர், வட்டத்தின் பெயர், கிராமத்தின் பெயர், புல எண், பரப்பு, குத்தகை ஆவண எண், குத்தகை காலம், கனிமத்தின் பெயர் போன்ற விவரங்கள் குறிக்கப்பட்ட தகவல் பலகையை தமது சொந்த செலவில் வைத்து நான்கு பராமரிக்க வேண்டும்.
7. குவாரிக்கு சென்றுவரும் பாதை வசதிகள் குத்தகைதாரர்கள் அவர் தம் சொந்த பொறுப்பினையே அமைத்துக் கொள்ள வேண்டும்.



8. குத்தகை வழங்கப்பட்ட பாறையில் குண்டுக்கல், ஜவ்லி அரணை கல், வேலிக்கற்கள், போன்ற சிறுகனிமங்கள் உடைத்தெடுக்க மட்டுமே அனுமதியுண்டு வெளிநாடுகளுக்கு ஏற்றுமதியாகும் மெருகட்டும் கனவடிவ கற்கள் வெட்டி எடுக்கக்கூடாது.
9. குவாரியிலிருந்து கொண்டு செல்லப்படும் மேற்கண்ட வகை கற்களுக்கு 1959ம் ஆண்டு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் பின் இணைப்பு II-ல் கண்டுள்ளவாறு உரிமவரி (சீனியரேஜ் தொகை) செலுத்த வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபணை இன்றி செலுத்தவேண்டும். மேலும் கரங்கத்திட்டத்தில் அனுமதிக்கப்பட்ட சாதாரணகற்கள் 3,95,712 கனமிட்டரும், கிராவல் மண் 56,088 கனமிட்டர்களுக்கு மட்டுமே நடைச்சீட்டுக்கள் வழங்கப்படும். இந்த அளவிடுகளை மீறும்பட்சத்தில் குவாரிக்கு நடைச்சீட்டுக்கள் வழங்கப்படுவது நிறுத்தம் செய்யப்படும்.
10. குத்தகை அனுமதி வழங்கப்பட்ட நிலத்திலிருந்து கொண்டு செல்லப்பட்ட கற்களுக்கு முறையான கணக்குகளும், குழிவாயில் பதிவேடும் முறையாக பராமரித்தல் வேண்டும். அவற்றை சம்பந்தப்பட்ட அலுவலர்கள் தணிக்கைக்கு ஆஜர்படுத்த கோரினால் தவறாது சமர்ப்பிக்க வேண்டும்.
11. தமிழ்நாடு மாவட்ட கனிம கட்டமைப்பு விதிகள் 2017-ன்படி 12.01.2015க்கு பிறகு வழங்கப்பட்ட குவாரி குத்தகை உரிமங்கள் செலுத்தப்படும் சீனியரேஜ் தொகையில் 10% தொகையினை மாவட்ட கனிம கட்டமைப்பு நிதிக்கு பங்களிப்பாக செலுத்தப்பட வேண்டும்.
12. இந்த ஆணையில் குத்தகை அனுமதி வழங்கப்பட்ட பஸத்தை முழுமையாகவோ, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிரையம் செய்வதோ கூடாது.
13. உதவி இயக்குநர் / துணை இயக்குநர் (புனியியல் மற்றும் கரங்கத்துறை)-ன் அலுவலக முத்திரை, கைபொப்ப முத்திரையுடன் கூடிய உரிய அனுப்புரைக் சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுப்புரைச்சீட்டில் வாகன எண், தேதி, புறப்படும் ஸ்டேஷன், செல்லும் இடம் ஆகியவற்றை முறையாகக் குறிப்பிட்டு கைபொப்பம் இட்ட பின்னரே குத்தகைதாரரோ அல்லது அவரது அனுமதி பெற்ற நபரோ கொடுக்க வேண்டும். மேற்கண்டவாறு குறிப்பிடுவதில் ஏதேனும் தவறுகள் இருந்தாலோ, கலங்கள் பூர்த்தி செய்யப்படாமல் இருந்தாலோ முறையற்ற வகையில் கனிமம் எடுத்துச் செல்வதாகக் கருதப்பட்டு வாகனத்தை கைப்பற்றி அபராதம் விதிப்பதோடு, அதற்கு குத்தகைதாரரை பொறுப்பாக்கி கனிம விதிகளின்படி மேல் நடவடிக்கை எடுக்கப்படும்.
14. குத்தகைதாரர் ஒவ்வொரு நாளும் குவாரியில் இருந்து எவ்வளவு சிறுகனிமங்கள் எடுக்கப்பட்டது என்பதையும் எந்த அளவு கனிமங்கள் லாரி/லண்டி மூலம் வெளியே அனுப்பப்பட்டது என்ற விபரத்தையும் காட்டும் பதிவேட்டைப் பராமரித்து வரவேண்டும்.



15. குத்தகைதாரர், தமக்கு குத்தகை வழங்கப்பட்ட பகுதிக்கு அருகில் உள்ள மட்டா நிலத்திற்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்யப்பட வேண்டும்.
16. வண்டிப்பாதை மற்றும் நடைபாதைகளில் இருந்து 10 மீட்டர் தூரம் தள்ளி குவாரி செய்ய வேண்டும். ரோடுகள், புகைவண்டிப்பாதை, பொதுப்பணித்துறை, வாய்க்கால், பொதுமக்கள் உபயோகத்திற்கான பகுதிகள், மின்சாரம் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள், வழிபாட்டு இடங்கள் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள், வழிபாட்டு இடங்கள் மற்றும் பழங்கால சின்னங்கள் உள்ள பகுதிகள் ஆகியவற்றில் இருந்து 50 மீட்டர் பாதுகாப்பு தூரம் விட்டு குவாரி செய்ய வேண்டும்.
17. குத்தகைக்கு விடப்பட்டுள்ள விஸ்தீரணத்தில் மட்டுமே குத்தகைதாரர் குவாரி செய்ய வேண்டும். அதற்கான கூடுதலான விஸ்தீரணத்தில் குவாரி செய்வது தெரியவந்தால் அபாரத நடவடிக்கை மேற்கொள்வதுடன் குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.
18. குத்தகை நிபந்தனை மீறப்பட்டால் குத்தகை இரத்து செய்யவோ, செய்யப்பட்ட தவறுதலுக்கு அபாரத நடவடிக்கை எடுத்து தண்டம் விதிக்கவோ அல்லது கிரிமினல் வழக்குத் தொடுக்க மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை ரத்து செய்யப்பட்டால் காப்புத் தொகை உப்ட அனைத்து தொகைகளும் அரசுக்கு ஆதாயமாக்கப்படும்.
19. குத்தகைதாரர் தமிழ்நாடு சிறுவனகக்கணிப் சலுகை விதிகள் 1959-ல் கண்டுள்ள விதிகளுக்கும் மற்றும் அரசு அவ்வப்போது அறிவிக்கும் சட்டதிட்டங்களுக்கும் உட்பட்டு குவாரிப்பணிகள் செய்ய வேண்டும்.
20. குவாரி குத்தகை உரிமம் காலாவதியான பின்பு எக்காரணத்தை முன்னிட்டும் மீண்டும் புதுப்பிக்கவோ அல்லது கால நீட்டிப்போ செய்து தரப்பட மாட்டாது.
21. வெடிபொருள் சட்டம் 1884-ல் தெரிவிக்கப்பட்ட சாத்துக்கள்படி குறைந்த அளவு வெடிபொருளை உபயோகித்து கற்கள் வெளியீய சிதறாமலும், சந்தம் அதிகம் ஏற்படாமலும், பொதுமக்களுக்கும், கால்நடைகளுக்கும், எவ்வித பாதிப்பும் இன்றியும் கல்குவாரி பணி செய்யப்பட வேண்டும்.
22. வெடிபொருள்கள் அரசு உரிமம் பெற்ற விற்பனைதாரரிடம் மட்டுமே பெற்று வெடிப்பதற்கு உரிமம் / அங்கீகாரம் பெற்ற வெடிப்பாளர்களை (கூடயளவநச / ஆனநேன ஆயவந) கொண்டு கல் குவாரியில் வெடி வைக்க வேண்டும்.
23. குவாரிப்பணி ஆரம்பிப்பதற்கு முன்னதாக குவாரி பணி செய்யப்பட இருக்கும் புலங்களின் எல்லையைச் சுற்றிலும் முள் கம்பி வேலி (ஷெய்சநென றசைந கநடேனபே) அமைக்கப்பட வேண்டும்.
24. குழுத்தை தொழிலாளர்கள் எவரையும் வேலைக்கு அமர்த்துதல் கூடாது.



சிறப்பு நிபந்தனைகள்

1. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-விருந்து புல எண்.700/1-ல் 50 மீட்டர் இடைவெளிவிடவேண்டும்.
2. மேய்க்கால் அரசு புறம்போக்கு புல எண்.695 மற்றும் வாய்க்கால் புறம்போக்கு புல எண்.706 ஆகியவற்றில் ஆக்ரமணம் ஏதும் செய்யக்கூடாது.

மேற்குறிப்பிட்ட நிபந்தனைகள், சிறப்பு நிபந்தனைகள் மற்றும் கனிம சட்டம் விதிகளை மீறியுள்ளது உறுதிபடும் திருணத்தில் விதிமுறைகளுக்கு உட்பட்டு குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும். மேற்கண்ட நிபந்தனைகள் ஒப்பந்தப் பத்திரத்தில் கண்டுள்ள நிபந்தனைகள், மாவட்ட சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் நிபந்தனைகள் மற்றும் 1959-ம் ஆண்டு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் ஆகியவற்றின் அடிப்படையில் குத்தகைதாரர் குவாரிப் பணி புரிய வேண்டும்.

ஓம்.XXX
நாள். 23.01.2019
மாவட்ட ஆட்சியர்,
காஞ்சிபுரம்.

/ உத்தரவின்படி /

23.01.19
மாவட்ட ஆட்சியருக்காக,
காஞ்சிபுரம்.

பெறுநர்,
திள். S.ரத்தினவேலு,
த/பெ. R. சிவசுவாமி,
பழைய எண்.5, புதிய எண்.2/33,
புலனேஸ்வரி நகர், 1வது தெரு,
கௌரிவாக்கம்,
சென்னை - 73.

நகல்

1. சார் ஆட்சியர், காஞ்சிபுரம்.
2. வட்டாட்சியர், உத்திரமேரூர்.
3. கிராம நிர்வாக அலுவலர், பினாயூர் (வட்டாட்சியர் மூலமாக)
4. மாவட்ட சுற்று சூழல் பொறியாளர்,
மாகக்கட்டுப்பாட்டு வாரியம், திருப்பெரும்புதூர் (இருப்பு) ஓரகடம்.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Rathnavelu

Chennai -73

AP 367543

V.M.

V. MANOHARI (S.V.)
32, MUTHURANGAM ROAD
TAMBARAM, CHENNAI - 43.
NO.16558, C/O. D.T. 4.12.18
PH:2226 9080



23546

29.11.18

APPENDIX - IV

(See Rule 19 (1), 20 and 41A, 42)

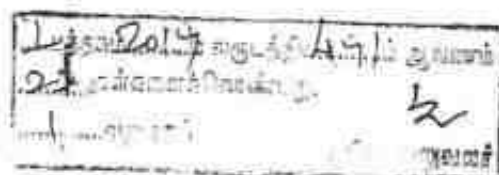
**FORM OF AGREEMENT FOR QUARRYING AND CARRYING
AWAY MINOR MINERALS FROM RYOTWARI LANDS IN WHICH
THE MINERALS BELONG TO GOVERNMENT**

(Kancheepuram District Collector's Proceedings No.195/Q3/2017
Dated - 01.2019)

AGREEMENT MADE THIS 23rd day of January 2019 between
Thiru. S. Rathnavelu, S/o. R. Sivaswamy, Old No: 5, New No.2/33,
Bhuvanishwari Nagar, 1st Street, Gowrivakkam, Chennai 600 073
(hereinafter referred to as 'the Registered Holder' which term shall
include in these presents where the context so admits include also
his heirs, executors administrators, legal representatives and
assigns; of the one part and the Governor of Tamil Nadu
(hereinafter called 'the Government' which term shall where the
context so admits include also his successors in office and assigns)
of the other part.

[Signature]
Registered Holder &
Lessee

[Signature]
District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000

INDIA

தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Rathnavelu
Chennai - 73

AP 367544

V. MANOHARI (S.V.)
32, LUTHURANGAM ROAD
TANDARAM, CHENNAI-45.
NO.16558/C/80 DT.4.12.8
PH:2226 9080



23547
29.11.18

-2-

WHEREAS, the Registered Holder holds the lands described in the schedule hereunder written (hereinafter referred to as the said lands);

AND WHEREAS, the Registered Holder has made application to the Collector of the District of Kancheepuram (hereinafter referred to as "the District Collector") seeking grant of quarrying lease for quarrying Rough Stone and Gravel in the said lands and to deposit mining waste thereon for a term of 5 years and has lodged with the Collector an accurate map or sketch of the said lands;

AND WHEREAS, the Collector, acting for and on behalf of the Government, has granted a quarrying lease to the Registered Holder and allowed him to commence quarrying operations for Rough Stone and Gravel in the said lands and to deposit mining waste thereon by the Registered Holder for a term of Five years from 23.01.2019 to 22.01.2024.

[Signature]
Registered Holder &
Lessee

[Signature] A/S
District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Raghnavelu
Chennai - 73

AP 367545

V. MANOHARI (S.V.)
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI-45.
NO.16558/C/89 DT.4.12.89
PH-2226 9080



23548
29.11.18

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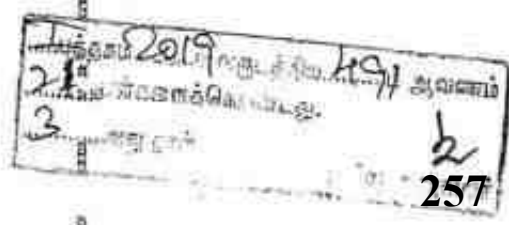
AND WHEREAS, the Registered Holder has deposited with the Collector the sum of Rs. 10,000/- remitted at State Bank of India, Kancheepuram vide challan No.108, date.29.11.2018 as security against loss or damage which may be incurred by the Government by reason by any of the said lands being rendered and unfit for cultivation by any mining operations therein of the Registered Holder or by deposit of mining waste thereon by the Registered Holder.

NOW THESE PRESENTS WITNESS and the Registered Holder doth hereby agree with the Government in the manner following, that is to say:-

- 01 The Registered Holder shall be at liberty at all times during the period of the lease to carry on mining operations for Rough Stone and Gravel in the lands in a proper and workman like manner and to deposit mining waste on the lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.

Registered Holder &
Lessee

District Collector,
Kancheepuram.





தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. RAJENDRAN
Chennai-73

AP 367546

V.M.

V. MANOHARI (S.V.)
32, GUTHURANGAM ROAD
TAMBARAM, CHENNAI-45.
NO 16558/C/89 DT. 4.12.84
PH: 2226 9050



23549
29.11.18

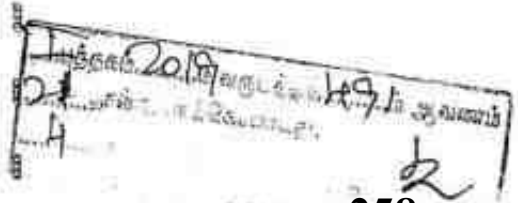
-4-

02 The Registered Holder shall pay to the Collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands Seigniorage on the minor minerals at the rates specified in the Appendix II to the Tamil Nadu Minor Mineral Concession Rules, 1959.

03 The Registered Holder shall and will keep correct accounts in such form as the Collector Shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the Registered Holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorised by the Director of Geology and Mining, Tamil Nadu from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such informations and returns regarding all or any of the matter aforesaid as the Government shall, from time to time required and direct.

[Signature]
Registered Holder &
Lessee

[Signature] G/R
District Collector,
Kancheepuram.



[Signature]



தமிழ்நாடு தமில்நாடு TAMILNADU

S. Rathanavelu
Chennai - 73

AP 367547

V.M.

V.MANOHARI (S.V.)
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI - 75
NO.16555/C/99 DT. 4.12.89
PH:2226 9050



23550
29.11.18

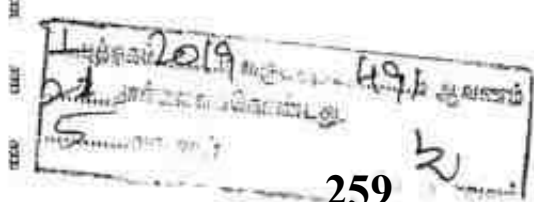
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The Registered Holder shall and will at all times, allow any officer authorized by the Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

- 05 The Registered Holder shall forthwith send to the District Collector a report of any accident, which may occur at or in the said lands and also of the discovery of any mineral other than Rough stones.
- 06 It shall be lawful for the Registered Holder at any time to cease mining operations under these presents provided he shall pay to the Collector for and on behalf of the Government Land assessment, cess and Seigniorage due to the Government and shall restore the said lands or fence, or fill in abandoned pits and excavations therein if required by the Collector and upon his so doing these presents shall cease and determine.

[Signature]
Registered Holder &
Lessee

[Signature] 7/19
District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Raghavaveu

Chennai - 73

AP 367548

V. MANOHARI (S.V.)
32, MUTHURANGAM ROAD
TAMBARAM, CHENNAI - 45
NO. 16553 / C / SD DT. 4.12.51
PR. 2226 9080



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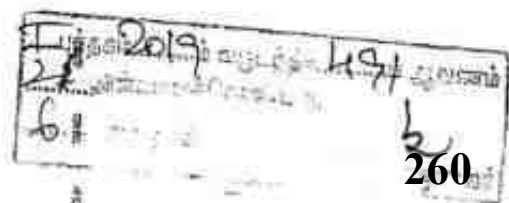
In case the Registered Holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereof as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in, and in case the Registered Holder shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence, or fill in any such abandoned pit or excavation which he shall be required to so fence or fill in them in any such case, it shall be lawful for the Collector to so restore any such land, or as the case may be, to so fence or fill any such pits or excavation at the expense of the Registered Holder and to apply the said sum of Rs.10,000/- so deposited in or towards the cost of so doing and

[Signature]

Registered Holder & Lessee

[Signature]

District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S- Raghavulu

Chennai - 13

AP 367549

V. N. S. V.

V. MANOHARI (S.V.)

32 MUTHURANGAM ROAD,

TAMBARAM, CHENNAI-45.

NO.16558/C/159 DT. 4.12.89

PH:2226 9080



23552
29.11.18

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to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration or fencing or filling in or to meet thirty times the assessment on the area rendered and uncultivable, it shall be lawful for the Government to recover the balance by resort to civil court.

08. The Registered Holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operation or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.


Registered Holder &
Lessee


District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000



தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Raghavavelu

Chennai - 73

AP 367550

V.M.

V.MANOHARI (S.V.)
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI-45.
NO.16553/C/1997/4.12.83
PH.2226 9083



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The Registered Holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector.

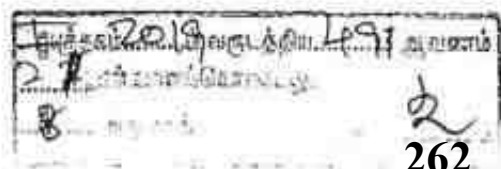
- 10 All land assessments, cess and Seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act 1864, as if they were arrears of land revenue.
- 11 In the event of any breach by the Registered Holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced Seigniorage or for the Collector to give notice in writing to the Registered Holder of his intention to cancel these presents where upon the same shall stand cancelled but without prejudice to any rights which the Government may have against the Pattadar in respect of any antecedent claim or breach of covenant or condition.

[Signature]

Registered Holder &
Lessee

[Signature] 10/12

District Collector,
Kancheepuram.





தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Rathnavelu
Chennai - 13

AP 367551

V. MANOHARI (S.V.)
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI - 45
NO 16358 / C / SD DT. 4.12.80
PH: 2226 9080



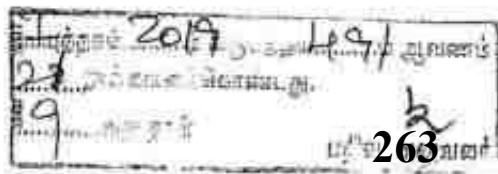
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- 12 Any notice to be given to the Registered Holder may be addressed to his last known place of abode and where a notice has been so addressed, it shall be deemed to have been duly served for the purpose of these presents.
- 13 Should any question or dispute arise regarding the agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the Registered Holder thereunder, the amount or payment of the Seigniorage fee or area assessment made payable thereby, the matter in issue shall be decided by the Director of Geology and Mining. In case the Registered Holder is not satisfied with the decision of the Director of Geology and Mining, the matter shall be referred to the State Government for decision.


Registered Holder &
Lessee


District Collector,
Kancheepuram.





भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये

रु.1000

ONE THOUSAND RUPEES

Rs.1000

INDIA

தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Raghavulu
Chennai - 73

AP 367552

V.M.

V. MANOHARI (S.V.),
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI - 45.
NO. 16558 / C / ED DT. 4.12.8
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29.11.18

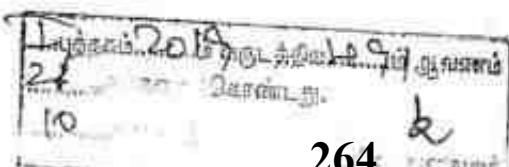
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- 14 The Registered Holder shall abide by the conditions laid down in the Payment of Wages Act 1936, (Central Act IV of 1936), the Mines Act, 1952 (Central Act XXXV of 1952) and the Explosives Act 1884 (Central Act IV of 1884).
- 15 Quarrying operations should be carried out in accordance with the Approved Mining Plan. If the mining operations are not carried out in accordance with the Approved Mining Plan, the District Collector may order suspension of all quarrying operations, by way of rectification to restore the conditions as may be necessary in the quarry as envisaged under the said mining plan.

நிபந்தனைகள் -

1. குத்தகை புலத்தினை அடுத்தள்ள அரசு மேய்க்கால் பறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு முறையே 10 மீட்டர் மற்றும் 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.

Registered Holder &
Lessee

District Collector,
Kancheepuram.




தமிழ்நாடு தமிழ்நாடு TAMILNADU

S. Raghav
Chennai - 73

AP 367553

V.M.

V.MANOHARI (S.V.)
32, MUTHURANGAM ROAD,
TAMBARAM, CHENNAI-45,
IN 16553 / C/89 DT. 4.12.89
PH: 2226 9080



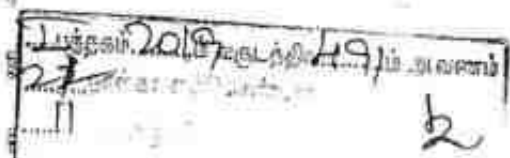
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3. பொதுமக்களின் நலன் கருதி பாதுகாப்பான முறையில் குறைந்த அழுத்தமுள்ள இலேட் கொடுக்கப் பயன்படுத்தியும், கைத்துறைப்பான் கருவி கொண்டு துளையிட்டும், தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய பாதுகாப்பானதும், அகலமான Benches அமைத்து குவாரிப்பணி செய்ய வேண்டும்.
4. ஊட்ட கற்றுக்குழுல் தாக்க மதிப்பீட்டு ஆணையத்தின் பரிந்துரை கடித எண். DEIAA-DIA / TN / MIN / 195 / Q3 / 2017-KPM, EC.No.27-2018, Dated: 03.10.2018-ல் காணும் நிபந்தனைகளை முறையாக கடைபிடித்து குவாரிப்பணி செய்வதுடன், பொது நிபந்தனை எண்.2-ல் கண்டவாறு குவாரிப்பணி ஆரம்பிப்பதற்கு முன்பாக தமிழ்நாடு மாகாணத்துப்பாட்டு வாரியத்தின் துடையின்மை என்று பெற்று அதன் பின்னடி குவாரிப்பணி துவங்க வேண்டும்.
5. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெளிவாக காட்டும் வகையில் கல் நட்டு வண்ணம் இட்டு குத்தகை காலம் முழுமைக்கும் பராமரிக்க வேண்டும்.
6. குத்தகைதாரர் குவாரியின் அருகே குத்தகைதாரர் பெயர், வட்டத்தின் பெயர், கிராமத்தின் பெயர், புல எண், பரப்பு, குத்தகை ஆவண எண், குத்தகை காலம், கீனிமத்தின் பெயர், போன்ற விவரங்கள் குறிக்கப்பட்ட தகவல் பலகையை தமது சொந்த செலவில் வைத்து நான்கு பராமரிக்க வேண்டும்.

[Signature]
Registered Holder &
Lessee

[Signature]
District Collector,
Kancheepuram.





7. குடியிருப்பு செக்ஸ் என்ட்ரன்ஸ் கட்டணக் கார்டுகள் ஆவர் தம் சொந்த பெறுவிலிப்பட்ட ஆவணத்துக் கொண்டு கட்டப்படும்.
8. குத்தகை வழங்கப்பட்ட பானாபால் துண்டிக்கல் துல்லரி துரணை கல், வேலிச்சுறாசல், போட்டி சிழுகலையில்கல் உடைந்தெடுக்க நடந்துபே அனுமதிவண்டும். வெளிநாடுகளுக்கு எழுந்திபதும் வெருகட்டும் கார்ப்பாசி கற்கள் வெட்டி எடுக்கக்கட்டது.
9. குவாரியிலிருந்து கொண்டு செல்லப்படும் மேற்கண் வகை கற்களுக்கு 1959ம் ஆண்டு தமிழ்நாடு சிறுசனிய சதுரை விதிபல் பின் இலண்டப் II-ல் கண்டுள்ளவாறு உரிமவரி (சீனியமீரஜ் தொலை) செலுத்து வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபனை இன்றி செலுத்தவேண்டும். மேலும் சாங்கத்திட்டத்தில் அனுமதிக்கப்பட்ட சாதாரணகற்கள் 3,95,712 கணமிட்டரும், சுவாசல் மண் 56,088 கணமிட்டர்களுக்கு மட்டுமே நடைச்சீட்டுக்கள் வழங்கப்படும். இந்த அளவீடுகளை மீறும்பட்சத்தில் குவாரிக்கு நடைச்சீட்டுக்கள் வழங்கப்படுவது நிறுத்தம் செய்யப்படும்.
10. குத்தகை அனுமதி வழங்கப்பட்ட நிலத்திலிருந்து கொண்டு செல்லப்பட்ட கற்களுக்கு முறையான கணக்குகளும், குழிவாயில் பதிவேடும் முறையாக பராமரித்தல் வேண்டும். அவற்றை சம்பந்தப்பட்ட அலுவலர்கள் துணிக்கைக்கு ஆஜர்படுத்த கோரிமால் தவறாது சமர்ப்பிக்க வேண்டும்.
11. தமிழ்நாடு மாவட்ட கனிம கட்டமைப்பு விதிகள் 2017-ன்படி 12.01.2015க்கு பிறகு பரங்கப்பட்ட குவாரி குத்தகை உரிமங்கள், செலுத்தப்படும் சீனியமீரஜ் தொலைபயில் 10% தொகையினை மாவட்ட கனிம கட்டமைப்பு நிதிக்கு பங்களிப்பாக செலுத்தப்பட வேண்டும்.
12. இந்த ஆணையில் குத்தகை அனுமதி வழங்கப்பட்ட புலத்தை முழுமையாகவோ, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிரையம் செய்வதோ கூடாது.
13. உதவி இயக்குநர் / துணை இயக்குநர் (புலியியல் மற்றும் கரங்கத்துறை)-ன் அலுவலக முத்திரை, கையொப்ப முத்திரையுடன் கூடிய உரிய அனுப்புகைச் சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுப்புகைச்சீட்டில் வாகன எண், தேதி, புறப்படும் நேரம், செல்லும் இடம் ஆகியவற்றை முறையாகக் குறிப்பிட்டு கையொப்பம் இட்ட பின்னல், குத்தகைதாரரோ அல்லது அவரது அனுமதி பெற்ற நபரோ கொடுக்க வேண்டும். மேற்கண்டவாறு குறிப்பிடுவதில் எதேனும் தவறுகள் இருந்தாலோ, கவங்கள் பூர்த்தி செய்யப்படாமல் இருந்தாலோ முறைபற்ற வகையில் கனிமம் எடுத்துச் செல்வதாகக் கருதப்பட்டு வாகனத்தை கைப்பற்றி அபராதம் விதிப்பதோடு, அதற்கு குத்தகைதாரரான பொறுப்பாக்கி கனிம விதிகளின்படி மேல் நடவடிக்கை எடுக்கப்படும்.
14. குத்தகைதாரர் ஒவ்வொரு நாளும் குவாரியில் இருந்து எவ்வளவு சிறுகனிமங்கள் எடுக்கப்பட்டது என்பதையும் எந்த அளவு கனிமங்கள் வாரி/வண்டி மூலம் வெளியே அனுப்பப்பட்டது என்ற விபரத்தையும் கூட்டும் பதிவேட்டினைப் பராமரித்து வரவேண்டும்.


Registered Holder &
Lessee


District Collector,
Kancheepuram.

2019 49/1 கனிமம்
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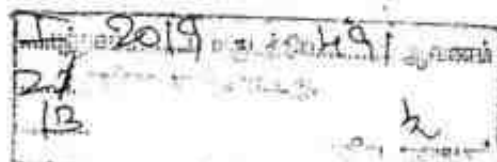


15. குத்தகைதரர் தரப்பட்டிருக்கக்கூடிய குத்தகை அளவுக்கு அருகில் உள்ள பட்ட நிலத்திலிருந்து எவ்வித இடம்பூரண இடங்களின் குவாரிப்பணி செய்யப்பட வேண்டும்.
16. வண்டியானது பற்றும் நடைபாதைகளில் இடத்து 10 மீட்டர் தூரம் தள்ளி வண்டி செய்ய வேண்டும். மேலும், பாதையொட்டிவராத பொதுப்பணிக்குறியு வாய்க்கால், பொதுமக்கள் உபயோகத்திற்கான பகுதிகள், மின்சாரம் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள் வழியாக இடங்கள் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள் வழியாக இடங்கள் மற்றும் பூங்கா சின்னங்கள் உள்ள பகுதிகள் ஆகியவற்றில் இருந்து 50 மீட்டர் பாதுகாப்பு தூரம் விட்டு குவாரி செய்ய வேண்டும்.
17. குத்தகைக்கு விடப்பட்டுள்ள விஸ்தீரணத்தில் மட்டுமே குத்தகைதாரர் குவாரி செய்ய வேண்டும். அதற்கான சுடுதொடான விஸ்தீரணத்தில் குவாரி செய்வது தெரிபவந்தால் அபாரத நடவடிக்கை மேற்கொள்வதுடன் குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.
18. குத்தகை நிபந்தனை மீறப்பட்டால் குத்தகை இரத்து செய்யலாம். செய்யப்பட்ட தவறுதலுக்கு அபாரத நடவடிக்கை எடுத்து உண்டாம் விதிக்கலாம் அல்லது கிரிமினல் வழக்குத் தொடுக்க மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை ரத்து செய்யப்பட்டால் காப்புத் தொகை உட்பட அனைத்து தொகைகளும் அரசுக்கு ஆதாயமாக்கப்படும்.
19. குத்தகைதாரர் தமிழ்நாடு சிறுவனைக்கனிம சலுகை விதிகள் 1959-ல் கண்டுள்ள விதிகளுக்கும் மற்றும் அரசு அல்லப்போது அறிவிக்கும் சட்டதிட்டங்களுக்கும் உட்பட்டு குவாரிப்பணிகள் செய்ய வேண்டும்.
20. குவாரி குத்தகை உரிமம் காலாவதியான பின்பு எக்காரணத்தை முன்னிட்டும் மீண்டும் புதுப்பிக்கலாம் அல்லது கால நீட்டிப்போ செய்து நாப்ட மாட்டாது.
21. வெடிபொருள் சட்டம் 1884-ல் தெரிவிக்கப்பட்ட சரத்துக்கன்படி குறைந்த அளவு வெடிபொருளை உபயோகித்து கற்கள் வெளியே சிதறாமலும், சத்தம் அதிகம் ஏற்படாமலும், பொதுமக்களுக்கும், கால்நடைகளுக்கும், எவ்வித பாதிப்பும் இன்றியும் கல் குவாரி பணி செய்யப்பட வேண்டும்.
22. வெடிபொருள்கள் அரசு உரிமம் பெற்ற விற்பனைதாரரிடம் மட்டுமே பெற்று வெடிப்பதற்கு உரிமம் / அங்கீகாரம் பெற்ற வெடிப்பாளர்களை (Blaster / Mines Mate) கொண்டு கல் குவாரியில் வெடி வைக்க வேண்டும்.
23. குவாரிப்பணி ஆரம்பிப்பதற்கு முன்னதாக குவாரி பணி செய்யப்பட இருக்கும் புலங்களின் எல்லைவரையில் சுற்றிலும் முள் கம்பி வேலி (Barbed wire fencing) அமைக்கப்பட வேண்டும்.
24. குழந்தை தொழிலாளர்கள் எவரையும் வேலைக்கு அமர்த்துதல் கூடாது.

[Signature]

Registered Holder &
Lessee

[Signature] 15/8
District Collector,
Kancheepuram.





சிறப்பு நிபந்தனைகள்

1. விண்ணப்பம் செய்திருக்கும் க்கு மற்றும் மேலது குத்தியல் செலவும் எஸ்கோஸ் பற்றியாகத் தபல எண்.706-லிருந்து தபல எண்.7001-ல் 50 மீட்டர் இடை வெளியிட வேண்டும்.
2. மேல்க்காது அரசு ஒப்புமத்து தபல எண்.895 மற்றும் எஸ்கோஸ் ஒப்புமத்து தபல எண்.706 ஆகியவற்றில் ஆகாமலாம் எனும் செய்யக்கூடாது.

மேல்குறிப்பிட்ட நிபந்தனைகள், சிறப்பு நிபந்தனைகள் மற்றும் வனிம சட்டம் விதிகளை மீறியுள்ளது உறுதியிடும் தருணத்தில் விதிமுறைகளுக்கு உட்பட்டு குத்தியலை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும். மேல்க்காது நிபந்தனைகள் ஒப்புமத்துப் பத்திரத்தில் சுண்டுள்ள நிபந்தனைகள், மாவட்ட கற்றுச் சூழல் தூக்க மதிப்பீட்டு ஆணையத்தின் நிபந்தனைகள் மற்றும் 1959-ம் ஆண்டு தமிழ்நாடு சிறுசுளிய சலுகை விதிகள் ஆகியவற்றின் அடிப்படையில் குத்தியல்தாரர் குவாரிப் பணி புரிய வேண்டும்.

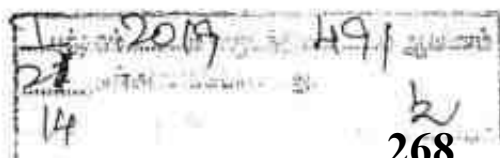
As per Approved Mining Plan the total production of Rough stone and Gravel for the five years lease period is 3,95,712 cubic meter and 56,088 cubic meter respectively. Hence for the purpose of calculating stamp duty the anticipated Seigniorage fee is Rs.2,51,97,912/- (Rupees Two Crore Fifty One Lakhs Ninety Seven Thousand Nine Hundred and Twelve Only) for the entire lease period of 5 years.

THE SCHEDULE

Name of the District	: Kancheepuram
Name of the Taluk	: Walajabad
Name of the Village	: Magaral "A"
Name of the Sub-Registration District	: Kancheepuram
Period	: Five years(From 23.01.2019 to 23.01.2024)

Registered Holder &
Lessee

District Collector,
Kancheepuram.





S. No.	S.F. No.	Extent (in Hect)	Area Assessment	North	South	West	East
1	700/1/P1	25.00	Rs 1,800/- Ch.No 109, SdI, KPM	700/1	700/2	701, 706	899/2
2	700/2	05.50	SdI, KPM Dt. 29.11.18	700/1	895	701	899/2
Total		2.34.50					

INWITNESS WHEREOF Thiru. S. Rathnavelu, S/o.R. Sivaswamy, Old No: 5, New No.2/33, Bhuvaneswari Nagar, 1st Street, Gowrivakkam, Chennai 600 073 "the Registered Holder" and Thiru.P.Ponniah, I.A.S., District Collector, Kancheepuram acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.




(REGISTERED HOLDER
& LESSEE)

(Signed by the above named
the Permit holder in the presence of)

1. R. Senthikumar (R. SETHIKUMAR)

NO 379, 6TH CROSS ST, SOMESUNDARAM AVENUE,
SPICOM NAGAR, PORUR, CHENNAI - 116

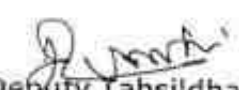
2. P. Selva Kumar (P. SELVA KUMAR)

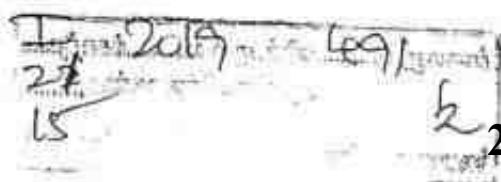
10/47, Pillayar Kovil Street,
Chennai Thaputhukulam,
Thippanam Patti (P.O), Tenkasi (T.K)
Tirunelveli (D.K) - 627808.


DISTRICT COLLECTOR,
KANCHEEPURAM.

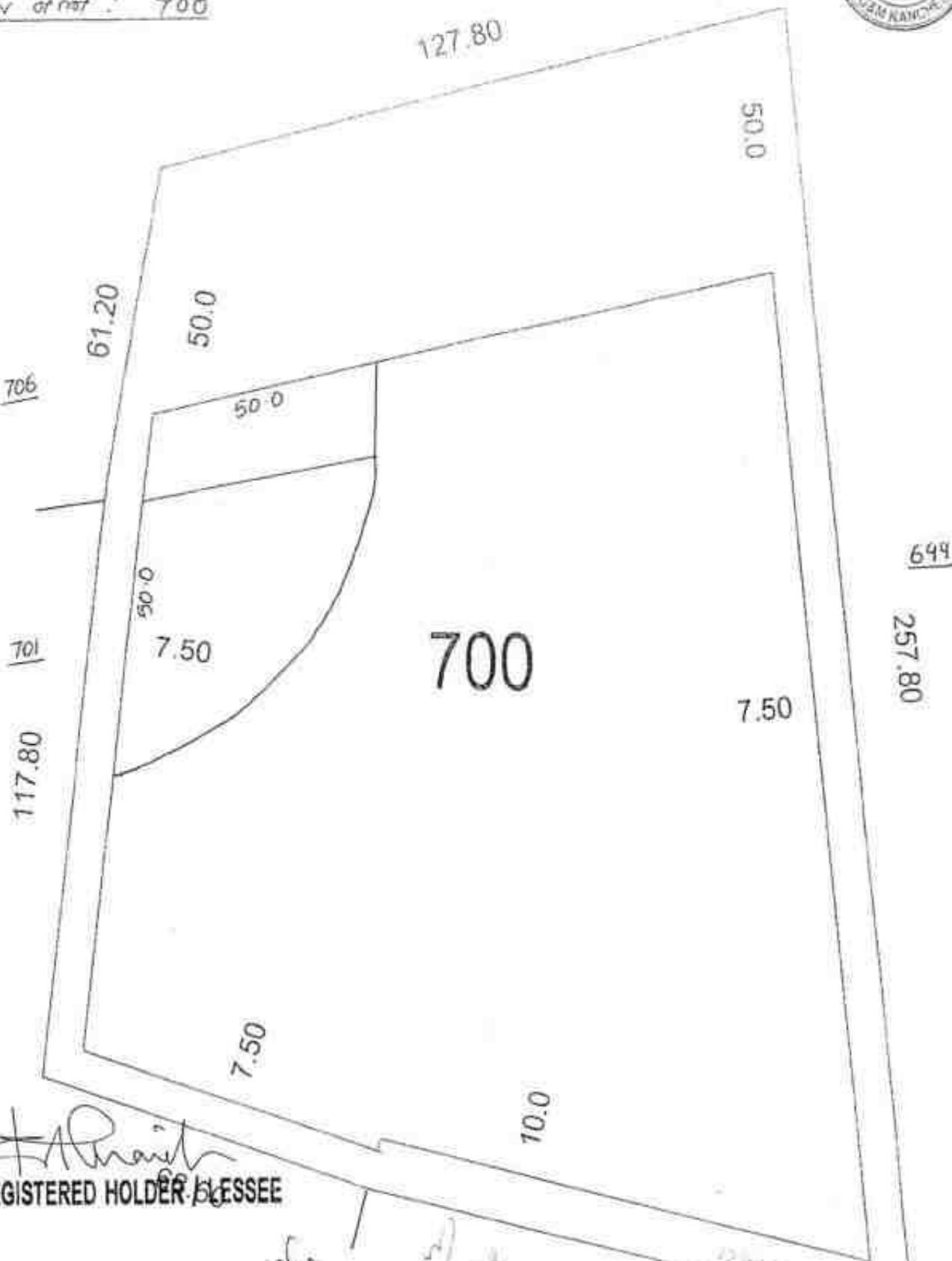
(Signed by the above named
the Lessor in the presence of)


Assistant Director,
Dept. of Geology and Mining,
Kancheepuram.

2. 
Deputy Tahsildhar,
Dept. of Geology and Mining,
Kancheepuram.



சென்னை நகராட்சி
பெரிய : கங்கையாறு
புற அளவு : 700



[Signature]
REGISTERED HOLDER-BLESSEE

DISTRICT COLLECTOR
KANCHIPURAM

வ. பார்வதி
வாராசாபாத்

2019
24
16

112.00
695

[Signature]

மாண்புமிகு...

R2 2

சென்னை நகராட்சி



பொதுமக்கள் திருவிழாக்கள்

[Signature]

இரு செவ்வந்திரம் திருவிழாக்கள் சென்னை நகராட்சி பகுதிக்குரிய பகுதியில் நடைபெறும் திருவிழாக்கள் நடைபெறும் திருவிழாக்கள் நடைபெறும் திருவிழாக்கள்

[Signature]

இரு செவ்வந்திரம் திருவிழாக்கள் சென்னை நகராட்சி பகுதிக்குரிய பகுதியில் நடைபெறும் திருவிழாக்கள் நடைபெறும் திருவிழாக்கள் நடைபெறும் திருவிழாக்கள்

30/12 ஆம் ஆண்டு பிப்ரவரி மாதம் 28 நாள்

கமலாட்சி கமலாட்சி

2 எண் இணை சார்பதிவாளர் காஞ்சிபுரம்

R/2 எண் இணை சார்பதிவாளர் காஞ்சிபுரம்/புத்தகம்-1/491/2019 எண்ணாகப் பதிவு செய்யப்பட்டது

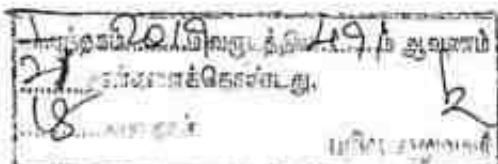
நாள்: 04/02/2019

2 எண் இணை சார்பதிவாளர் காஞ்சிபுரம்



கமலாட்சி கமலாட்சி

Joint Sub Registrar
Kanchipuram



2/2

[Signature]



இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India
புதுவை அடையாளம் / Enrollment No.: 21926003132561

To
A/Rajeshwari
S Rajeshwari
S/O R Rajeshwari
old no 5, new no 2033 bhuvaneshwari nagar 1st floor
govindakum
Sembakulam
Sembakulam
Tamil Nadu 600073
Tamil Nadu 600073
989755520644
56106498
989755520644
989755520644



உங்கள் ஆதார் எண் / Your Aadhaar No.
9897 5552 0644
எனது ஆதார். எனது அடையாளம்



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56106498
989755520644



எனது ஆதார். எனது அடையாளம்



தகவல்
ஆதார் அடையாளத்திற்கான எங்கள் குடியரிமைக்கு அல்ல
அடையாள எண்ணை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்

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To establish identity, authenticate online.

273

ஆதார் முழுவிதமாக செல்லுபடியாகும்
வங்காளத்தில் அரசு மற்றும் அரசு சார
சேவைகளைப் பயன்படுத்திக் கொள்ள ஆதார்
உத்தியோகம் இருக்கும்
Aadhaar is valid throughout the country.
Aadhaar will be helpful in availing Government
and Non-Government services in future.

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Sembakulam
Tamil Nadu 600073
Tamil Nadu 600073
989755520644
56106498
989755520644

எனது ஆதார். எனது அடையாளம்



AADHAAR

தகவல்

ஆதார் அடையாளத்திற்கான சான்று
செய்திப்பெறும் அல்ல

அடையாள சான்றை இலையபதனம் முலம்
உறுதிப்படுத்திக் கொள்ளவும்

INFORMATION
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To establish identity, authenticate online.

ஆதார் நாட்டு முழுதிலும் செல்லுபடியாகும்.
வாழ்நாட்டில் அங்கு மற்றும் அங்கு சாரா
செய்திப்பெறும் பதனப்படுத்திக் கொள்ள ஆதார்
உறுதிப்படுத்தும் இடத்திலும்.

Aadhaar is valid throughout the country.
Aadhaar will be helpful in availing Government
and Non-Government services in future.



இந்திய அடையாள அங்கீகரிக்கப்பட்ட அதிகாரம்
Unique Identification Authority of India

Address:
S/O. Rajkumar, S/O. S/O. CROSS
STREET, SOMASUNDARAM
AVENUE, SACTHI NAGAR,
Pond, Ponnur, Tiruvallur, Tamil
Nadu, 600110

4518 5193 8047



4518 5193 8047

4518 5193 8047

R. Senthil Kumar



AADHAAR

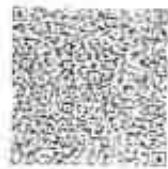
இந்திய அரசாங்கம்

Unique Identification Authority of India
Government of India

பதிவு அடையாளம் / Enrollment No. 10630002756074700

To
செந்தில்குமார்
S/O. Rajkumar
S/O. S/O. CROSS STREET
SOMASUNDARAM AVENUE, SACTHI NAGAR,
Pond, Ponnur, Tiruvallur,
Tamil Nadu, 600110

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ME 1064 B4415F7H



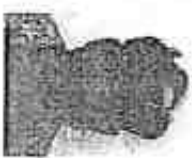
உங்கள் ஆதார் எண் / Your Aadhaar No.
4518 5193 8047

எனது ஆதார். எனது அடையாளம்



இந்திய அரசாங்கம்
Government of India

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நீர்வளத்துறை

அனுப்புநர்:
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செயற்பொறியாளர், நீ.வ.து.,
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பெறுநர்
உதவி இயக்குனர்,
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காஞ்சிபுரம்

கடித எண்: இவ.அ 2/ கோ.22 (கனிமம் - மாகரல் கங்குவாரி) / 2023 / நாள்: 29.09.2023.

அய்யா,

பொருள் : கனிமங்களும் குவாரிகளும் - காஞ்சிபுரம் மாவட்டம் - வாலாஜாபாத் வட்டம் - மாகரல் 'ஆ' கிராமம் - பட்டா புல எண்கள். 700/1(pt) & 700/2 - மொத்த பரப்பு 2.34.50 ஹெக்டேர்ஸ் பரப்பளவில் சாதாரண கற்கள் / கிராவல் மண் வெட்டி எடுக்க திரு.சரத்தினவேலு, த/பெ.ர.சிவசாமி என்பவருக்கு ஐந்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கி ஆணையிடப்பட்டது - குத்தகை காலம் 22.01.2024-வுடன் முடிவடைபவரானதால் அதனை அடுத்த ஐந்து ஆண்டுகளுக்கு புதுப்பித்து அனுமதி வழங்கக் கோரியது - வாய்க்கால் புறம்போக்கு புல எண். 206-ல் பாதுகாப்பு இடைவெளி 10 மீ விட்டு குவாரிப் பணிகள் மேற்கொள்ள மனு அளித்தது - தொழில்நுட்ப அறிக்கை சமர்ப்பித்தல் - தொடர்பாக.

- பார்வை : 1. மாவட்ட ஆட்சித்தலைவர், காஞ்சிபுரம் மாவட்டம், காஞ்சிபுரம் அவர்களின் செயல்முறை ஆணை ந.க.எண்.195 / க்யூ 3 / 2018 / நாள்.23.01.2019.
2. உதவி இயக்குனர் (பொ), புவியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் அவர்களின் ந.க.எண்.311 / க்யூ 3 / 2023 / நாள்.28.08.2023.
3. உதவி செயற்பொறியாளர், நீ.வ.து., கீழ்பாலாறு வடிநில உபகோட்டம், காஞ்சிபுரம் அவர்களின் கடித எண்.1623 / கோ.132 / 2023 / நாள். 26.09.2023.

பார்வை எண்.2ல் காணும் உதவி இயக்குனர் (பொ), புவியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் அவர்களின் கடிதத்தில் காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் 'ஆ' கிராமம், பட்டா புல எண்கள். 700/1(pt) & 700/2 ஆகியவற்றின் மொத்த பரப்பு 2.34.50 ஹெக்டேர்ஸ் பரப்பளவில் சாதாரண கற்கள் / கிராவல் மண் வெட்டி எடுக்க திரு.சரத்தினவேலு, த/பெ.ர.சிவசாமி என்பவருக்கு ஐந்து ஆண்டுகளுக்கு (23.01.2019 முதல் 22.01.2024 வரை) பார்வை எண்.1-ல் காணும் மாவட்ட ஆட்சித்தலைவர், காஞ்சிபுரம் மாவட்டம், காஞ்சிபுரம் அவர்களால் வழங்கப்பட்ட



செயல்முறை ஆணையில் மேற்குறிப்பிடப்பட்ட புல எண் நிலத்திற்கு வடக்கு மற்றும் மேற்கு பகுதியில் செல்லும் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.701/1-க்கு 50.00 மீட்டர் பாதுகாப்பு இடைவெளி விடப்பட வேண்டும் என்ற நிபந்தனையின் அடிப்படையில் அனுமதி வழங்கி ஆணையிடப்பட்டது எனவும், மனுதாரருக்கு வழங்கப்பட்ட அனுமதி காலம் வரும் 22.01.2024 அன்றுடன் முடிவடைபவ்வுள்ளது எனவும் தெரிவிக்கப்பட்டுள்ளது.

மேலும், மனுதாரருக்கு ஏற்கனவே வழங்கப்பட்ட அனுமதியில் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.700/1-க்கு விடப்பட வேண்டிய பாதுகாப்பு இடைவெளி 50.00 மீட்டர் இடைவெளியிலிருந்து 10.00 மீட்டர் இடைவெளி விட்டு குவாரிப்பணி செய்ய அடுத்த ஐந்து ஆண்டுகளுக்கு புதுப்பித்து வழங்கக்கோரி மனுதாரர் விண்ணப்பித்துள்ளதை தொடர்ந்து, பார்வை எண்.2-ல் காணும் உதவி இயக்குனர் (பொ), புலியியல் மற்றும் சுரங்கத்துறை, காஞ்சிபுரம் அவர்களின் கடிதத்தில் வாய்க்கால் புறம்போக்கு புல எண்.706-லிருந்து புல எண்.701-க்கு 10.00 மீட்டர் பாதுகாப்பு இடைவெளி குவாரிப்பணி மேற்கொள்ள அனுமதி வழங்குவது தொடர்பான நீர்வளத்துறையின் அறிக்கையினை அனுப்பி வைக்குமாறு கேட்டுக்கொள்ளப்பட்டதனை தொடர்ந்து மேற்கண்ட தளத்தினை இத்துறையின் தள அலுவலரால் தள ஆய்வு செய்து பார்வை எண்.3-ல் காணும் உதவி செயற்பொறியாளர், நீ.வ.து, கீழ்பாலாறு வடிநில உபகோட்டம், காஞ்சிபுரம் அவர்களின் பரிந்துரையின் அடிப்படையில் நீர்வளத்துறையின் தொழில்நுட்ப கருத்துரு கீழ்க்கண்டவாறு அனுப்பி வைக்கப்படுகிறது.

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாத் வட்டம், மாகரல் கிராமம் காஞ்சிபுரத்திலிருந்து சுமார் 16.00 கி.மீ தொலைவில் காஞ்சிபுரத்திலிருந்து தெற்கு புறத்தில் அமைந்துள்ளது. மனுதாரர் சாதாரண கற்கள் / கிராவல் மண் குவாரி ஐந்து ஆண்டுகளுக்கு அனுமதி கேரியுள்ள புல எண்கள் காஞ்சிபுரம் - மாநில நெடுஞ்சாலையிலிருந்து மாகரல் - சித்தாலப்பாக்கம் கிராம எட்டு சாலையிலிருந்து சுமார் 3.20 கி.மீ தூரத்தில் மேற்கில் அமைந்துள்ளது.

மேற்கண்ட கால்வாயானது மாகரல் கிராம பகுதியில் மனுதாரரின் புல எண்களுக்கு மேற்கு பகுதியில் பெய்யும் மழை நீர் செல்லும் வடிகால் கால்வாயாகும். மேற்கண்ட கால்வாய் மாகரல் கிராம பகுதியிலிருந்து சுமார் 1200 மீ தூரம் சென்று மேற்கிலிருந்து கிழக்காக மனுதாரர் குவாரி பணி செய்யும் பகுதிக்கு கிழக்கு புறமாக உள்ள மாகரல் பொன்னேரிக்கு செல்கின்றது.



மேற்கண்ட கால்வாய் மழைக்காலங்களில் அப்பகுதியில் பெய்யும் மழை நீர் மட்டுமே செல்லும் வடிநீர் கால்வாயாகும் மற்ற காலங்களில் நீர் வரத்து இல்லை. பொதுவாக மழைக்காலங்களில் கல்குவாரி பணிகள் ஏதும் மேற்கொள்ளப்படுவதில்லை. மேலும், கால்வாயில் அதன் கொள்ளளவை காட்டிலும் அதிகமாக நீர்வரத்து ஏதுமில்லை என்பதும் தள ஆய்வில் தெரியவருகின்றது.

மனுதாரரின் புல எண்கள். 700/1 (pt) & 700/2-ன் மொத்த பரப்பு 2.34 50 ஹெக்டேர் பட்டா நிலங்களில் சாதாரண கற்கள் / கிராவல் மண் வெட்டி எடுக்கும் பணிகளை மேற்கொள்ள ஏற்கனவே குவாரி செய்ய அனுமதி வழங்கப்பட்ட இடைவெளியான 50.00 மீட்டரிலிருந்து 10.00 மீ இடைவெளியாக குறைக்கலாம் எனவும், இடைப்பட்ட பகுதியில் மனுதாரர் குவாரிப்பணிகள் மேற்கொள்ள கீழ்க்கண்ட நிபந்தனைகளை தவறாது கடைபிடிக்கப்பட வேண்டும் என்ற நிபந்தனையின் அடிப்படையில் தொழில்நுட்ப அறிக்கை அனுப்பி வைக்கப்படுகிறது.

நிபந்தனைகள்:

1. புல எண்.706-ல் உள்ள மாகரல் பொண்ணேரி ஏரியின் வரவுக்கால்வாயில் வருவாய்துறை ஆவணங்களின்படி வருவாய் துறையின் நில அளவையரை கொண்டு நில அளவை செய்து எல்லை நிர்ணயம் செய்து எல்லைக்கற்கள் பதித்து ஆக்கிரமிப்பு ஏற்படாவண்ணம் பாதுகாக்க வேண்டும். மேலும், எல்வித காரணம் கொண்டும் நீரோட்ட வழிபாதையில் (Linear Water Way) எல்விதமான தடையேதும் ஏற்படுத்தக்கூடாது.
2. மனுதாரரின் புல எண்கள். 700/1 (pt) & 700/2 ஆகியவற்றிக்கு வடக்கு திசையில் புல எண்.706-ல் உள்ள மாகரல் பொண்ணேரி ஏரியின் வரவுக்கால்வாய் எல்லையிலிருந்து மனுதாரரின் நிலத்தில் 10.00 மீட்டர் பாதுகாப்பு இடைவெளி குறையாமல் விடப்பட வேண்டும்.
3. மனுதாரரின் புல எண்கள். 700/1 (pt) & 700/2-ல் கனிம வளத்துறையால் நிர்ணயிக்கப்படும் குறைந்தபட்ச பாதுகாப்பு இடைவெளியும் மனுதாரரின் புல எண்களில் விடப்பட வேண்டும்.
4. மனுதாரரின் புல எண்களை கற்றிலும் தமிழ்நாடு ஏரிகள் பாதுகாப்பு மற்றும் ஆக்கிரமிப்பு அகற்றும் சட்டம் 2007ன் படி 30 மீட்டர் இடைவெளியிலும் ஒவ்வொரு வளைவு பகுதியிலும் ஒரு கல் வீதம் 0.15 x 0.15 x 1.50 மீ அளவுள்ள கல் கொண்டு கான்கிரீட் போட்டு நடப்படவேண்டும்.

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5. சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணிகள் மேற்கொள்ள பயன்படுத்தப்படும் கனரக வாகனங்களினால் (டிப்பர், பொக்கலைன் மற்றும் ஜேசிபி) மாகரல் பொண்ணேரி ஏரியின் வரத்துக்கால்வாய் பகுதிக்கு எந்தவித பாதிப்பும் ஏற்படுத்தக் கூடாது. மேலும், மனுதாரர் பாதுகாப்பு தொகையாக ரூ.2,00,000/- (ரூபாய் இரண்டு இலட்சம் மட்டும்) வங்கி வரைவோலையாக ஏதேனும் ஒரு தேசிய மயமாக்கப்பட்ட வங்கியிலிருந்து செப்பொறியாளர், நீ.வ.து. கீழ்பாலாறு வடிநில கோட்டம், காஞ்சிபுரம் அவர்களின் பெயரில் எடுத்து செயற்பொறியாளர் அலுவலகத்தில் செலுத்த வேண்டும். இந்த தொகை சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணி முடிந்தவுடன் மாகரல் பொண்ணேரி ஏரியின் வரத்துக்கால்வாய் பகுதிக்கு எந்தவித பாதிப்பும் இல்லை என துறை அலுவலரிடமிருந்து அறிக்கை கிடைக்கப்பெற்ற பின்னரே பாதுகாப்பு தொகையினை திரும்ப வழங்கப்படும்.
6. சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணியில் பணியாற்றும் பணியாளர்கள் திடக்கழிவு, திரவக்கழிவு, குவாரி மண் மற்றும் குப்பை களங்களை அருகில் உள்ள மாகரல் பொண்ணேரி ஏரியின் வரவுக் கால்வாய் மற்றும் மாகரல் பொண்ணேரி ஏரியில் கொட்டாமல் பார்த்துக்கொள்ள வேண்டும். தவறும் பட்சத்தில் தங்களுக்கு வழங்கப்படும் இந்த தொழில்நுட்ப அனுமதி திரும்ப பெறப்படும்.
7. சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணியின் போது வெடி வெடிப்பதனால் அருகிலுள்ள நிலங்கள், வாய்க்கால் மற்றும் ஏரிக்கு எந்தவித பாதிப்பும் ஏற்படாதவாறு பார்த்துக்கொள்ள வேண்டும்.
8. சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணியில் விபத்து ஏதும் ஏற்படாதவாறு முன்னெச்சரிக்கை நடவடிக்கை மேற்கொள்ளப்பட வேண்டும். அவ்வாறு விபத்துக்கள் ஏற்படின் அதற்கு நீர்வளத்துறை எவ்விதத்திலும் பொறுப்பேற்கக்கூது.
9. சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்கும் பணியில் உட்கொண்டு வெளியேறும் டிப்பர், வாரிகள் மற்றும் இதர வாகனங்கள் மாகரல் பொண்ணேரி ஏரியின் வரத்துக்கால்வாய் பகுதியில் செல்லக்கூடாது. மேலும், ஏரிக்கு நீர்வரத்தை தடை செய்யக்கூடாது.
10. மாகரல் பொண்ணேரி ஏரி வரத்துக்கால்வாயில் நீர்வளத்துறையின் மூலம் புனரமைப்பு பணிகள் மேற்கொள்ளும்போது எவ்வித இடைபூறும் ஏற்படுத்தக்கூடாது. மேலும் நீர்வளத்துறை அதிகாரிகள் எந்த தேரத்திலும் பார்வையிட தடையேதும் தெரிவிக்கக்கூடாது.

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11. சாதாரண கற்கள் மற்றும் கிராவல் மண் எடுக்கும் பணிகளை மேற்கொள்ள அரசின் உரிய விதிமுறைகளையும், பாதுகாப்பு நெறிமுறைகளையும், மேலும் இதர துறையின் விதிக்கும் நிபந்தனைகளையும் தவறாமல் கடைபிடிக்க வேண்டும்.

12. மனுதாரரால் அளிக்கப்பட்ட ஆவணங்களின் அடிப்படையில் இந்த தொழில்நுட்ப அறிக்கை அளிக்கப்படுகிறது. ஆவணங்களின் உண்மை தன்மைக்கு மனுதாரரே முழு பொறுப்பு ஆவார். மேலும், பொதுமக்களிடமிருந்து ஏரியின் வரவுக்கால்வாய் குறித்து தொடர் புகார் ஏதேனும் வரப்பெற்றால் அதை மனுதாரர் தனது சொந்த செலவில் சரிசெய்து தரப்பட வேண்டும். மேலும், தொடர்ச்சியாக புகார்கள் வரப்பெற்றால் இத்துறையின் மூலம் ஆய்வு செய்து வரப்பெற்ற புகார் உண்மை என கண்டறியப்பட்டால் தங்களுக்கு வழங்கப்படும் இந்த தொழில்நுட்ப அனுமதியினை இரத்து செய்ய இத்துறைக்கு முழு அதிகாரம் உண்டு. இதனால் ஏற்படும் இழப்புகளுக்கு இத்துறை எவ்விதத்திலும் பொறுப்பேற்காது.

13. அரசால் அவ்வப்போது நிர்ணயிக்கப்படும் வரன்முறை மற்றும் விதிமுறைகளுக்கு மனுதாரர் கட்டுப்பாட வேண்டும்.

14. மனுதாரர் நிலத்தை சுற்றி ஏரிகள் பாதுகாப்பு மற்றும் ஆக்கிரமிப்பு சட்டம், 2007-ன்படி எல்லை கற்கள் முப்பது மீட்டருக்கு ஒரு கல் வீதமும் மற்றும் வளைவு பகுதியில் ஒரு கல் பதித்து தொடர்ந்து பராமரிக்க வேண்டும்.

15. மேற்கண்ட நிபந்தனைகள் மீறும் பட்சத்தில் மனுதாரருக்கு வழங்கப்பட்ட தொழில்நுட்ப அறிக்கையை இரத்து செய்து மாநில சுற்றுச் சூழல் தாக்க மதிப்பீட்டுக் குழுவிற்கு (SEIAA)-க்கு பரிந்துரை செய்யப்படும்.

இணைப்பு

கிராம வரைபடம் (ம) ஆவணங்கள்

செயற்பொறுப்பாளர், நீ.வ.து.
கீழ்பாலாறு வடநில கோட்டம்,
காஞ்சிபுரம்.

29/09/23

- 487 -



சென்னை-1

சென்னை, 23

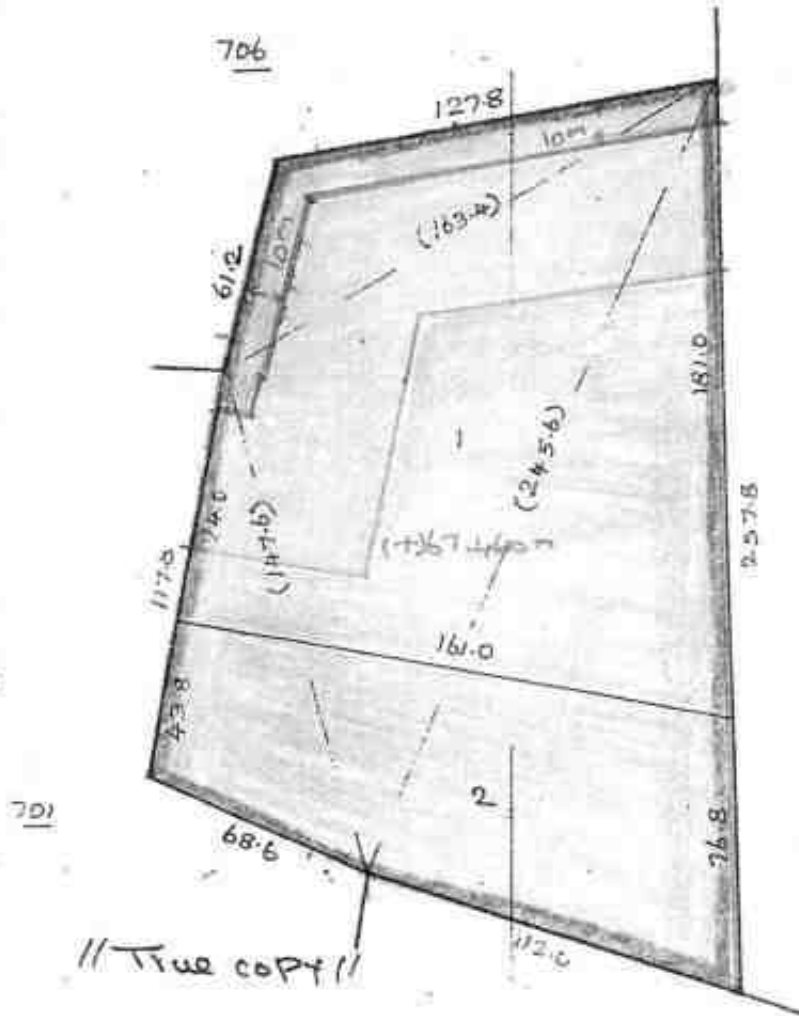
အိမ်ထောင်ရေး

சிறுநீரம் { எண். 189!
 { பெயர். டாக்டர்

பரப்பு: ஹெக்டேர்

3. 94. 24.0

o/v



695

WEASE APPLIED AREA

VILLAGE ADMINISTRATION

09.09.2020

VILLAGE

Wala Jabab

TALUK

KANCHEEPURAM DISTRICT

Assistant Engineer, W.R.D.

Irrigation Section,

Kancheepuram.

Assistant Executive Engineer, WRD
Lower Palar Basin Sub-Division
Kancheepuram

અભિયાન: 16.12.2000-17

31/07/2016 14:25

செய்து



பி. எம். 189- பரகரம்.

2	3	4	5	6	7	8	9	10	11
						ந. ஸப.	தெய. ஓர்வ.	ந. ஸப.	
696	7	4	...	8-5	8	0 89	2 87.5	2 63	328 க. பெருமாள் (1), க. குமார் சேனா (2), குமார் நாயக்கர் (3).
697	7	4	-	8-5	8	0 89	0 53.0	0 48	101 பெ. சந்திர பண்டிதர்.
698-1	7	4	...	8-5	8	0 89	0 85.5	0 78	93 பெ. சிவசக கண்ணா.
-2	7	4	-	8-5	8	0 89	0 34.5	0 32	101 பெ. சந்திர பண்டிதர்.
							1 20.0	1 10	
699-1	7	4	-	8-3	6	1 85	0 17.5	0 32	குமார்.
-2	7	4	-	8-3	6	1 85	2 02.5	8 75	21 க. ஆண்டியப்ப நாயக்கர்.
-3	7	4	...	8-3	6	1 85	0 88.0	1 64	140 நா. திருமேயன் முதலியார்.
							3 08.0	5 71	
700-1	7	4	-	8-2	5	3 09	2 18.5	6 74	220 வ. முனியம் மாள்.
-2	7	4	-	8-2	5	3 09	1 05.5	3 26	57 கிஷ்டப்ப நாயக்கர்.
							3 24.0	10 00	
701	7	4	-	8-2	5	3 09	4 21.0	13 00	182 அ. பழையார் ஆம்மாள்.
702-1	7	4	...	8-3	5	3 09	1 91.0	5 90	185 க. பெருமாள் நாயக்கர்.
-2	7	4	-	8-3	5	3 09	2 02.5	6 25	182 அ. பழையார் ஆம்மாள்.
							3 93.5	12 15	
703	7	4	...	8-3	5	3 09	0 87.5	2 70	185 க. பெருமாள் நாயக்கர்.
704	7	4	...	8-3	6	1 85	0 54.0	...	புலியக்கோட்டி
705-1	7	4	...	8-3	6	1 85	1 95.0	3 62	171 தி. பழையார் நாயக்கர்.

VILLAGE ADMINISTRATIVE OFFICER

09.09.2023

VILLAGE

KANCHEEPURAM DISTRICT

TALUK

புலியக்கோட்டி

புலியக்கோட்டி

புலியக்கோட்டி

புலியக்கோட்டி



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : வாலாஜாபாத்

வருவாய் கிராமம் : மாகரல் - ஆ

பட்டா எண் : 545

உரிமையாளர்கள் பெயர்

1. சிவசுவாமி

மகன்

ரத்தினவேலு

B

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
700	1	2 - 18.50	6.74	--	--	--	--	2018/0103/03/064564- -- -- 25-01-2018
		2 - 18.50	6.74					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/12/2024/00545/30474 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இந் தகவல்கள் 20-09-2023 அன்று 12:37:53 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

// True copy //

VILLAGE ADMINISTRATIVE OFFICER
 09. magaal "3" VILLAGE
 Walajabad TALUK
 KANKEEPURAM DISTRICT



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : காஞ்சிபுரம்

வட்டம் : வாலாஜாபாத்

வருவாய் கிராமம் : மாகரல் - ஆ

பட்டா எண் : 546

உரிமையாளர்கள் பெயர்

1. சிவசுவாமி

மகன்

ரத்தினவேலு

இ-

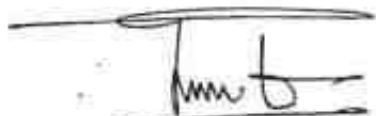
புல எண்	உட்பிரிவு	புன்செய்		நுன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
700	2	1 - 5.50	3.26	--	--	--	--	2018/0103/03/068719- -- -- 02-03-2018
		1 - 5.50	3.26					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 03/12/2024/00546/80488 என்ற குறிப்பு எண்ணை உள்ளிட்டு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 20-09-2023 அன்று 12:38:51 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

// True copy //


VILLAGE ADMINISTRATIVE OFFICER,
MAKARAL - 2 VILLAGE,
WALAJABAD TALUK,
KANGHREPURAM DISTRICT



PHOTOCOPY OF THE APPLIED LEASE AREA

Site photos in respect of rough stone and gravel quarry lease in S.F.No 700/1 (Part) over an extent of 0.89.5Hectares and 700/1 (Part) & 700/2 over an extent of 2.34.5Hectares into a single for total extent (0.89.5Hect + 2.34.5 Hect) - Patta land - Magarai - B Village - Walajabad Taluk - Kancheepuram District - Tamil Nadu State in belonging to Mr.S. Rathnavelu.



Handwritten signature: S. Rathnavelu



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இந்திய அரசாங்கம்
Unique Identification Authority of India

Government of India

பதிவு அடையாளம் / Enrollment No.: 2192/60031/32560

To:
ரத்தினவேலு
S Rathnavel
S/O: R Sivaswamy
old no 5, new no 2/33 shuvaneswar nagar 1st street
govilvakkam
Sembakkam
Selayur
Tamil Nadu 600073
9962034163



உங்கள் ஆதார் எண் / Your Aadhaar No. :

9897 5552 0644

எனது ஆதார்: எனது அடையாளம்



இந்திய அரசாங்கம்
Government of India
ரத்தினவேலு
S Rathnavel
பிறந்த நாள்: 008 / 20/04/1978
ஆண்பால் / Male



9897 5552 0644

எனது ஆதார்: எனது அடையாளம்

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியுரிமைக்கு அல்ல
- அடையாள சான்றை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்

INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்
- வருங்காலத்தில் அரசு மற்றும் அரசு ஈரர் சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.

- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



Unique Identification Authority of India

முகவர்
தந்தை: தாய் பெயர்: ரா
சீவசுவாமி பழைய எண் 5
புதிய எண் 2/33 புவனேஸ்வரி
நகர் 1வது தெரு. கெளரிவாகம்
செம்பாக்கம் கரஞ்சீடும்
சென்னை-600073

Address:
S/O: R Sivaswamy, old no 5, new
no 2/33, shuvaneswar nagar 1st
street, govilvakkam, Sembakkam,
Kanchipuram, Selayur, Tamil
Nadu, 600073

9897 5552 0644



1947



new@uidai.gov.in



www.uidai.gov.in

Handwritten signature



Signature of Shri S. Karuppannan

अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)
CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस. करुपण्णन, मॉंगनीकाडू, मुत्तमपट्टी पोस्ट, बॉम्मीडी बर्यो, ओमलूर तालुक, सेलम डीस्ट्रिक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक सक्षय दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri S. Karuppannan, Manganikadu, Muthampatty (Post), Bommididi (Via), Ormalur Taluk, Salem District, Tamilnadu - 635 301, whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकीपंजीयन संख्या है
His registration number is

RQP/MAS/263/2014/A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 15.12.2024 को समाप्त होगी।
This recognition is valid for a period of 10 years ending on 15.12.2024.

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।

This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान/ Place : Chennai
दिनांक/ Date : 16.12.2014.

क्षेत्रीय खाननियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

Signature of Regional Controller of Mines



PLATE NO-I

APPLICANT:

Mr. S. RATHNAVELU,
S/o. R. SIVASWAMY,
45, OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S/F NO : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
SH-118A ROAD	
HABITATIONS	

KEY MAP

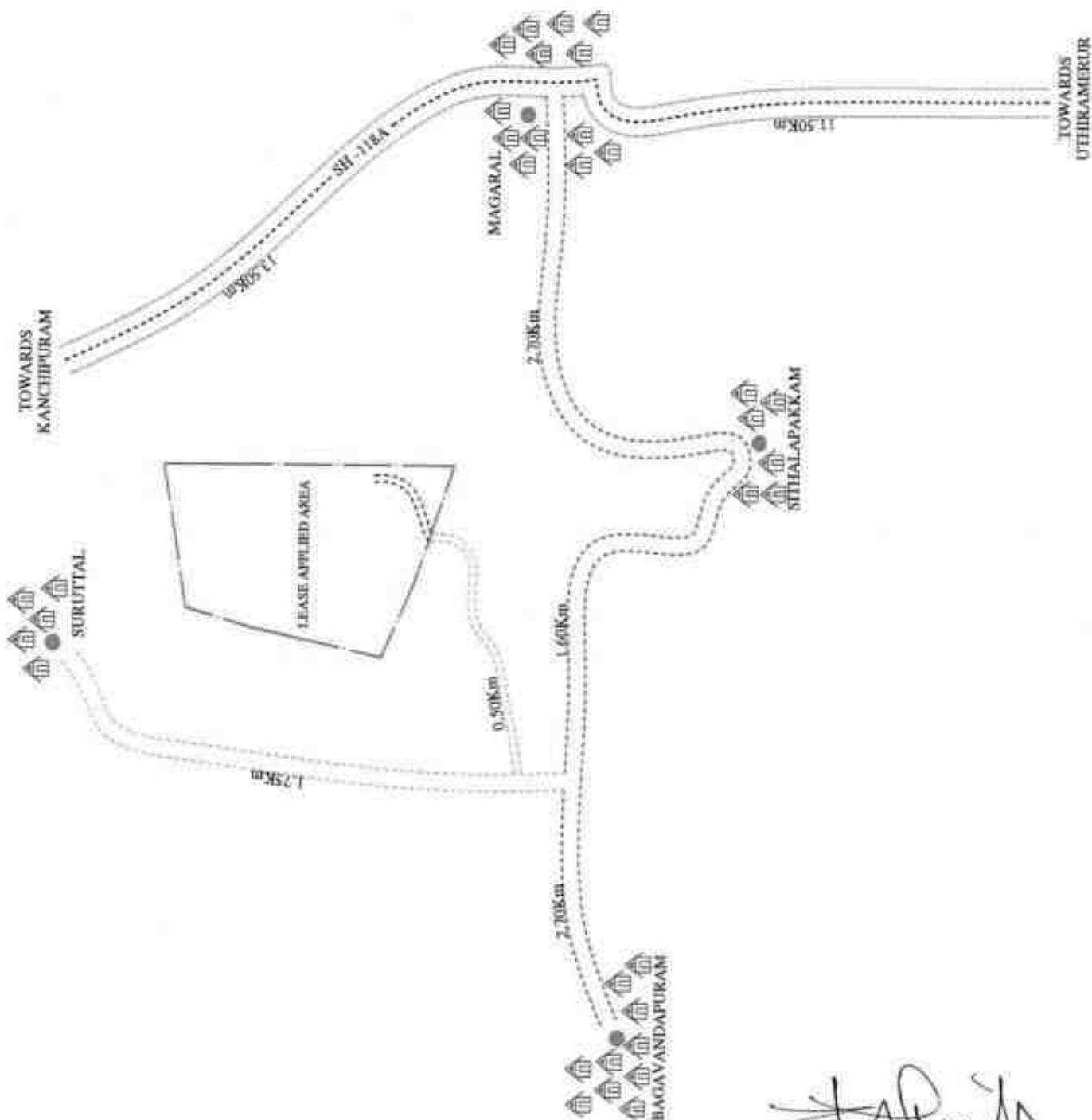
Not to Scale

Prepared By:

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



Dr. S. KARUPPANNAN, M.Sc./Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/253/2014/A



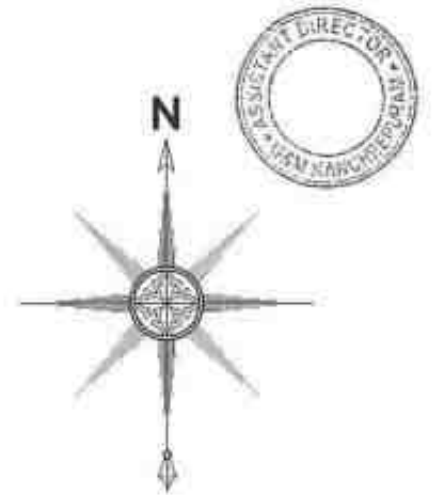


PLATE NO-IA

APPLICANT:
Mr.S.RATHNAVELU,
S/o. R.SIVASWAMY,
45, OLD No:5, NEW No:2/33,
BHUVANESWARINAGAR,
1ST STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:
S.F.NO : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA : ●
TOPO SHEET NO : 57-P/10
LATITUDE : 12°43'32.72"N to 12°43'41.11"N
LONGITUDE : 79°43'55.53"E to 79°44'01.13"E

LOCATION PLAN NOT TO SCALE

Prepared By:

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

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

292



APPLICANT:
Mr.S.RATHNAVELU,
S/o. R.SIVASWAMY,
45, OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

S.F.NO	: 700/1 & 700/2
EXTENT	: 3.24.0 Hect
VILLAGE	: MAGARAL-B
TALUK	: WALAJABAD
DISTRICT	: KANCHEEPURAM

LATITUDE :12°43'32.72"N to 12°43'41.11"N
LONGITUDE :79°43'55.53"E to 79°44'01.13"E

☐

5

[illegible]

SCALE- 1:1,00,000

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


Dr. S. KARUPPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

TOWARDS
SURUTTAL
12° 43' 41.11" N



79° 43' 55.53" E

TOWARDS
SITHALAPAKKAM

293

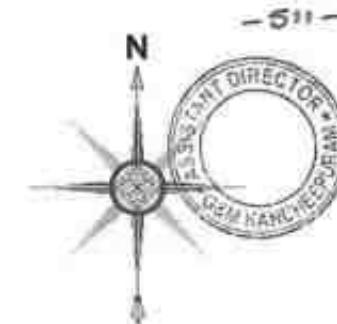


PLATE NO-IC

APPLICANT:

Mr.S.RATHNAVELU,
S/o. R.SIVASWAMY,
45, OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.NO : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE AREA



APPROACH ROAD



CART ROAD



VILLAGE ROAD



100m RADIUS



200m RADIUS



300m RADIUS



400m RADIUS



500m RADIUS



EXISTING QUARRY'S PIT



TOPO SHEET NO : 57-P/10

LATITUDE : 12° 43' 32.72" N to 12° 43' 41.11" N

LONGITUDE : 79° 43' 55.53" E to 79° 44' 01.13" 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]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

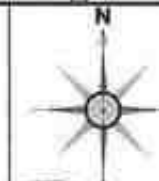


PLATE NO-ID

APPLICANT:

Mr.S.RATHNAVELU,
S/o. R.SIVASWAMY,
45, OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.NO : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

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MINE LEASE AREA	
APPROACH ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
SHRUBS	
HABITATIONS	
EXISTING QUARRY'S PIT	

TOPO SHEET NO : 57-P/10

LATITUDE :12°43'32.72"N to 12°43'41.11"N

LONGITUDE :79°43'55.53"E to 79°44'01.13"E

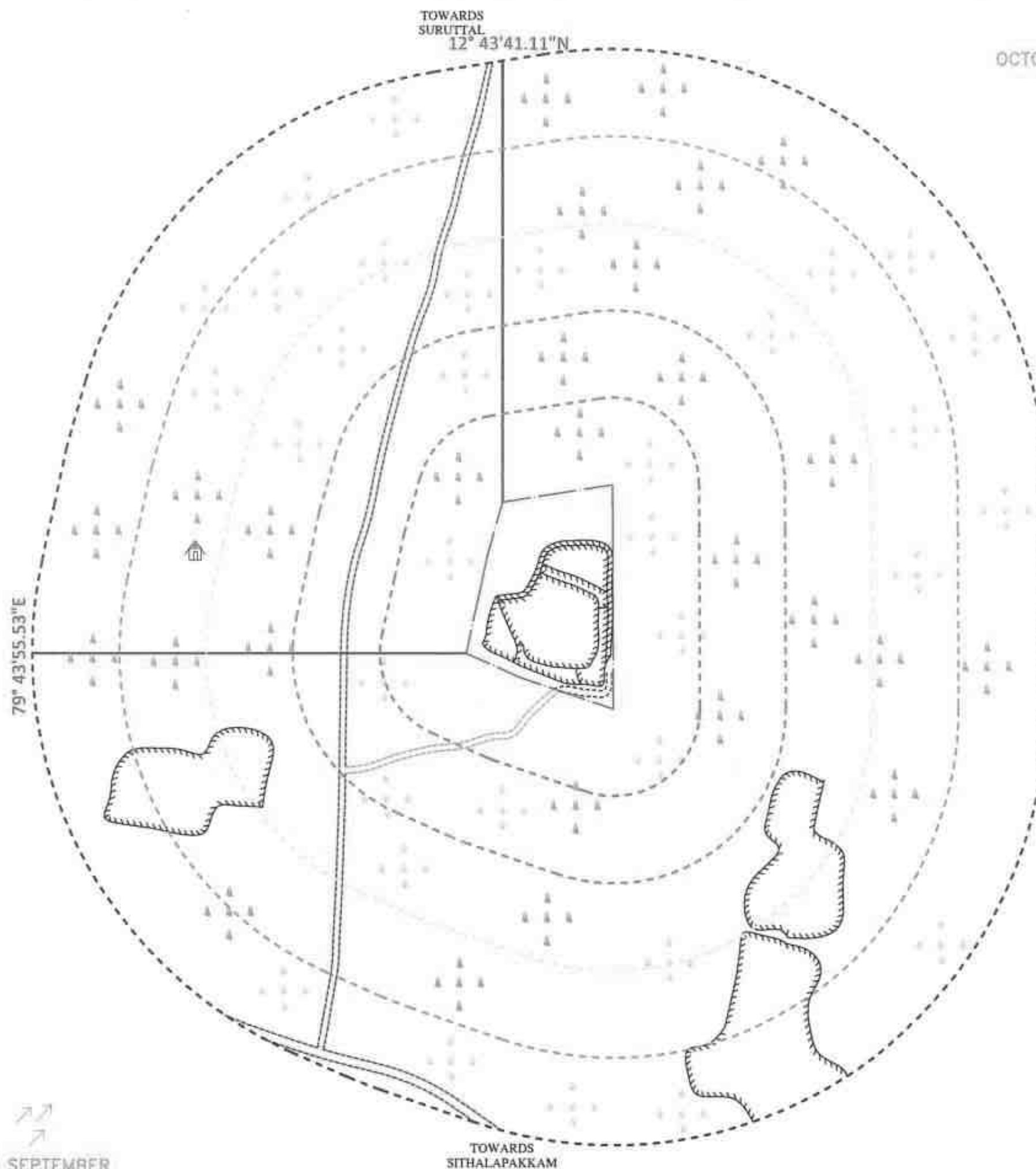
ENVIRONMENTAL PLAN

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

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



JULY TO SEPTEMBER

OCTOBER TO DECEMBER



[Signature]

Prepared By:

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Dr.S.KARUPPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

MINE LEASE PLAN
SCALE 1 : 1000

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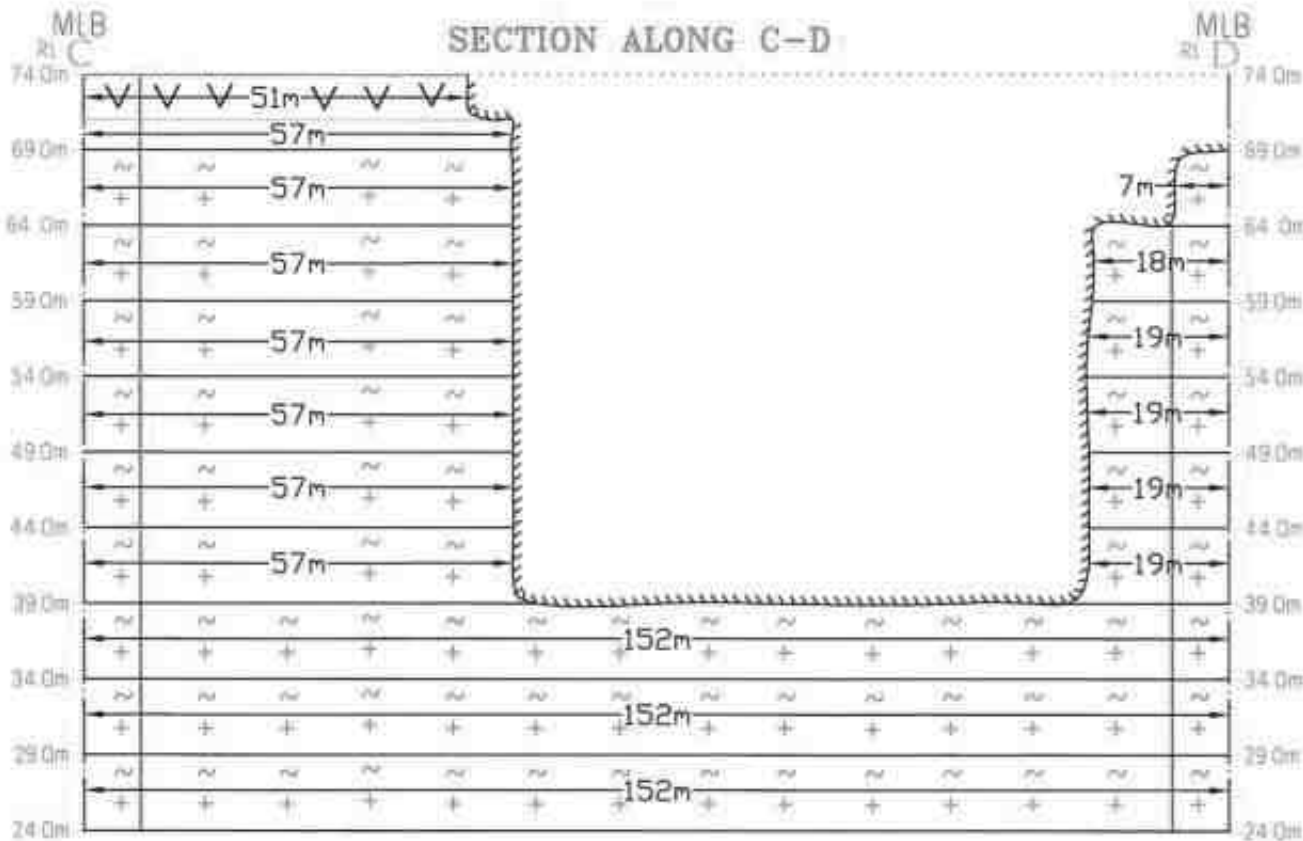
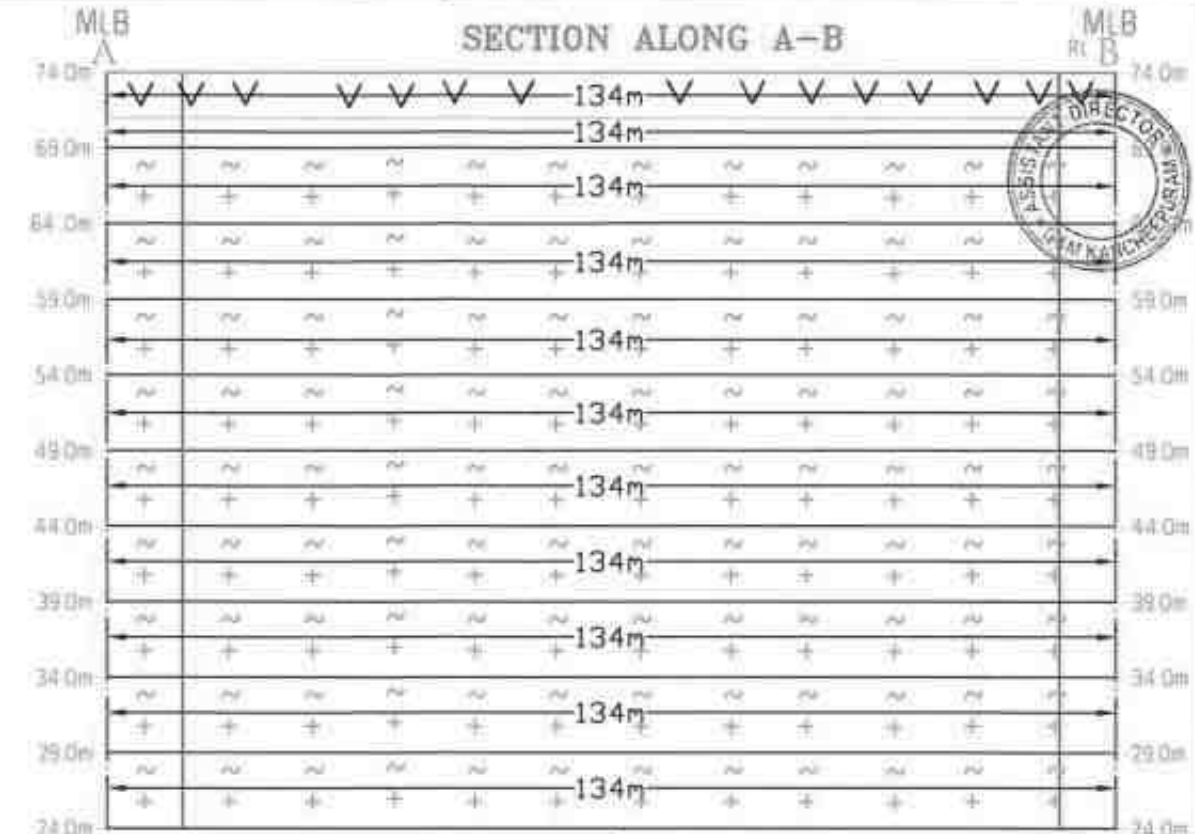
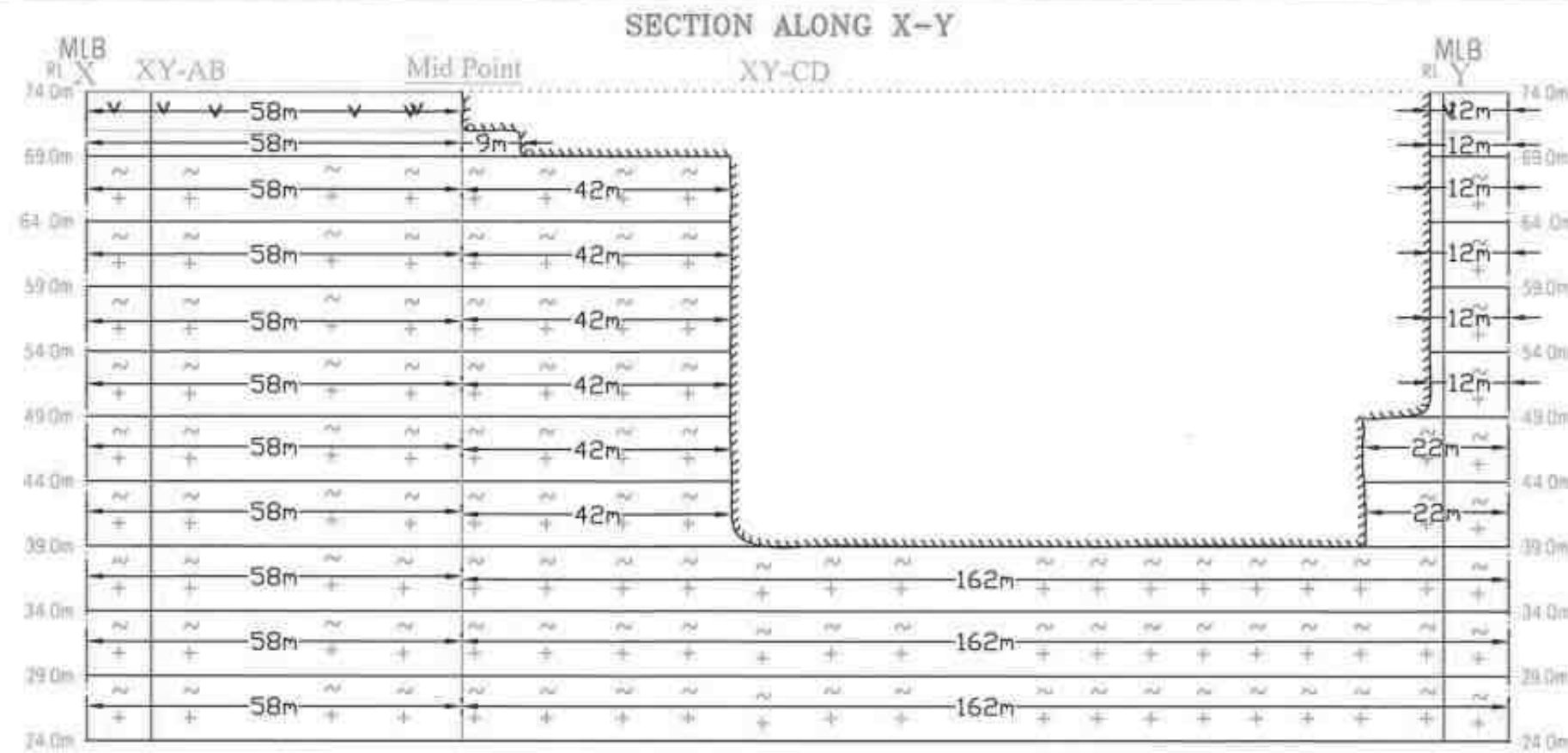
- MINE LEASE BOUNDARY
- SAFETY AREA
- BOUNDARY PILLAR STONES
- APPROACH ROAD
- ODAI

APPLICANT:

Mr.S.RATHNAVELU,
S/o.R.SIVASWAMY,
OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.No : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM



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
XY-AB	I	58	134	3	23316	.....	23316
	I	58	134	2	15544	15544	.....
	II	58	134	5	38860	38860	.....
	III	58	134	5	38860	38860	.....
	IV	58	134	5	38860	38860	.....
	V	58	134	5	38860	38860	.....
	VI	58	134	5	38860	38860	.....
	VII	58	134	5	38860	38860	.....
	VIII	58	134	5	38860	38860	.....
	IX	58	134	5	38860	38860	.....
	X	58	134	5	38860	38860	.....
TOTAL					388600	365284	23316
XY-CD	I	12	51	3	1836	.....	1836
	I	21	57	2	2394	2394	.....
	II	54	64	5	17280	17280	.....
	III	54	75	5	20250	20250	.....
	IV	54	76	5	20520	20520	.....
	V	54	76	5	20520	20520	.....
	VI	64	76	5	24320	24320	.....
	VII	64	76	5	24320	24320	.....
	VIII	162	152	5	123120	123120	.....
	IX	162	152	5	123120	123120	.....
	X	162	152	5	123120	123120	.....
TOTAL					500800	498964	1836
GRAND TOTAL					889400	864248	25152

PLATE NO-III A

APPLICANT:
Mr.S.RATHNAVELU,
S/o.R.SIVASWAMY,
OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1ST STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:
S.F.NO : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE BOUNDARY

SAFETY AREA

ROUGH STONE

GRAVEL

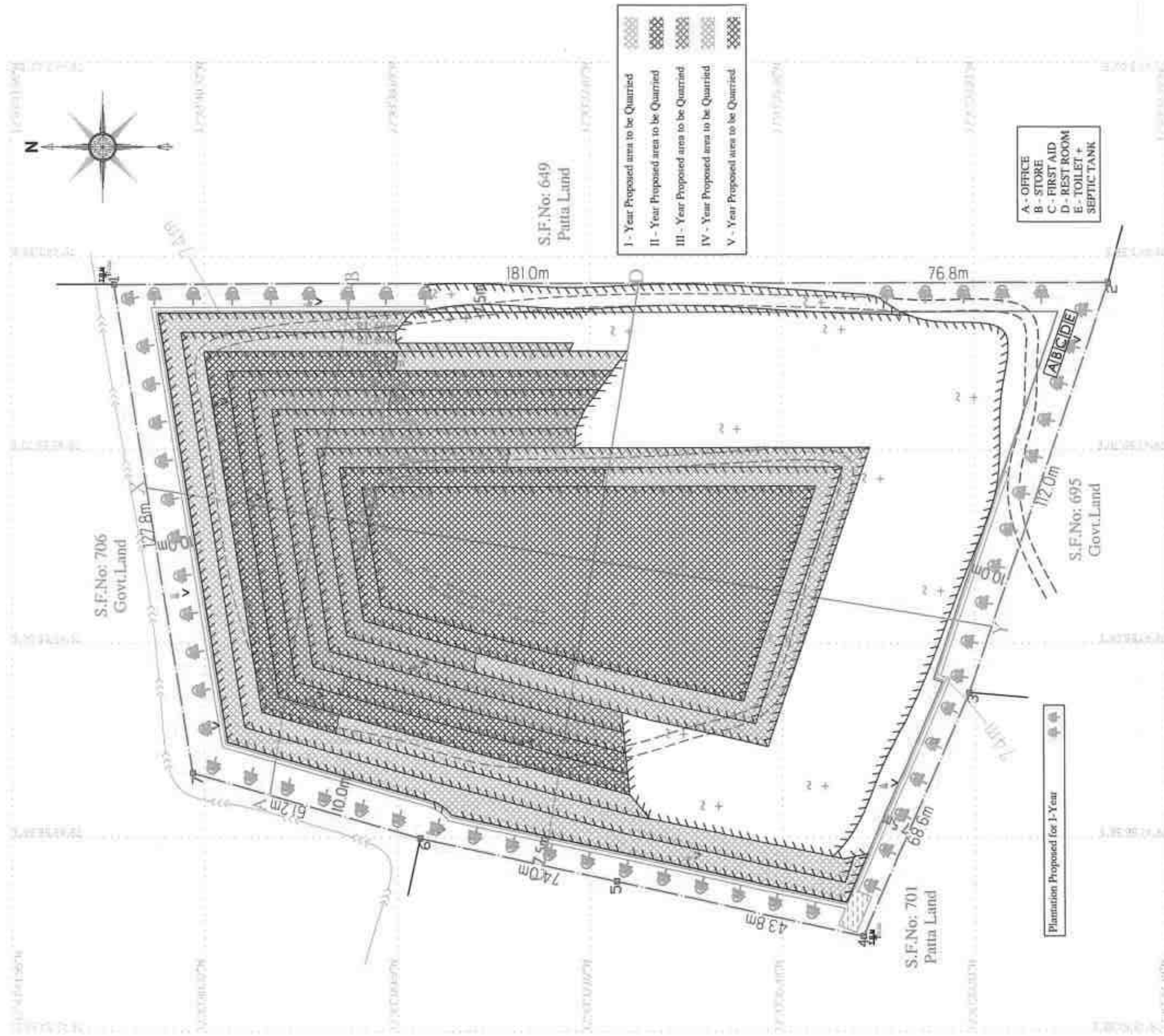
EXISTING PIT

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

Prepared By:

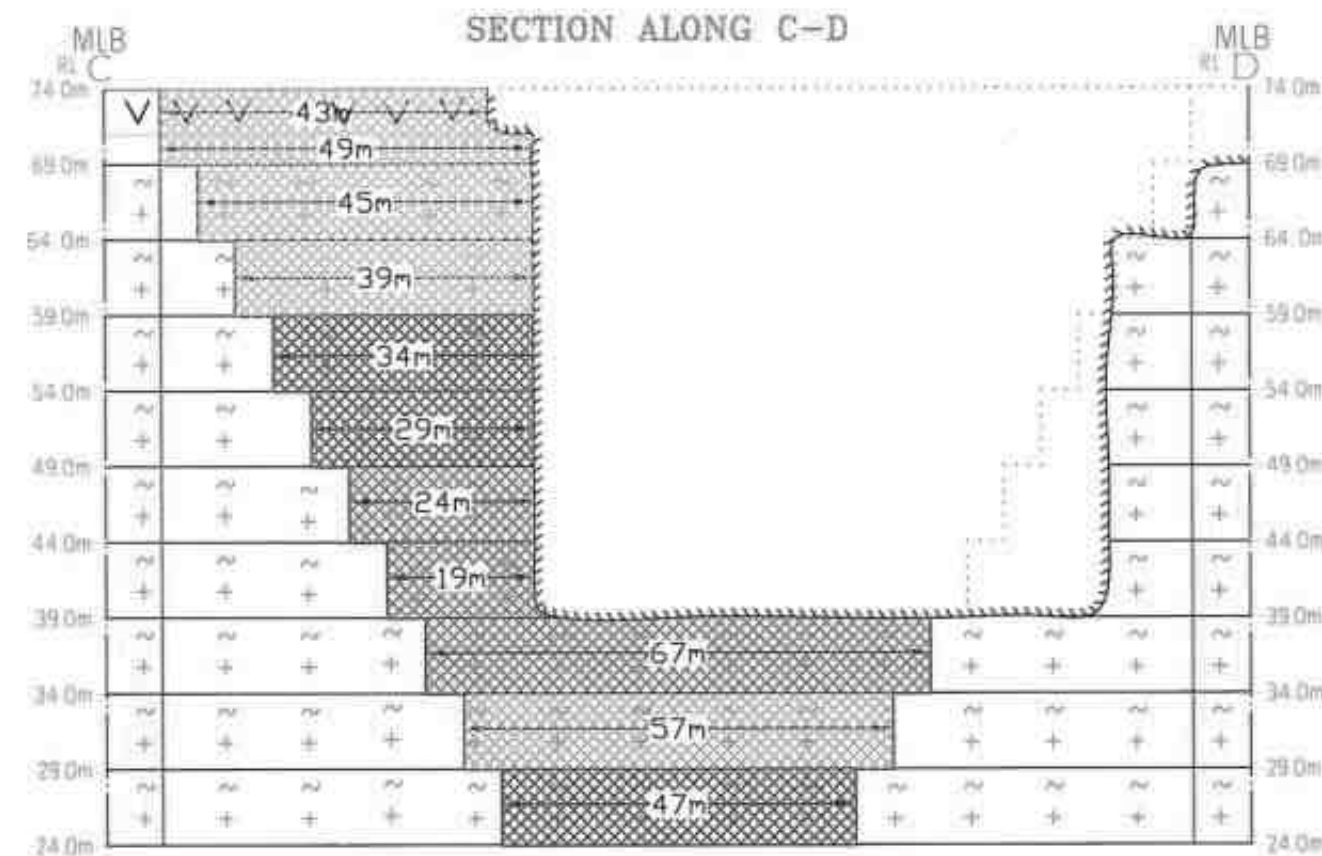
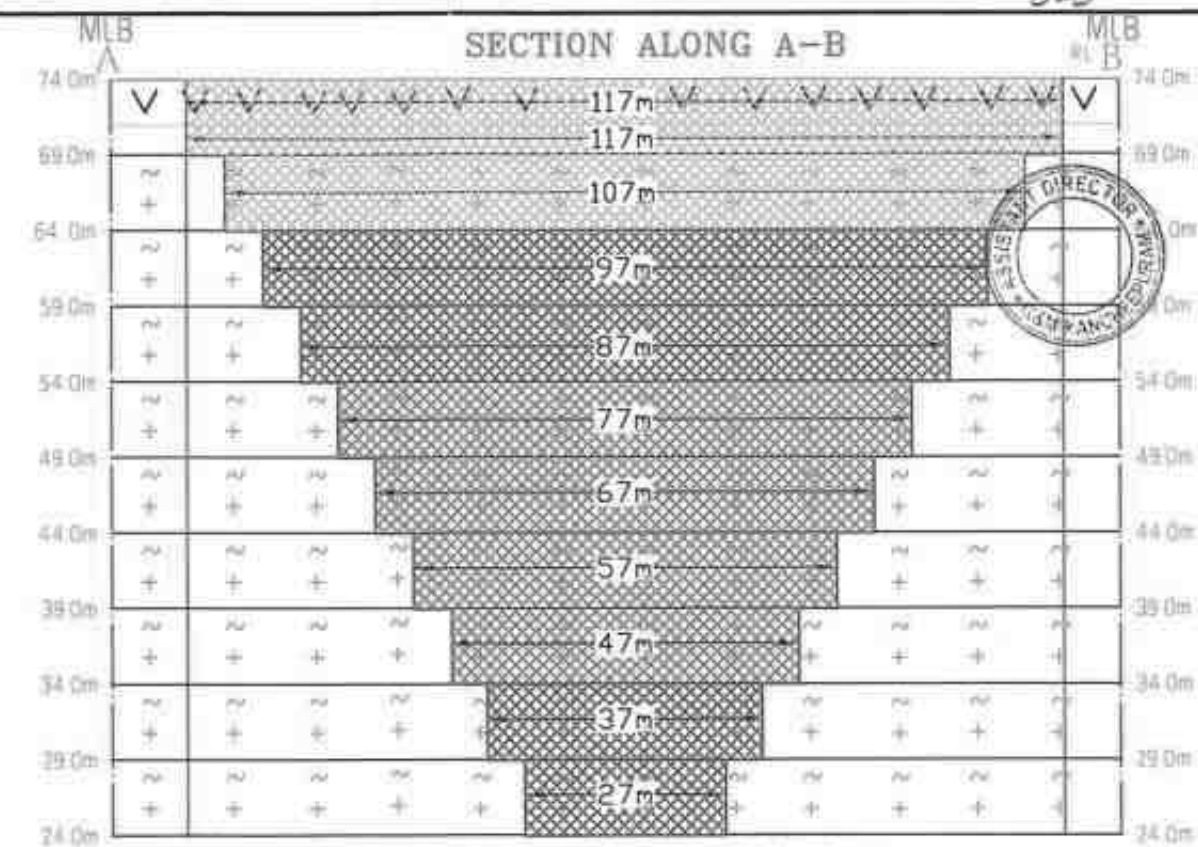
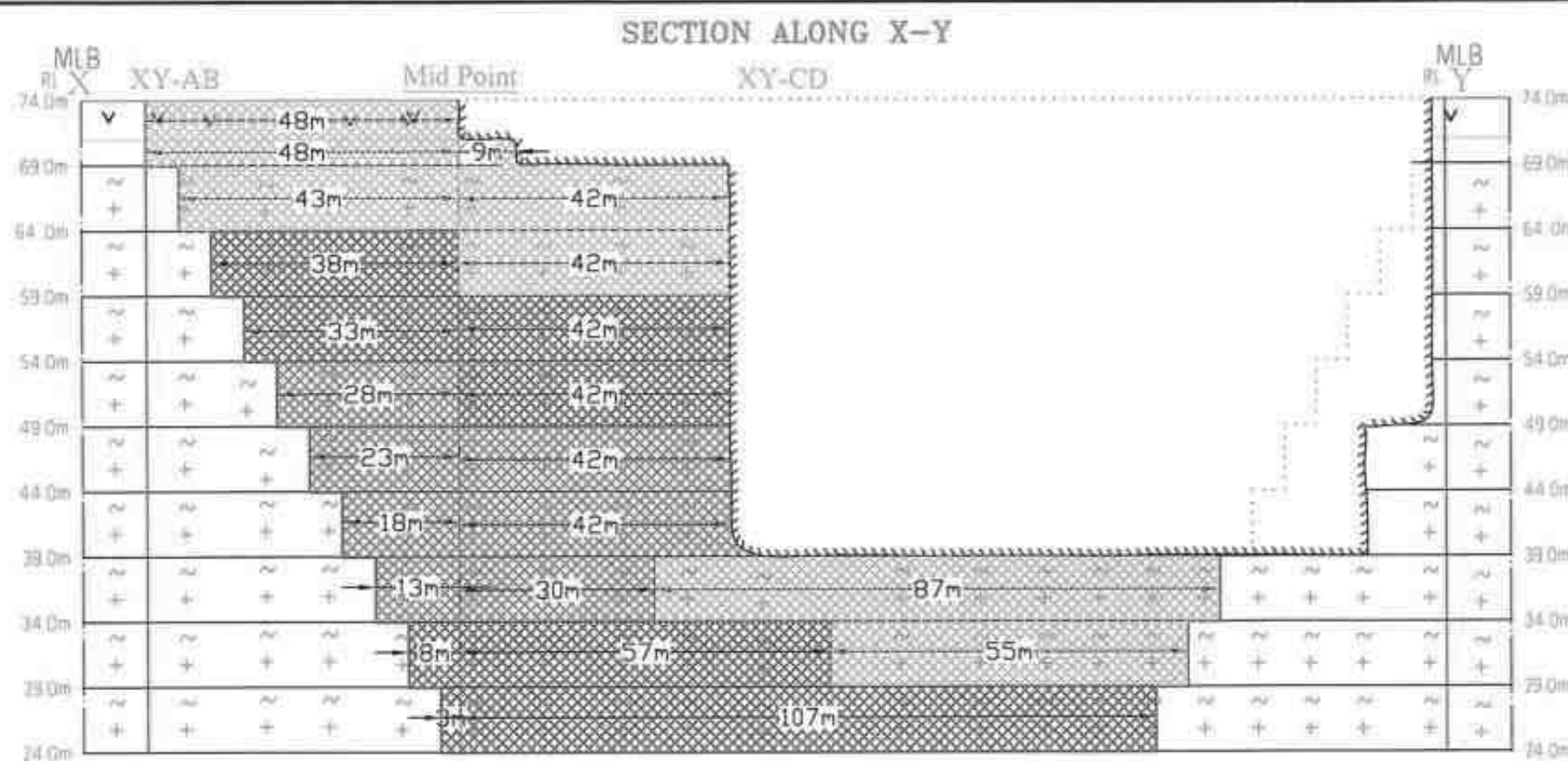
I DO HEREBY CERTIFY THAT THE PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



Handwritten signature: A. Ranth

YEARWISE DEVELOPMENT AND PRODUCTION PLAN	
PLAN SCALE 1: 1000	
Prepared By: <i>[Signature]</i> I DO HEREBY CERTIFY THAT THE PLAN HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE Dr.S.KARUPPANNAN, M.Sc., Ph.D. RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A	
INDEX	
ROUGH STONE	
EXISTING PIT	
PROPOSED BENCH	
FENCING	
DRAINAGE & SETTLING TANK	
MINE LEASE BOUNDARY	
SAFETY AREA	
APPROACH & MINE HAUL ROAD	
ODAI	
BOUNDARY PILLAR STONES	
CONTOUR LINE	
TEMPORARY BENCH MARK	
GRAVEL & SHRUB	
PLATE No-IV APPLICANT: Mr.S.RATHNAVELU, S/o.R.SIVASWAMY, OLD No:5, NEW No:2/33, BHUVANESWARI NAGAR, 1 ST STREET, GOWRIVAKKAM, CHENNAI-73.	LEASE APPLIED AREA: S.F.No : 700/1 & 700/2 EXTENT : 3.24.0 Hect VILLAGE : MAGARAL-B TALUK : WALAJABAD DISTRICT : KANCHEEPURAM



- 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

YEARWISE PRODUCTIONS								
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
I-YEAR	XY-AB	I	48	117	3	16848	.....	16848
		I	48	117	2	11232	11232	.....
		II	43	107	5	23005	23005	.....
	XY-CD	I	9	43	3	1161	.....	1161
		I	9	49	2	882	882	.....
		II	42	45	5	9450	9450	.....
		III	42	39	5	8190	8190	.....
TOTAL						70768	52759	18009
II-YEAR	XY-AB	III	38	97	5	18430	18430	.....
		IV	33	87	5	14355	14355	.....
	XY-CD	IV	42	34	5	7140	7140	.....
		V	42	29	5	6090	6090	.....
TOTAL						46015	46015	0
III-YEAR	XY-AB	V	28	77	5	10780	10780	.....
		VI	23	67	5	7705	7705	.....
	XY-CD	VI	42	24	5	5040	5040	.....
		VII	42	19	5	3990	3990	.....
	XY-AB	VII	18	57	5	5130	5130	.....
		VIII	13	47	5	3055	3055	.....
	XY-CD	VIII	30	67	5	10050	10050	.....
TOTAL						45750	45750	0
IV-YEAR	XY-CD	VIII	87	67	5	29145	29145	.....
		IX	55	57	5	15675	15675	.....
TOTAL						44820	44820	0
V-YEAR	XY-CD	IX	57	57	5	16245	16245	.....
		IX	8	37	5	1480	1480	.....
	XY-AB	X	3	27	5	405	405	.....
		XY-CD	X	107	47	5	25145	25145
TOTAL						43275	43275	0
GRAND TOTAL						250628	232619	18009

PLATE NO-IVA

APPLICANT:

Mr.S.RATHNAVELU,
S/o.R.SIVASWAMY,
OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.NO : 700/1 & 700/2
EXTENT : 3.24.00 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE BOUNDARY

SAFETY AREA

ROUGH STONE

GRAVEL

EXISTING PIT

ULTIMATE BENCH

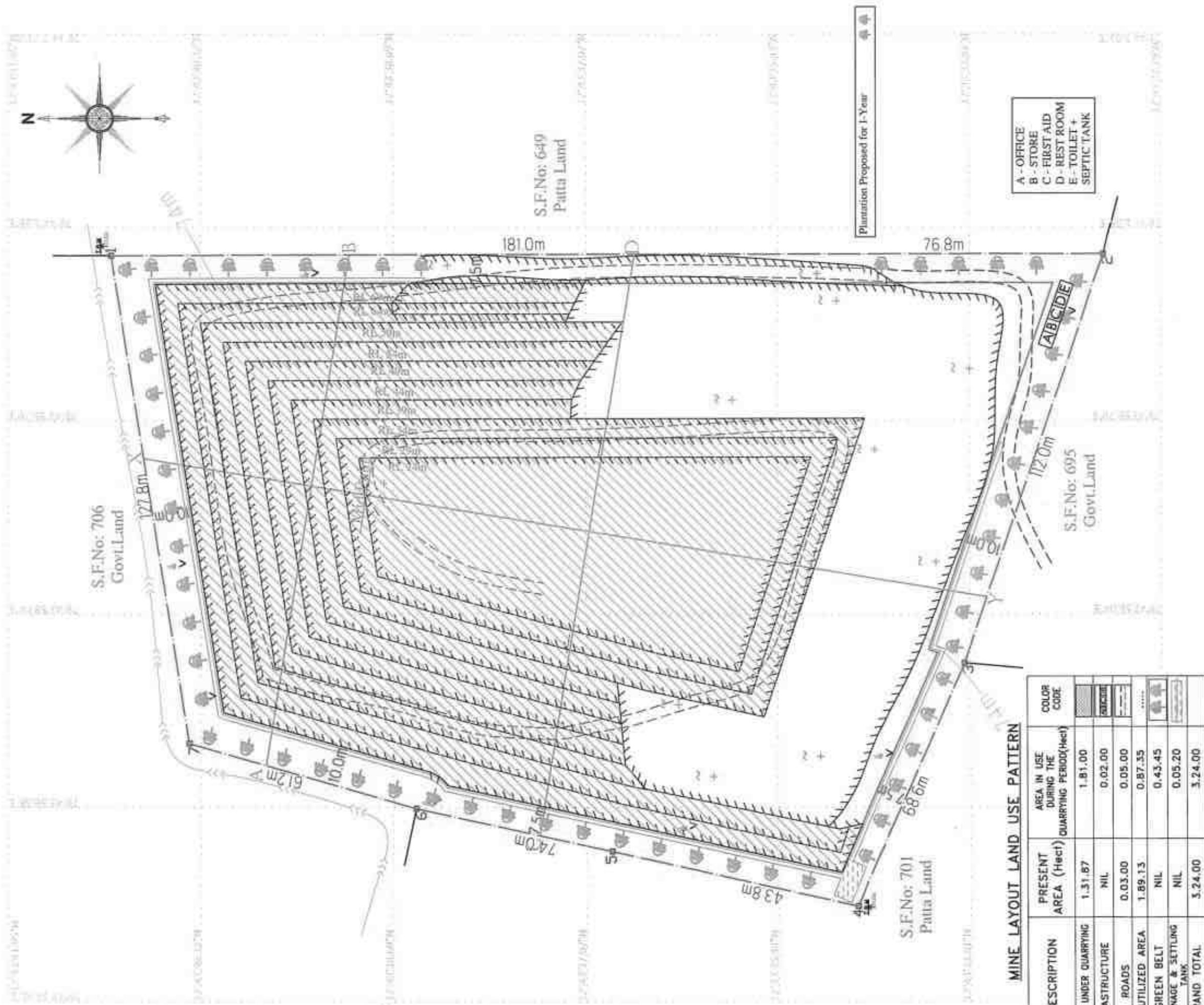
YEARWISE DEVELOPMENT AND PRODUCTION SECTIONS

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

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



MINE LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD (Hect)	COLOR CODE
AREA UNDER QUARRYING	1.31.87	1.81.00	
INFRASTRUCTURE	NIL	0.02.00	
ROADS	0.03.00	0.05.00	
UN-UTILIZED AREA	1.89.13	0.87.35	
GREEN BELT	NIL	0.43.45	
DRAINAGE & SETTLING TANK	NIL	0.05.20	
GRAND TOTAL	3.24.00	3.24.00	

PLATE No-V

APPLICANT:
Mr.S.RATHNAVELU,
S/o.R.SIVASWAMY,
OLD No-5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.No : 700/1 & 700/2
EXTENT : 3.24.0 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

INDEX

MINE LEASE BOUNDARY	ROUGH STONE
SAFETY AREA	EXISTING PIT
APPROACH & MINE HAUL ROAD	PROPOSED BENCH
ODAI	FENCING
BOUNDARY PILLAR STONES	DRAINAGE & SETTLING TANK
CONTOUR LINE	
TEMPORARY BENCH MARK	
GRAVEL & SHRUB	

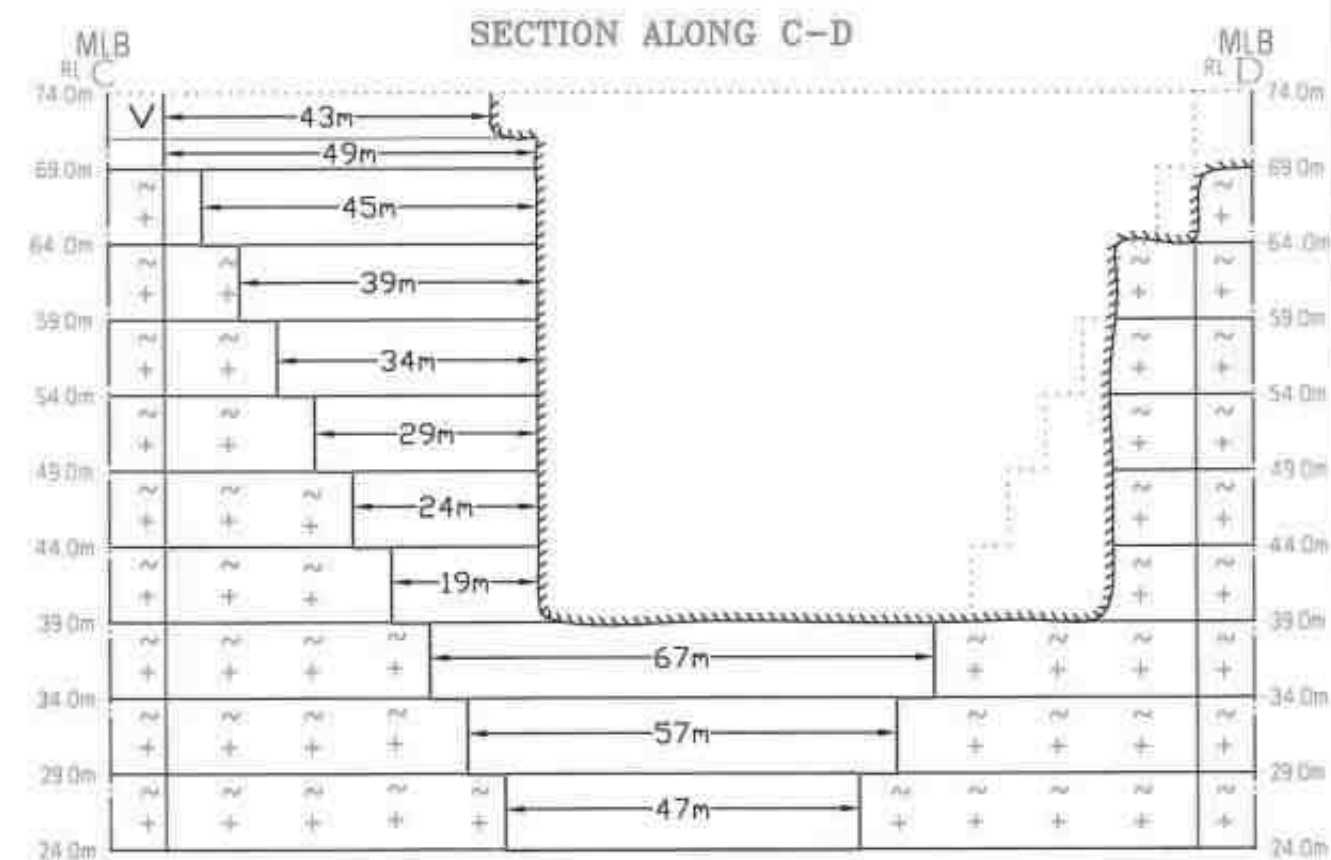
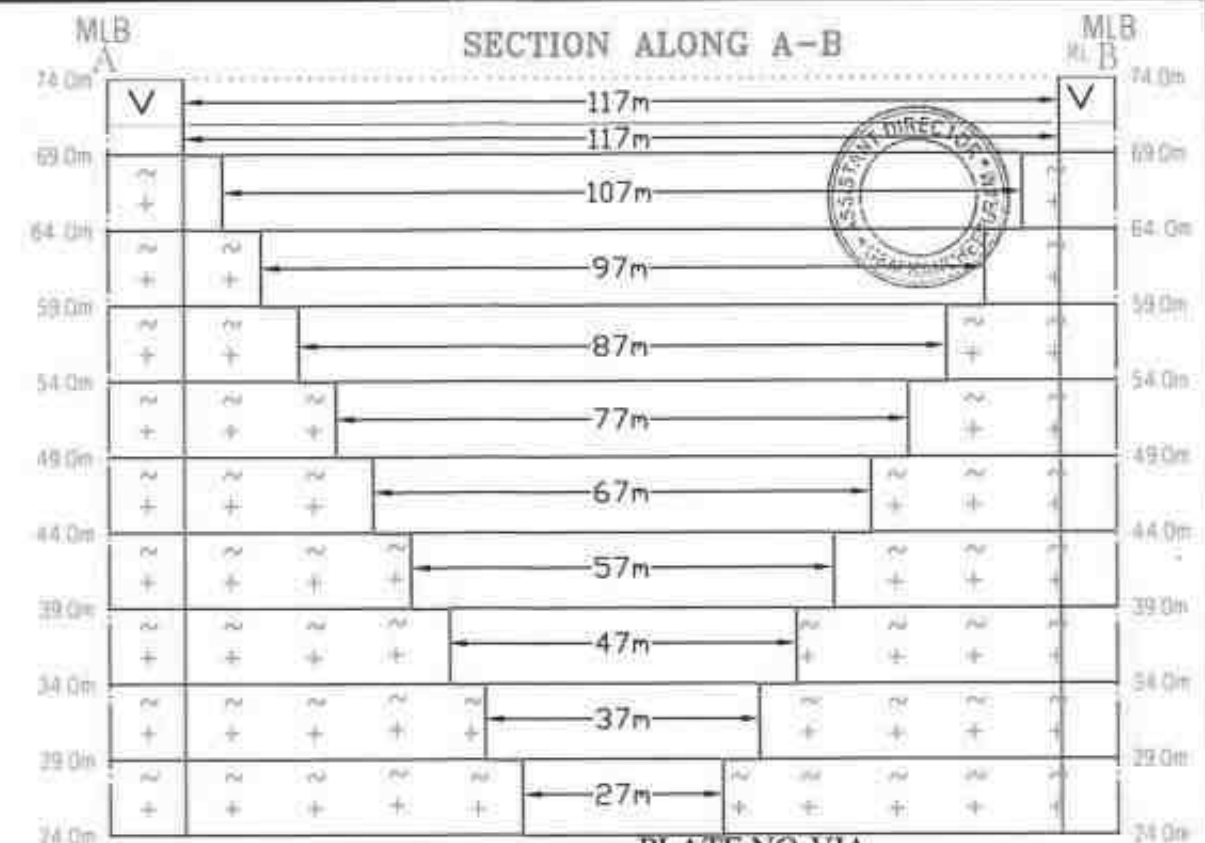
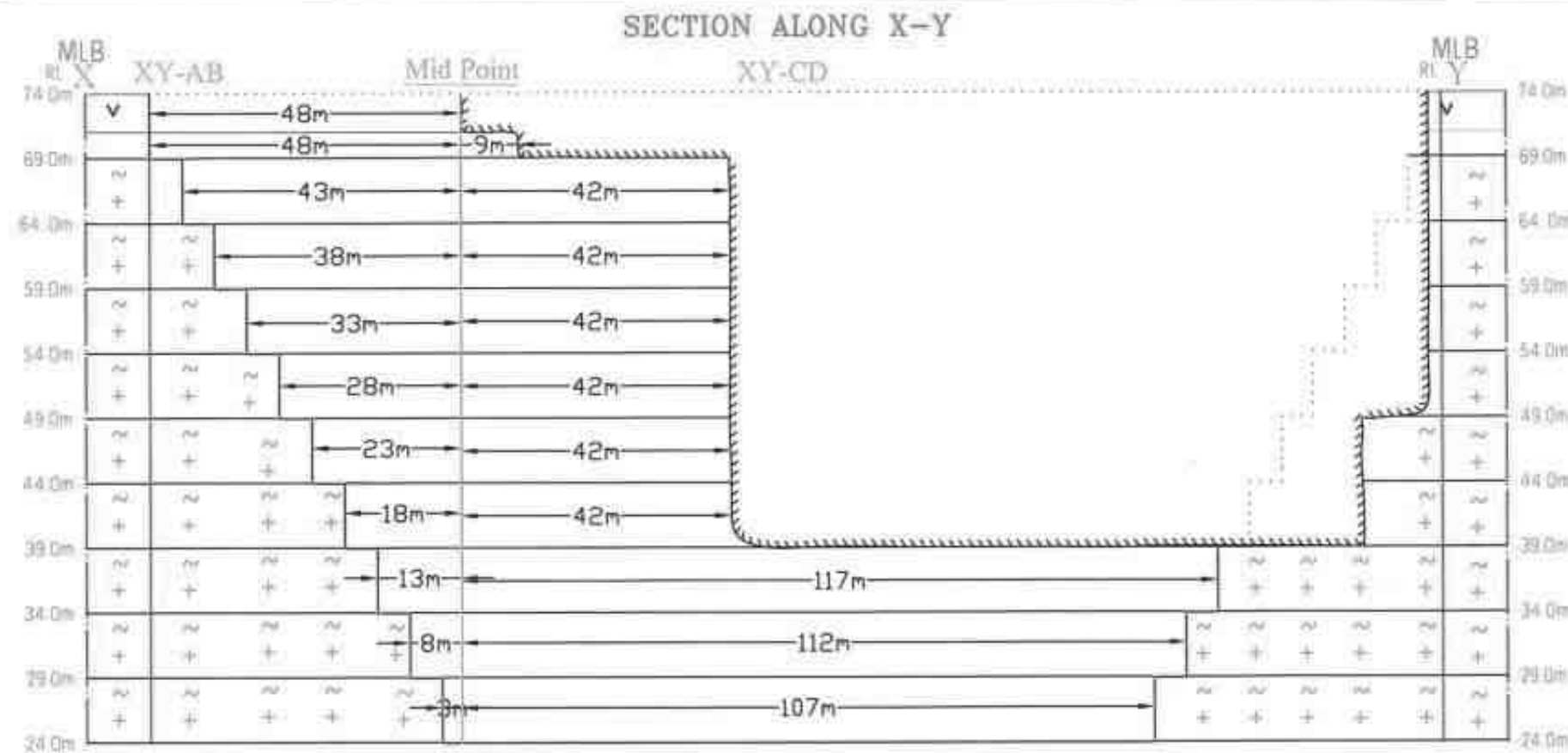
MINE LAYOUT AND LAND USE PATTERN PLAN

PLAN SCALE 1: 1000

Prepared By:

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

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
ROP/MAS/263/2014/A



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
XY-AB	I	48	117	3	16848	.....	16848
	I	48	117	2	11232	11232	.....
	II	43	107	5	23005	23005	.....
	III	38	97	5	18430	18430	.....
	IV	33	87	5	14355	14355	.....
	V	28	77	5	10780	10780	.....
	VI	23	67	5	7705	7705	.....
	VII	18	57	5	5130	5130	.....
	VIII	13	47	5	3055	3055	.....
	IX	8	37	5	1480	1480	.....
	X	3	27	5	405	405	.....
TOTAL					112425	95577	16848
XY-CD	I	9	43	3	1161	.....	1161
	I	9	49	2	882	882	.....
	II	42	45	5	9450	9450	.....
	III	42	39	5	8190	8190	.....
	IV	42	34	5	7140	7140	.....
	V	42	29	5	6090	6090	.....
	VI	42	24	5	5040	5040	.....
	VII	42	19	5	3990	3990	.....
	VIII	117	67	5	39195	39195	.....
	IX	112	57	5	31920	31920	.....
	X	107	47	5	25145	25145	.....
TOTAL					138203	137042	1161
GRAND TOTAL					250628	232619	18009

PLATE NO-VIA

APPLICANT:

Mr.S.RATHNAVELU,
S/o.R.SIVASWAMY,
OLD No:5, NEW No:2/33,
BHUVANESWARI NAGAR,
1st STREET, GOWRIVAKKAM,
CHENNAI-73.

LEASE APPLIED AREA:

S.F.NO : 700/1 & 700/2
EXTENT : 3.24.00 Hect
VILLAGE : MAGARAL-B
TALUK : WALAJABAD
DISTRICT : KANCHEEPURAM

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MINE LEASE BOUNDARY	
SAFETY AREA	
ROUGH STONE	
GRAVEL	
EXISTING PIT	
ULTIMATE BENCH	

CONCEPTUAL SECTIONS

SECTION HOR 1 : 1000 & VER 1: 500

Prepared By:

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Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

சான்ற

காஞ்சிபுரம் மாவட்டம், வாலாஜாபாடு வட்டம்,
09. மாகரல் "அ" கிராமம், பட்டா எண்:-
545 படி, பன்செய் புலஎண்:- 700/1-2.18.5
வெங்கடர், பட்டா எண்:- 546 படி, பன்செய்
புலஎண்:- 700/2 - 1.05.5 வெங்கடர் நிலம்
திரு சிவசுவாமி மகன் ருத்நிரவரன் என்பவர்
பெயரில் பட்டவாக உள்ளது என்றும்,
மேற்படி புலஎண்கள்: 700/1 - 2.18.5 வெங்கடர்,
700/2 - 1.05.5 வெங்கடர் நிலங்களை
சுத்தி (சுமார் இரண்டாறு மீட்டர்) சுற்றளவில்,
புரத்தா சின்னங்கள், காப்பு காடுகள்,
உளவிலங்கு சரணாலங்கள், உயர்விலங்கு
மின்தம்பங்கள் போன்றவை இவ்வாறு
கிராம காவிரிசாரணத்தில் இருந்துகொண்டு,
(பொது சுவாமிக்கு மட்டும், இச்சான்று
வசூலிக்கப்படுகிறது)

09-மாகரல் "அ"

02.09.2023.

mm.k
02/09/2023.
VILLAGE ADMINISTRATIVE OFFICER,
09. magaral "a" VILLAGE,
Walajabad TALUK
KANCHEEPURAM DISTRICT.



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.

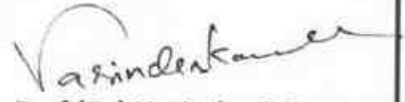
Issue Date
Feb 19, 2024

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)

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