

**DRAFT OF 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 = 9.67.50 hectares**

**Tmt.P.AMARAVATHI ROUGHSTONE QUARRY**

**At**

**Kuppam Village, Pugalur Taluk,**

**Karur District, Tamil Nadu State**

ToR letter No. SEIAA-TN/F.No. 9306/SEAC/ToR-1295/Dated 27.10.2022.

**NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT**

Name and Address	Extent & S.F.No.
<b>Tmt.P.Amaravathi</b> W/o.Mr.Palanisamy D.No.5/18, Ponniyagoundanpudur Punnamchatram post, Pugalur Taluk, Karur District-639136.	2.84.0 ha & 513/2C & 595/2 (Part)

**ENVIRONMENTAL CONSULTANT**

**GEO TECHNICAL MINING SOLUTIONS**

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NABET ACC. NO: NABET/EIA/2124/SA 0184

Valid till: Dec 31, 2023



**ENVIRONMENTAL LAB**

**EXCELLENCE LABORATORY**

**No.23/93, Fifth Street, Ram Nagar,**

**S.S.Colony, Madurai-625 010.**

**Baseline Study Period – October 2022 through December 2022**

## TERMS OF REFERENCE (ToR) COMPLIANCE

Tmt.P.Amaravathi

ToR issued vide Letter No. SEIAA-TN/F.No.9306/SEAC/ToR-1295/2022 dated  
27.10.2022

SPECIFIC CONDITIONS		
1	The Proponent shall furnish the letter received from DFO concerned stating the proximity details of Reserve Forests, Protected Area, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	DFO letter will be included in the final EIA.
2	The Proponent shall carry out Bio diversity study through reputed institution and the same shall be included in EIA Report.	The FAE of ecology and biodiversity carried out this study. The ecological details have been provided in Section 3.5 under Chapter III, pp.66-86.
3	Detailed survey of permanent structures located within 2 km from the project site shall be included in the EIA report.	The report on the permanent structures within 2 km radius will be included in the final EIA report.
4	As the proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed during the earlier operation period (2001-2006), the Project proponent (PP) shall prepare and submit a 'Slope Stability Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.	The slope stability plan for carrying out the realignment of the benches will be submitted during the time of EIA appraisal.
5	Concurrently, the PP shall furnish 'Slope stability action plan' during the time of EIA appraisal for ensuring the	The slope stability plan for carrying out the realignment of the benches will be submitted during the time of EIA appraisal.

	systematic working through proper design of benches incorporating the haul road with permitted gradient as the depth of the proposed quarry is 30m.	
6	The Proponent 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 has been attached with the approved mining plan report in Annexure III.
7	The Proponent 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 30m from the blast site.	NONEL blasting is proposed for this project. A conceptual design of blasting has been given in Section 2.6 under Chapter II, pp.19-28.
8	The EIA Coordination 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 video and photographic evidences will be shown at the time of final EIA presentation.
9	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.10.2016, then the proponent shall furnish the following details from AD/DD, mines.	
	a	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
		The application for obtaining work permit is under process. Details on the quantity of minerals mined out, highest production, approved depth of mining, etc. will be

	b	Quantity of minerals mined out.	provided in final EIA.
	c	Highest production achieved in any one year	
	d	Detail of approved depth of mining.	
	e	Actual depth of the mining achieved earlier.	
	f	Name of the person already mined in that leases area.	
	g	Name of the person already mined in that leases area.	
	h	whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	
10		All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Toposheet, Topographic sheet geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on Google Earth Image, as shown in Figure 2.3, p.13 and geology and geomorphology of the lease area have been discussed in Section 2.4 under Chapter II, p.12.
11		The Proponent shall carry out Drone video survey covering the cluster greenbelt, fencing etc.,	Drone video photographs showing fencing and greenbelt development will be included in the final EIA report. The drone video will be submitted during the final EIA report appraisal.
12		The proponent shall furnish photographs of adequate fencing, green belt along the periphery including	Photographs showing fencing, green belt will be included in the final EIA report.



	replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	
13	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 details of mineral reserves have been discussed in Section 2.5 under Chapter II, pp.12-18. The anticipated impact of mining on land, air, noise, water, soil, biology, and socio economy is discussed under Chapter IV, pp.96-123.
14	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.	Employment details of the proposed project are provided in Table 2.14 under Chapter II, p.28.
15	The Project Proponent shall conduct the hydrogeological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.38-50.

	<p>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.</p>	
16	<p>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 &amp; flora/fauna including traffic/vehicular movement study.</p>	<p>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, pp. 31-95.</p>
17	<p>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 &amp; health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p>	<p>Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII, pp.137-141.</p>
18	<p>Rain water harvesting management with recharging details along with water balance (both monsoon &amp; non-monsoon) be submitted.</p>	<p>The rainwater harvesting management plan will be submitted with the final EIA report.</p>
19	<p>Land use of the study area delineating forest area, agricultural land, grazing land wildlife sanctuary, national park migratory routes of fauna water bodies,</p>	<p>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</p>

	<p>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.</p>	<p>other ecological features has been discussed in Section 3.1, pp.31-37 under Chapter III. The details of surrounding sensitive ecological features are provided in Table 3.41 under Chapter III, p.93.</p> <p>Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.22.</p>
20	<p>Details of the land for storage of Overburden/Waste Dump (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, is land use R&amp;R issues, if any, should be provided.</p>	<p>Not Applicable.</p> <p>No dumps have been proposed outside the lease area.</p>
21	<p>Proximity to Areas declared as “Critically Polluted” (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p>	<p>Not Applicable.</p> <p>This project area is involved in the production of rough stone and gravel materials as per the approved mine plan.</p>
22	<p>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.</p>	<p>Details about rainwater harvesting structures will be included in the final EIA report.</p>
23	<p>Impact on local transport infrastructure due to the Project should be indicated.</p>	<p>Details regarding the impact of the project on traffic are given in Section 3.7 under Chapter</p>

		III, pp.91-92.
24	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, pp.66-86.
25	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 mine closure plan are shown in Section 2.6 under Chapter II, pp.19-28.
26	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	The comments made in public hearing meeting will be updated in the final EIA report after public hearing meeting
27	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Details of advertisement will be updated in the final EIA report.
28	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	The Tamil Version of EIA report, executive summary and other related information will be incorporated in this report.
29	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the

	educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	importance of protecting the biological environment.
30	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 <b>appendix-I</b> 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 Tables 4.13 and 4.14 in Section 4.6 under Chapter IV, pp.113-119.
31	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 greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
32	A Disaster management plan shall be prepared and included in the EIA/EMP Report for the complete life of the	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII, pp.133-137.

	proposed quarry (or) till the end of the lease period.	
33	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, pp.130-133.
34	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, pp.120- 121.
35	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.145 & 146.
36	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	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 to 32 people directly as discussed in Section 8.1 under Chapter VIII, p.144.

	may be given with time frames for implementation.	
37	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.
38	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, pp.144-146.
39	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 certified by MoEF & CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	The application to the detailed compliance to previous EC conditions is under the process. The compliance report will be submitted at the time of EIA presentation.
40	The proponent shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	A detailed EMP plan has been provided in Tables 10.10 & 10.11 under Chapter X, pp.159-165. The affidavit stating to abide EMP will be included in final EIA report.
41	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	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

	(Protection) Act' 1986.	Environment (Protection) Act, 1986.
	<b>Discussion by SEIAA and the Remarks:-</b>	
	The proposal was placed in the 563 <sup>th</sup> meeting of the Authority held on 27.10.2022. The Authority noted that the subject was appraised in 318 <sup>th</sup> SEAC meeting held on 07.10.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with public Hearing under cluster for undertaking the combined Environment Impact Assessment study and preparation of separate Environment Management plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions.	
1.	Proponent shall comply with all the conditions imposed in the precise area communication letter before applying for EC.	The mining plan was prepared in compliance with conditions imposed in the precise area communication letter and was approved by Department of Geology and Mining.
2	cluster Management committee, 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.
3	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.
4	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.
5	Detailed Operational Plan must be	All the information has been discussed in



	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.	Section 2.6 under Chapter II, pp.19-28.
6	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.	Awareness about the risk management plan will be given to the committee.
7	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.
8	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.
9	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.
10	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.
11	Detailed study shall be carried out in regard to impact of mining around the proposed	

	mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following	
	a)	Soil health & bio-diversity.
	b)	Climate change leading to Droughts, Floods etc.
	c)	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local People.
	d)	Possibilities of water contamination and impact on aquatic ecosystem health.
	e)	Agriculture, Forestry, & Traditional practices.
	f)	Hydrothermal/Geothermal effect due to destruction in the Environment.
	g)	Bio-geochemical processes and its foot prints including environmental stress.
	h)	Sediment geochemistry in the surface streams.
12	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	
	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.	
13	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	
	The fire safety and evacuation plan will be submitted by the committed to the corresponding authority.	
14	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy	
	The measures to control air, noise, and water pollution due to dust have been provided in Sections 4.3, 4.4, 4.5 and 4.6 under Chapter	

	shall be furnished.	IV, pp.97-119.
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplanted 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, pp.66-86. Details about transplanted of plants have been provided in Section 4.6 under Chapter IV, pp.113-119.
16	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, pp.113-119.
17	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, pp.97 and 98.
18	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III, pp.66-86. 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.
19	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, water-bodies/ Rivers, & any ecological fragile areas.	The matter has been discussed under Chapter IV, pp.96-123.

20	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	The VAO certificate of 300 m radius will be attached with the final EIA report.
21	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.	The concerns raised during the public consultation and all the activities proposed will be updated in the final EIA report.
22	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, pp.113-119.
23	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, pp.66-86.
24	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of	The FAE of ecology and biodiversity has advised the project proponent that replantation work, particularly for the project

	goods and services.	area where plants of 4 years old exist should be carried out in the vacant areas available.
25	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 is under process and report will be added to the final EIA report.
26	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV, pp.97-98.
27	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV, pp.113-119.
28	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, pp.113-119.
29	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, pp.97 & 98.
30	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	A detailed Environment Management Plan has been prepared and provided in Tables 10.10 & 10.11 under Chapter X, pp.159-165.
31	The Environmental Impact Assessment should study impact on climate change temperature rise, pollution and above soil & below soil carbon stock.	The information will be included in the final EIA report.
32	The Environmental Impact Assessment	There are no protected areas, National Parks,

	should study impact on protected areas, Reserve Forest, National Parks, Corridors and Wildlife pathways, near project site.	Corridors and Wildlife pathways near project site. The list of environmentally sensitive areas within 10 km radius has been provided in Table 3.41 under Chapter III, p.93.
33	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, pp.96 & 97.
34	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, pp.96-123.
35	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site' and archaeological sites possible land form changes visual and aesthetic impacts.	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV, pp.113-119.
36	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, p.141 & 142.
37	The project proponent shall detailed 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 among other environmental protection measures.

38	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.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.38-50.
39	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII, pp.133-137.
40	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, pp.130-133.
41	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	A conceptual mine closure plan is attached along with the approved mining plan report in the annexure part. The budget details for the mine closure plan are shown in Section 2.6

		under Chapter II, pp.19-28.
42	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 in Tables 10.10 & 10.11 under Chapter X, pp.159-165.
<b>STANDARD TERMS OF REFERENCE</b>		
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. This is not a violation category project. This proposal falls under B1 category.
2.	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	The proposed site for quarrying is a patta land. A copy of the ownership document has been enclosed along with the approved mining plan in Annexure III.
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	All the documents related to mining plan, EIA and public hearing are compatible to each other and have been provided in Annexure.
4.	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area	All corner coordinates of the mine lease area have been superimposed over Google Earth image, as shown in Figure 2.3, p.13 under Chapter II.



	should clearly show the land use and other ecological features of the study area (core and buffer zone).	
5.	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	The baseline data sampling locations for all the environmental components are shown in Survey of India Toposheet under Chapter III.
6.	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The lease applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7.	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/ procedures to bring into focus any infringement/ deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting	The proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under Chapter X, pp.148 & 149.

	of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	
8.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90 <sup>0</sup> bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate.  Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	All the data contained in the EIA report such as waste generation etc., is for the life of the mine / lease period.
10.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases	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, pp.31 & 37.  Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.7

	and submitted. Impact, if any, of change of land use should be given.	under Chapter II, p.21.
11.	Details of the land for any over burden dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given	Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. Hence, no dumps are proposed outside the lease area.
12.	Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not Applicable. There is no forest land involved within the proposed project area and the proposed project area is a patta land. Moreover, a certificate from DFO will be obtained and attached with the final EIA report.
13.	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be	Not Applicable. There are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There is no forest impacted families (PF) or people (PP).

	furnished.	
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable.  The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Details about forest vegetation have been provided in Section 3.5 under Chapter III, pp.66-86.
16.	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	A study was done on wildlife within the study area, as shown in Section 3.5 under Chapter III, pp.66-86. The impact on wild life has been discussed in Section 4.6, pp.113-119.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to	There are no National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.41 under Chapter III, p.93.

	proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished	
18.	A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	<p>A detailed biological study was carried out in both core and buffer zones and the results have been discussed in section 3.5 under Chapter III, pp.66-86.</p> <p>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.</p>
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the	<p>Not Applicable.</p> <p>Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.</p>

	SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable. The project doesn't attract the C.R.Z. Notification, 2018.
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R plan / compensation details for the Project Affected People (PAP) is not anticipated.

	socio-economic aspects should be discussed in the Report.	
22.	One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline data were collected for the period of October 2022 - December 2022 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included under Chapter III, pp. 31-95.
23.	Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view. The model results have been given in Section 4.4 under the Chapter IV, pp.99-108.

	<p>used for modelling should be provided.</p> <p>The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation.</p> <p>The wind roses showing pre-dominant wind direction may also be indicated on the map.</p>	
24.	<p>The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.</p>	<p>The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II, p.26.</p>
25.	<p>Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.</p>	<p>Not Applicable.</p> <p>Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors</p>
26.	<p>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.</p>	<p>Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.</p>
27.	<p>Impact of the Project on the water</p>	<p>Impact studies and mitigation measures of</p>



	quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	water environment including surface water and ground water were conducted and the results have been discussed in Section 4.3 under Chapter IV, pp. 97 & 98.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	Not Applicable.  The ground water table is found at the depth of 60-70 m below ground level. The ultimate depth of quarry is 45 m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under chapter III, pp.38-50.
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Not Applicable.  There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated.
30.	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	The highest elevation of the project area is 175 m AMSL. Ultimate depth of the mine is 45 m BGL. Depth to the water level in the area is 60-70 m BGL.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in	A detailed Greenbelt Development Plan has been provided in Section 4.6 under Chapter

	<p>a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p>	<p>IV, pp.113-119.</p>
<p>32.</p>	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress</p>	<p>Traffic density survey was carried out to analyse the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III, pp.91&amp;92.</p>

	Guidelines.	
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6 under Chapter II, pp.19-28.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Progressive mine closure plan showing post mining land use has been prepared for this project and is given in Section 2.6 under Chapter II, pp.19-28.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV, pp.120 &121.
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.145 & 146.
37.	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the Socio-Economic environment by offering

	indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	employment to 32 people directly, as discussed in Section 8.1 under Chapter VIII, p.144.
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Detailed environment management plan for the project to mitigate the anticipated impacts has been provided in Tables 10.10 &10.11 under Chapter X, pp.159-165.
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	The outcome of public hearing will be updated in the final EIA/EMP report.
40.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 55,50,000/- CER Cost is Rs. 5,00,000/- In order to implement the environmental protection measures, an amount of Rs.23,74,000 as capital cost and recurring cost as Rs. 19,41,662 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be Rs. 1,31,02,910.

42	A disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details regarding disaster management plan have been provided in Section 7.3 under Chapter VII, pp.133-137.
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project have been discussed under Chapter VIII, pp.144-146.
44.	<b>Besides the above, the below mentioned general points are also to be followed:</b>	
a)	Executive Summary of the EIA/EMP Report	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been properly referenced with index and continuous page numbering.
c)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of tables and source of the data collected have been mentioned.
d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Original Baseline monitoring reports will be submitted in the final EIA report during appraisal.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents have been provided in English.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be enclosed along with final EIA/EMP report.
g)	While preparing the EIA report, the	Instructions issued by MoEF & CC O.M. No.

	instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	J-11013/41/2006-IA. II (I) dated 4th August, 2009 have been followed while preparing the EIA report.
h)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	No changes were made in the basic scope and the project parameters.
i)	As per the circular no. J-11011/618/2010-IA. II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	The certified compliance report will be submitted along with final EIA report.
j)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	All the plans related to mining have been included along with the approved mining plan report in Annexure.

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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 14<sup>th</sup> September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14<sup>th</sup> 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 letter No. SEIAA-TN/F.No.9306/ToR-1295/2022 Dated:27.10.2022. This EIA report has been prepared for the project proponent Tmt. P. Amaravathi applied for rough stone lease in the patta land falling in S. F. No. 513/2C & 595/2 (Part) over an extent of 2.84.0 ha in Kuppam Village, Pugalur Taluk, Karur District and Tamil Nadu. This EIA report takes into account the rough stone quarries within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contains only two proposed projects, known as P1 and P2, three existing projects known as E1, E2 and E3. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269 (E) Dated 1<sup>st</sup> July 2016. The total extent of all the quarries in the cluster is 9.67.5 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**

<b>Proposed Quarries</b>				
<b>Code</b>	<b>Name of the Owner</b>	<b>S.F. No and Village</b>	<b>Extent (ha)</b>	<b>Status</b>
<b>P1</b>	Tmt. P. Amaravathi	513/2C,595/2B Kuppam	2.84.0	Proposed Area
<b>P2</b>	Tvl. NTC Infra Projects Private Limited.	494/2 (part) Kuppam	2.24.5	Applied Area
<b>Existing Quarries</b>				
<b>E1</b>	Tmt.P.Mallika	509/1(part) Kuppam	1.88.0	07.02.2018 To 06.02.2023
<b>E2</b>	Tmt.P.Amaravathi	509/2A(Part) Kuppam	0.89.5	18.08.2017 To 17.08.2022
<b>E3</b>	Thiru.S.Jeevanantham	524/3A2,524/3B Kuppam	1.81.5	05.07.2017 To 04.07.2022
<b>Expired Quarries</b>				
---Nil---				
	<b>Total Cluster Extent</b>		<b>9.67.5</b>	---

**Source:**

*DD Letter – Rc.No.266/Mines/2020, Dated: 27.05.2022.*

**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 **October-December 2022** 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 given below.

- 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/77887/2022, Dated: 08.06.2022) 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 09.06.2022.

### ***Scoping***

The proposal was placed in the 301<sup>st</sup> meeting of SEAC on 06.08.2022. 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.

### **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 **Letter No: SEIAA-TN/F.No.9306/ToR-1295/2022 Dated :27.10.2022 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 1<sup>st</sup> June and 1<sup>st</sup> 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).

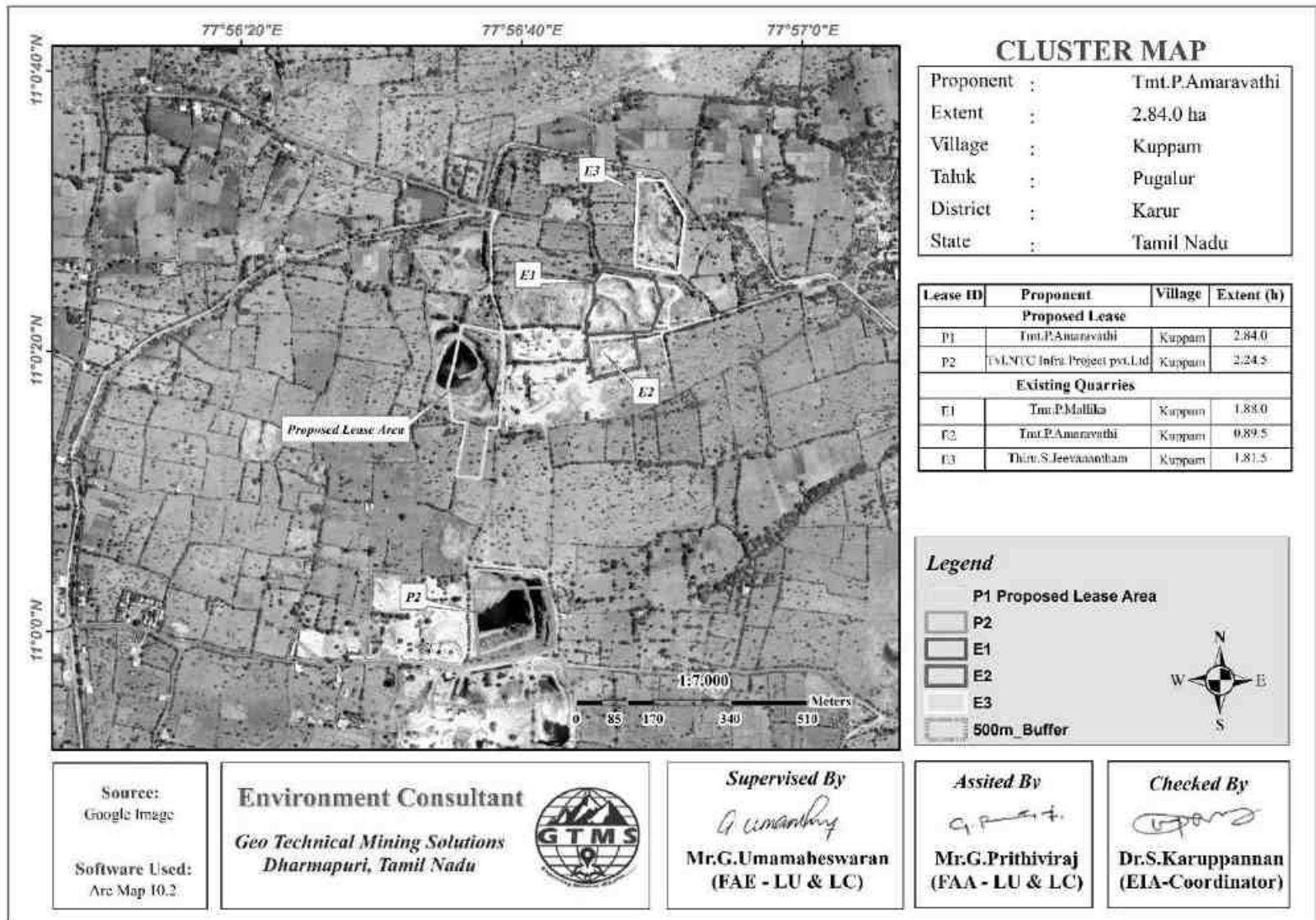


Figure 1.1 Location of the Proposed and Existing Rough Stone and Gravel Quarries in the Cluster of 500 m Radius



## 1.6 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC. The generic structure of the EIA document should be as under:

- ❖ Introduction
- ❖ Project Description
- ❖ Description of the Environment
- ❖ Anticipated Environmental Impact & Mitigation Measures
- ❖ Analysis of Alternatives (Technology & Site)
- ❖ Environmental Monitoring Program
- ❖ Additional Studies
- ❖ Project Benefits
- ❖ Environmental Cost Benefit Analysis
- ❖ Environmental Management Plan (EMP)
- ❖ Summary & Conclusion
- ❖ Disclosure of Consultants engaged.

## 1.7 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.

### 1.2 Details of Project Proponent

<b>Name of the Project Proponent</b>	<b>Tmt.P.Amaravathi</b>
Address	W/o.Mr.Palanisamy D.No.5/18, Ponniyagoundanpudur Punnamchatram post,Pugalur Taluk, Karur District-639136.
Status	Proprietor

## 1.8 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone which is primarily used in construction projects. The method adopted for rough stone excavation is open cast semi mechanized method involving formation of benches with 5 m height and 5 m width. The proposed project site is located in Kuppam Village, Pugalur Taluk, Karur 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 Proposed Project**

Name of the Quarry	Tmt. P. Amaravathi - Rough Stone Quarry	
Type of Land	Patta land	
S.F.No	513/2C & 595/2 (part)	
Extent	2.84.0	
Toposheet No.	513/2C & 595/2 (Part)	
Highest Elevation	175 m AMSL	
Latitude	11°0'10.90"N to 11°0'21.89"N	
Longitude	77°56'34.71"E to 77°56'38.75"E	
Ultimate Depth of Mining	45 m BGL as per ToR	
Ultimate Pit Dimension	Pit Level 1=140 m (L) X 21 m (W) X 5m (D) Pit Level 2=38 m (L) X 86 m (W) X 10m (D) Pit Level 3=112 m (L) X 69 m (W) X 15m (D)	
Geological Resources	Rough stone (m <sup>3</sup> )	Top Soil (m <sup>3</sup> )
	986352	13668
Mineable Reserves	272149	8506
Proposed production for 5 years	272149	8506
Method of Mining	Open cast semi mechanized mining method	
Topography	Flat Terrain	
Machinery proposed	Jack hammer	4
	Compressor	1
	Excavator	1
	Tipper	6
Blasting Method	Controlled blasting method involving shot hole drilling and small dia. of 25 mm slurry explosives is proposed for removal of rough stone.	
Proposed Manpower Deployment	32 persons	
Project Cost	Rs.55,50,000/-	
Proposed Water Requirement	3.420 KLD	

## 1.9 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. A detailed account of the emission sources, emissions control equipment, background air quality levels, meteorological measurements, dispersion model and all other aspects of pollution like effluent discharge, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of **October-December 2022** 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.

## 1.10 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, 14<sup>th</sup> 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.

## 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, **Tmt. P. Amaravathi** 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 16.06.2020 to extract rough stone. The precise area communication letter was issued by Department of Geology and Mining, Karur vide Rc.No.266/Mines/2020 Dated 21.10.2021. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Deputy Director Department of Geology and Mining, Karur (Rc.No.266/Mines/2020 Dated 25.01.2022). The overall view of the project site is shown in Figure 2.1.



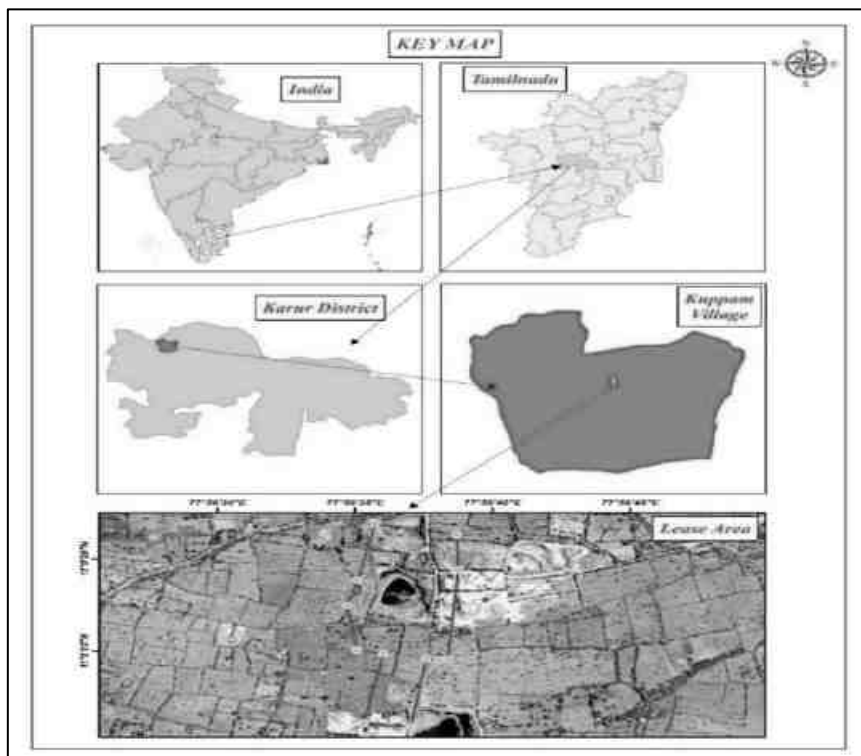
**Figure 2.1 Overall View of Proposed Project Site**

## **2.2 LOCATION AND ACCESSIBILITY**

The proposed quarry project is located in Kuppam Village, Pugalur Taluk, Karur District, as shown in Figure 2.2. The area lies between Latitudes from 11°0'10.90"N to 11°0'21.89"N and Longitudes from 77°56'34.71"E to 77°56'38.75"E. The maximum altitude of the project area is 175 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

**Table 2.1 Site Connectivity to the Project Area**

<b>Type of Features</b>	<b>Name/Location</b>	<b>Distance (km)</b>	<b>Direction</b>
Nearest Roadways	(SH-332) K. Paramathi-Noyyal	2.4 km	W
	(SH-84) Karur-Noyyal	3.33 km	E
Nearest Town	Pugalur	9.5 km	NE
Nearest Railway Station	Pugalur	9.5 km	NE
Nearest Airport	Coimbatore	70 km	NW
Nearest Seaport	Thuthookudi	208 km	S



**Figure 2.2 Key Map Showing Location of the Project Site**

### 2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 2.84.0ha.
- ❖ 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 2.3.

**Table 2.2 Corner Coordinates of Proposed Project**

Pillar ID	Latitude	Longitude	Pillar ID	Latitude	Longitude
1	11°0'21.29"N	77°56'38.69"E	7	11°0'11.12"N	77°56'35.31"E
2	11°0'19.38"N	77°56'38.75"E	8	11°0'14.88"N	77°56'36.03"E
3	11°0'14.57"N	77°56'38.37"E	9	11°0'15.06"N	77°56'35.06"E
4	11°0'14.50"N	77°56'38.06"E	10	11°0'17.48"N	77°56'34.71"E
5	11°0'14.59"N	77°56'37.58"E	11	11°0'18.85"N	77°56'35.10"E
6	11°0'10.90"N	77°56'37.03"E	12	11°0'21.89"N	77°56'35.73"E

## 2.4 GEOLOGY AND GEOMORPHOLOGY

The lease area geologically occurs in migmatite terrain. The Charnockite, commercially called as roughstone occurs within the migmatite rock, as shown in Figure 2.5 and 2.6. Also, the lease area geomorphologically occurs over pediplain.

## 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 margins, as shown in Figure 2.4 and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 45 m BGL considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The 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 <sup>3</sup>	Top Soil in m <sup>3</sup>
Geological Resource in m <sup>3</sup>	986352	13668
Mineable Reserves in m <sup>3</sup>	272149	---
Proposed production for 5 years m <sup>3</sup>	272149	---

Based on the year wise development and production plan and sections, as exemplified in Figures 2.7&2.7a, the year wise production results have been provided in Table 2.4.

**Table 2.4 Year-Wise Production Details**

Year	Rough Stone (m <sup>3</sup> )	Top Soil (m <sup>3</sup> )
I	57399	8506
II	56950	-
III	58700	-
IV	50850	-
V	48250	-
<b>Total</b>	<b>272149</b>	<b>8506</b>

*Source: Approved Mining Plan &*

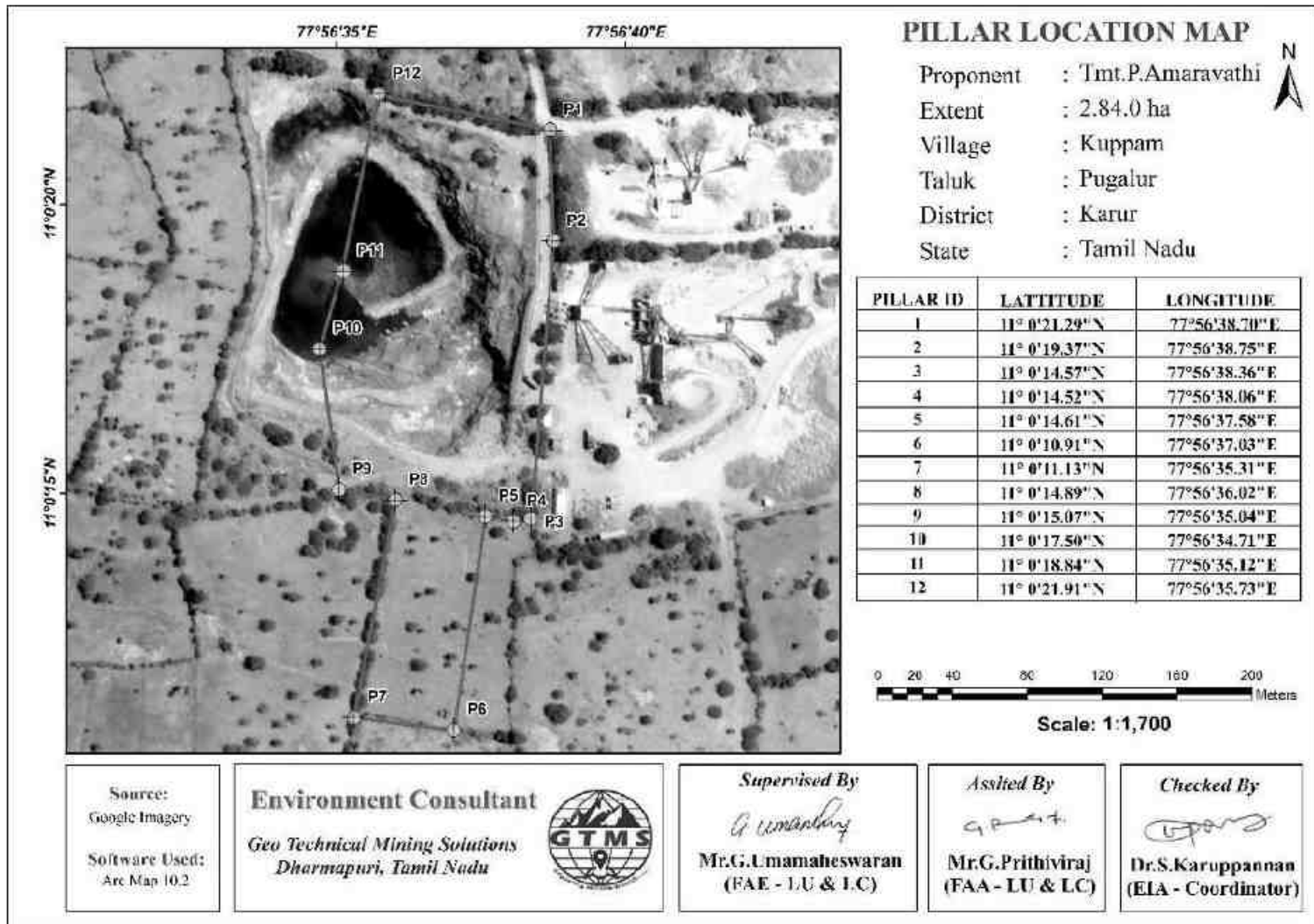


Figure 2.3 Google Earth Image Showing Lease Area with Pillar



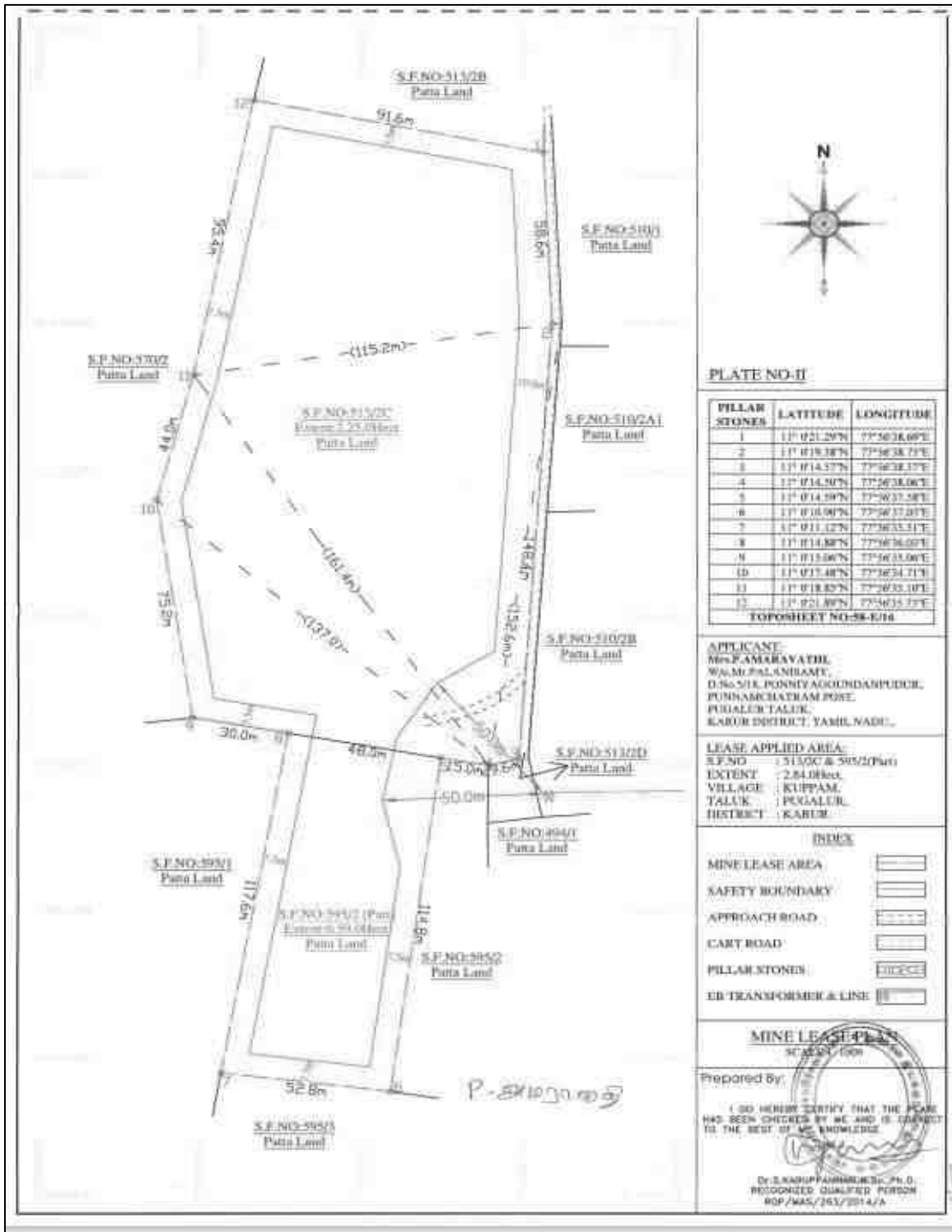


Figure 2.4 Mine Lease Plan

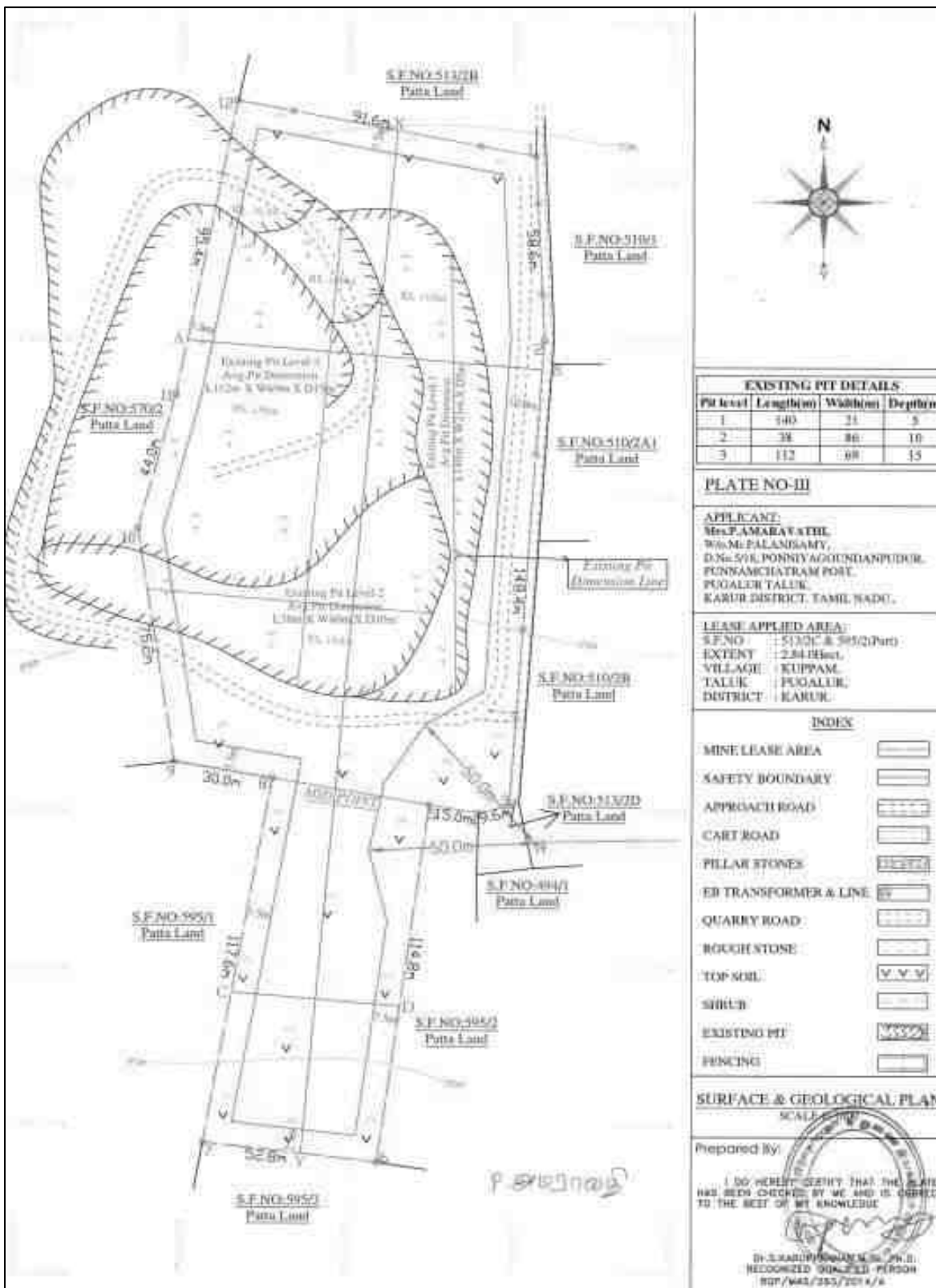


Figure 2.5 Surface & Geological Plan

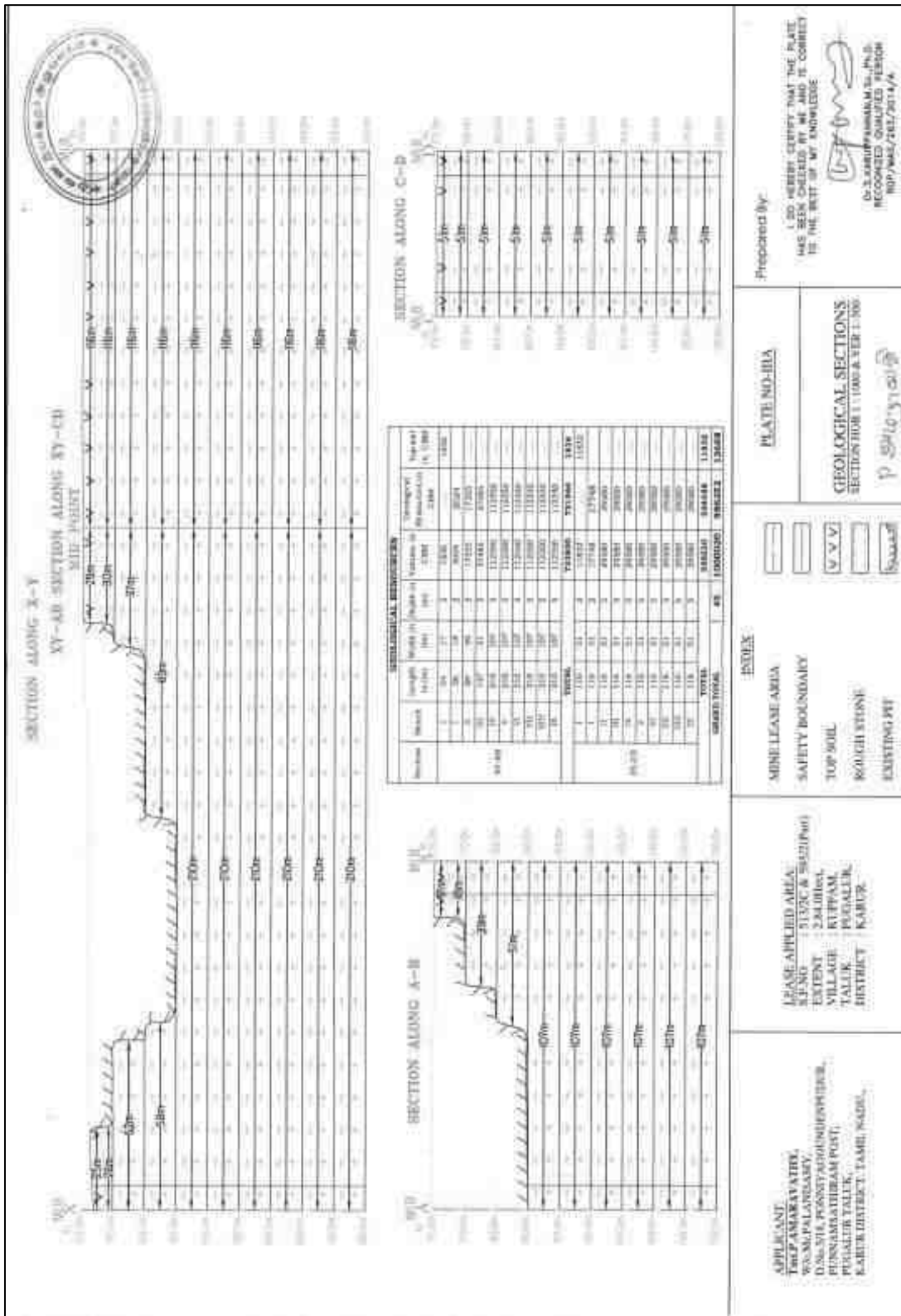


Figure 2.6 Geological Sections

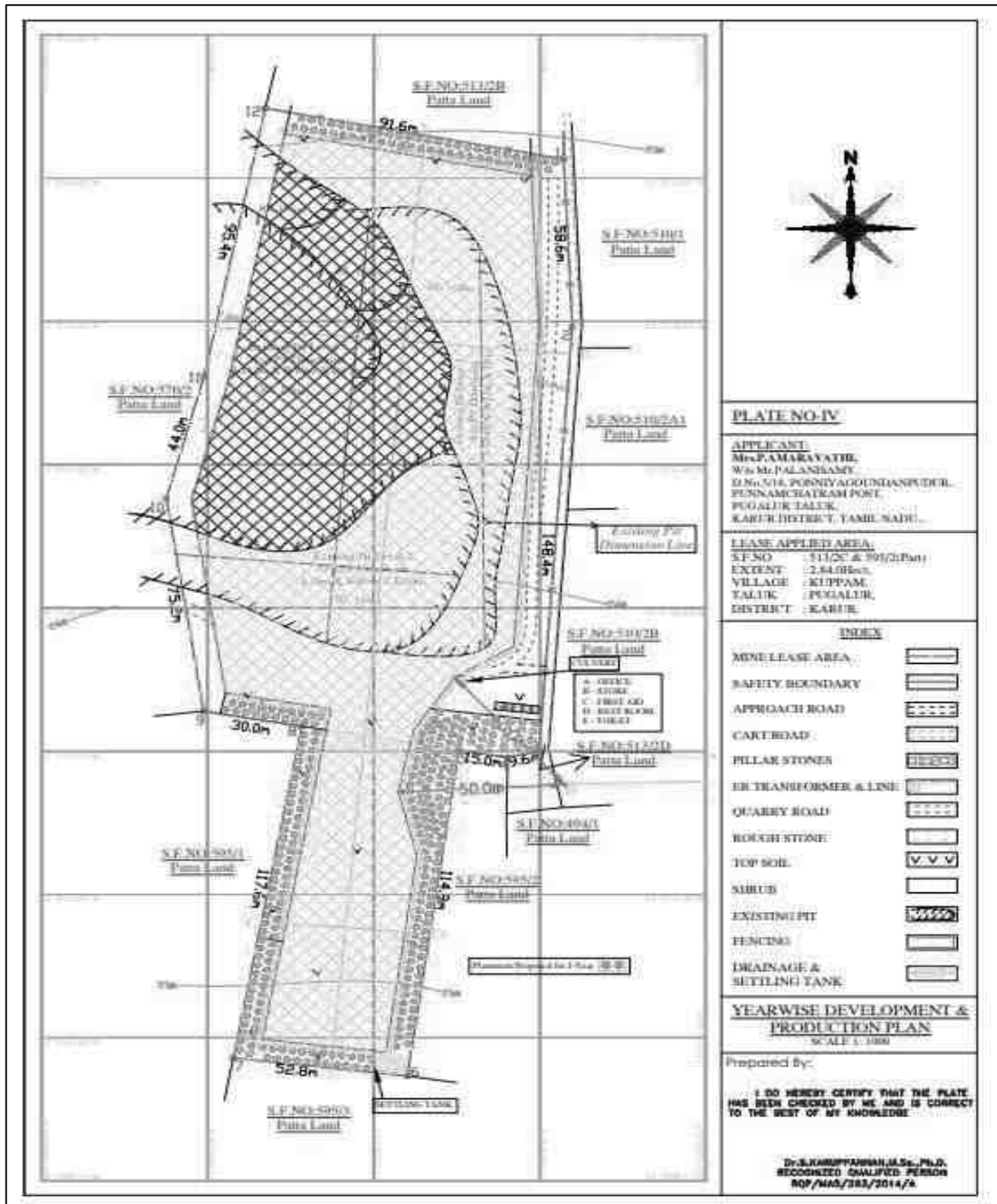


Figure 2.7 Yearwise Development and Production Plan



## **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. The extracted rough stone will be loaded manually to the trucks for dispatch to the customers. In this project, NONEL blasting will be adopted to extract rough stone.

### **2.6.1 Conceptual Blasting Design**

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

#### **Rules of Thumb for Blast Design**

Based on practical experience and technical information, a set of rules for blasting have been provided as below ([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**

Blasthole Diameter (D) in mm	32
Burden (B) in m	1
Spacing (S) in m	0.97
Subdrill in m	0.3
Charge length (C) in m	0.64
Stemming	1
Hole Length (L) in m	1.9
Bench Height (BH) in m	1.6
Mass of explosive/hole in g	400
Stemming material size in mm	3.2

Burden stiffness ratio	1.64
Blast volume/hole in m <sup>3</sup>	1.59
Production of rough stone/day in m <sup>3</sup>	<b>202</b>
Number of blastholes/day	<b>127</b>
Blasthole pattern	Staggered/Rectangular
Mass of explosive /day in kg	<b>51</b>
Powder factor in kg/m <sup>3</sup>	0.25
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	<b>23</b>

*Source: Explosives Engineers' Guide and blast manual (Chapter8 (nps.gov))*

### 2.6.2 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**

	<b>Rough Stone/5 years</b>
Proposed production	272149
Number of Working Days	270
Production /Day (m <sup>3</sup> )	202
No. of Lorry Loads	34

### 2.6.3 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	Size/Capacity	Make/Dia of Hole (mm)	Motive Power
1	Jack Hammers	4	Hand Held	32 mm	Diesel Drive
2	Compressor	1	Air	Atlas Copco	Diesel Drive
3	Excavator	1	-	Hitachi	Diesel Drive
<b>Haulage &amp; Transport Equipment</b>					
4	Tipper	6	15 M. T	Bharath Benz	Diesel Drive



#### 2.6.4 Progressive Quarry Closure Plan

The progressive quarry closure plan (Figure 2.8) 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 0.77.5 ha of land is allocated for quarrying; about 0.02.0 ha of land is allocated for quarrying for roads; and about 1.99.0 ha of land is designated as unutilized area. Whereas, at the end of the mine life, about 2.26.0 ha of land would have been quarried; about 0.01.0 ha of land would have been used for establishing infrastructures; about 0.03.0 ha of land would have been used for road development; about 0.26.5 ha of land would have been used for green belt development and about 0.27.5 ha of land would have been unutilized.

**Table 2.8 Land use data at present, during scheme of mining, and at the end of mine life**

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	0.77.5	2.26.0
Infrastructure	Nil	0.01.0
Roads	0.02.0	0.03.0
Green Belt	0.05.5	0.26.5
Drainage & Settling tank	Nil	Nil
Unutilized area	1.99.0	0.27.5
<b>Total</b>	<b>2.84.0</b>	<b>2.84.0</b>

#### 2.6.5 Quarry Closure Budget

As the proposed project has the enormous potential for continuous operations even after the expiry of lease period, final mine closure plan is not proposed for now. Based on the environment management plan as discussed in Chapter X, the mine closure cost is given in Table 2.9.

**Table 2.9 Mine Closure Budget**

Activity	Capital Cost	Recurring Cost/Annum
568 plants inside the lease area	113600	17040
852 plants outside the lease area	255600	25560
Wire Fencing	568000	28400
Renovation of Garland Drain	28400	14200
<b>Total</b>	<b>965600</b>	<b>85200</b>

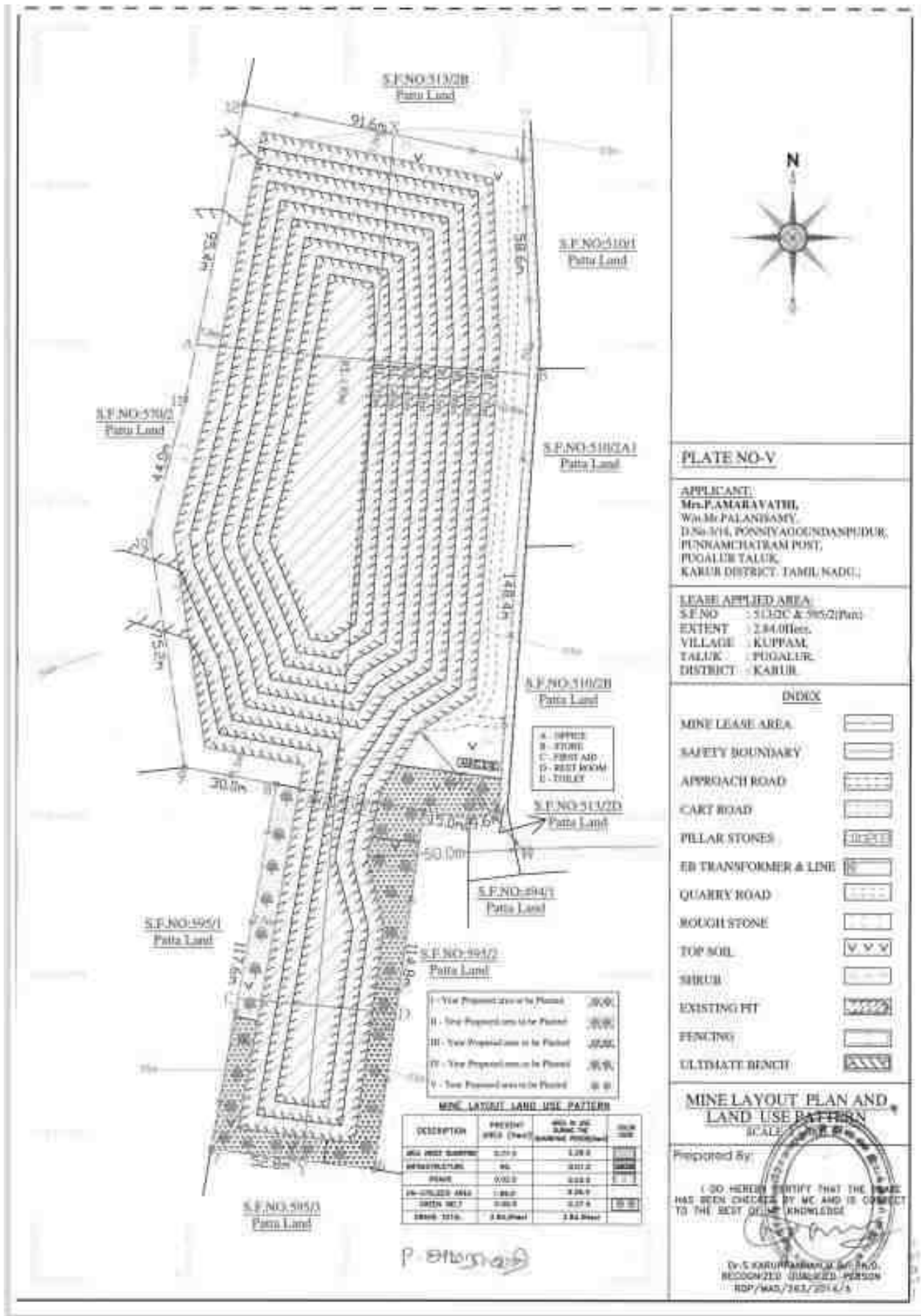


Figure 2.8 Mine Layout Plan and Land Use Pattern

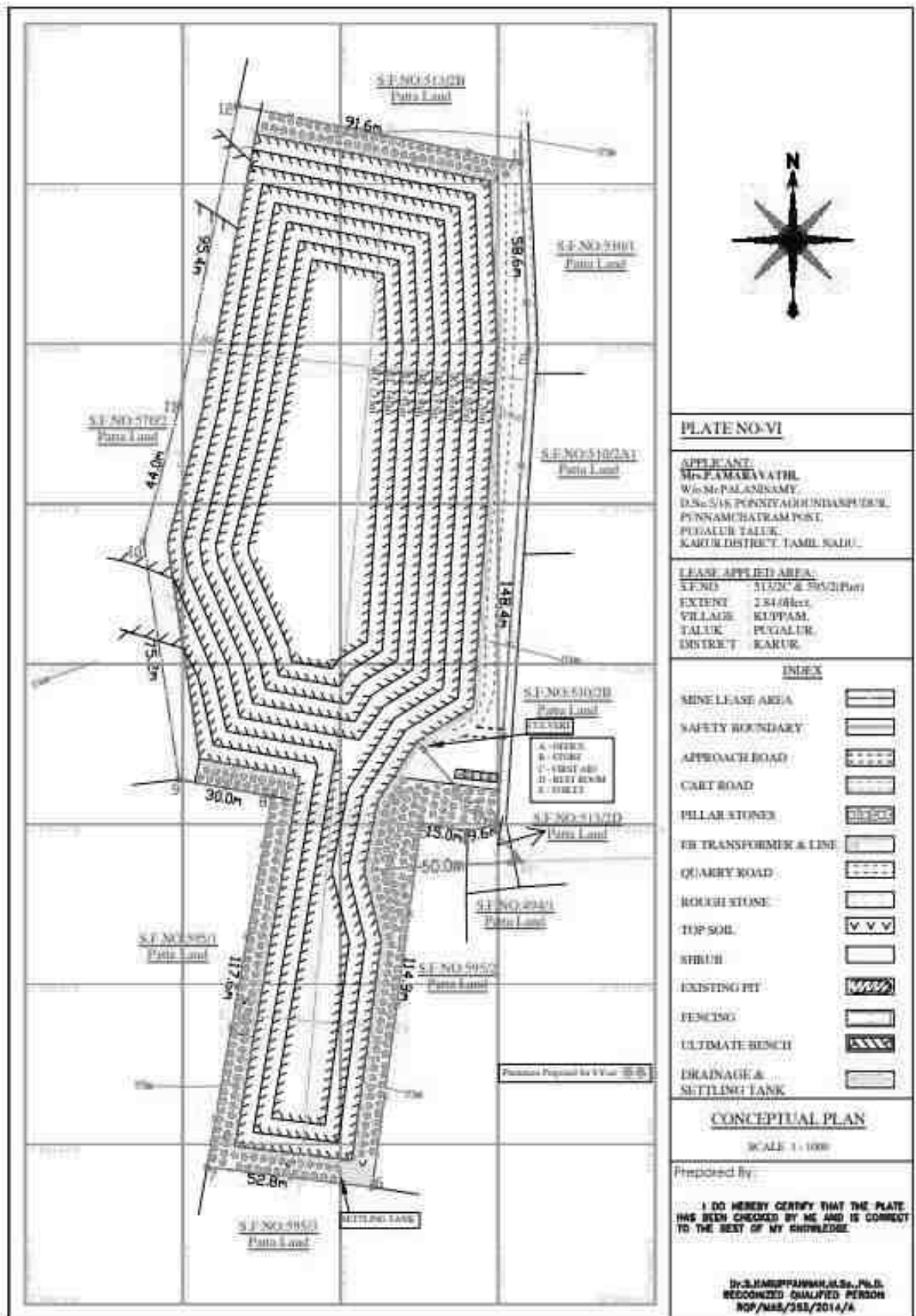


Figure 2.9 Conceptual Plan

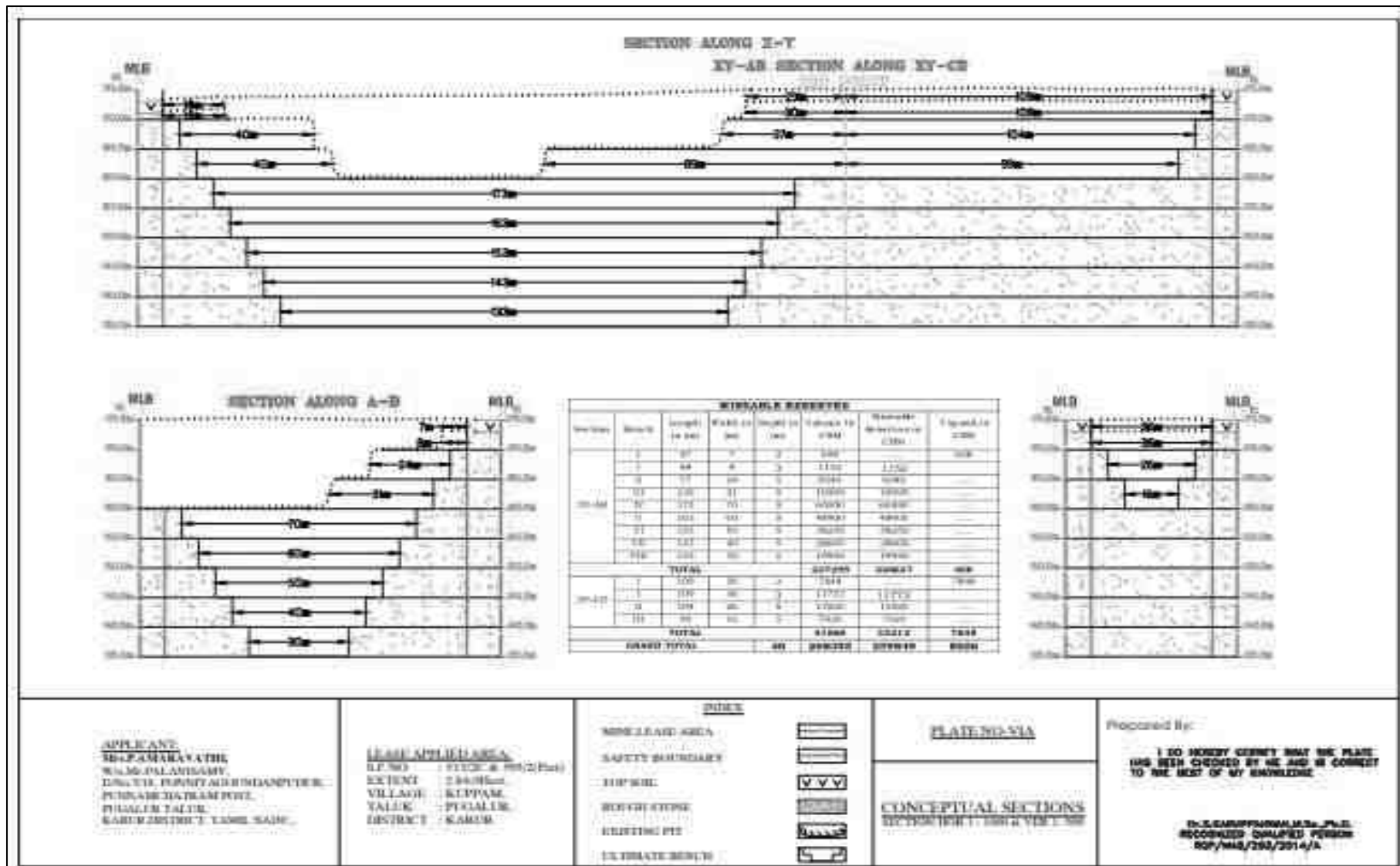


Figure 2.9a Conceptual Plan Sections

### 2.6.6 Conceptual Mining Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc. The ultimate pit dimension derived from Figures 2.9 & 2.9a is provided in Table 2.10.

**Table 2.10 Ultimate Pit Dimension**

Pit	Length (m)	Width (m)	Depth(m)
I	173	70	45

*Source: Approved Mining Plan & ToR*

### 2.6.7 Infrastructures

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

#### ***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.

### 2.6.8 Water Requirement

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

**Table 2.11 Water Requirement for the Project**

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Existing bore wells nearby the lease area
Green Belt development	1.0 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.420KLD	Existing bore wells and approved water vendors
<b>Total</b>	<b>3.420KLD</b>	

*Source: Prefeasibility Report*

### 2.6.9 Energy Requirement

High speed Diesel (HSD) will be used for quarrying machineries. As per the data shown in Table 2.12, Around 1194880 litres of HSD will be used for rough stone and 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**

<b>Fuel Requirement for Excavator</b>			
<b>Details</b>	<b>Rough Stone (272149 m<sup>3</sup>)</b>	<b>Top Soil (8506 m<sup>3</sup>)</b>	<b>Total Diesel in liters</b>
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m <sup>3</sup> /hr)	20	60	---
Time Required (hours)	13607	142	---
Total Diesel Consumption for 5 years (litre)	217719	1418	<b>219137</b>
<b>Fuel Requirement for Compressor</b>			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	127	---	---
Total Diesel Consumption for 5 years (litre)	68580	---	<b>68580</b>
<b>Fuel Requirement for Tipper</b>			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m <sup>3</sup>	6	6	---
Number of Trips / days	34	0	---
Number of Trips / 5 years	45358	0	---
Total Diesel Consumption for 5 years (litre)	907163	0	<b>907163</b>
<b>Total Diesel Consumption by Excavator, Compressor and Tipper</b>			<b>1194880</b>

## 2.6.10 Capital Requirement

The project proponent will invest **Rs.55,50,000/-** 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	31,00,000
2	Machinery Cost	15,00,000
3	EMP Cost	5,25,000
4	Expenditure Cost	4,25,000
<b>Total Project Cost</b>		<b>55,50,000/-</b>

*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	Quarry Manager	1
		Mines Forman	--
		Mechanical Engineer	--
		Account cum & admin	1
2	Skilled	Earth Moving Operator	4
		Driver	6
		Mechanic	--
		Blaster/Mat	1
3	Semi – skilled	Helpers/Greaser's	3
4	Unskilled	Musdoor/ Labours	12
		Cleaners	3
		Attendants	1
<b>Total</b>			<b>32</b>

*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 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
1	Environmental Clearance						
2	Consent to Establish						Project Establishment Period
3	Consent to operate						Production starting period.
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

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



**CHAPTER III**  
**DESCRIPTION OF THE ENVIRONMENT**

**3.0 GENERAL**

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as land, water, air, noise, biological and socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering **October through December, 2022** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified Excellence Laboratory for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

***Study Area***

The study area has been divided into two zones: core zone and buffer zone. Core zone is considered as lease area and buffer zone as 5 km radius from the periphery of the cluster, except for ecological study, which considers 10 km as buffer zone. Both core and buffer zones are taken as the study area. The data was collected from the study area to understand the existing environment conditions of the above-mentioned environmental components. Sampling methodologies for the various environmental parameters, including frequency of sampling, method of sample analysis, etc., are briefly given in Table 3.1.

**Table 3.1 Monitoring Attributes and Frequency of Monitoring**

<b>Attribute</b>	<b>Parameters</b>	<b>Frequency of Monitoring</b>	<b>No. of Locations</b>	<b>Protocol</b>
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	8 (1 nearby core & 7 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	10 (1 surface water & 9 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 <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> NO <sub>x</sub> Fugitive dust	24 hours, twice a week (October to December, 2022)	10 (1 core & 9 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	12 (1 core & 11 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 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.1 was prepared using Sentinel II image for the study area of 5 km radius. Totally, 7 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 180.31 ha accounting for 2.32 %, of which lease area of 2.84.0 ha contributes only about 0.036 %. 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**

<b>S. No.</b>	<b>Classification</b>	<b>Area (ha)</b>	<b>Area (%)</b>
1	Crop Land	6758.00	87.03
2	Dense Forest	96.49	1.24
3	Land with or without scrub	60.84	0.78
4	Mining/Industrial wastelands	180.31	2.32
5	Plantations	661.91	8.52
6	Settlements	5.29	0.07
7	Water Bodies	2.51	0.03
<b>Total</b>		<b>7765.35</b>	<b>100</b>

*Source: Sentinel II Satellite Imagery*

### **3.1.2 Topography**

The proposed lease area is located in a flat terrain with an altitude range of 174-175 m AMSL, showing relief of 1 m.

### **3.1.3 Drainage Pattern**

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.2.

### **3.1.4 Seismic Sensitivity**

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

### **3.1.5 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.

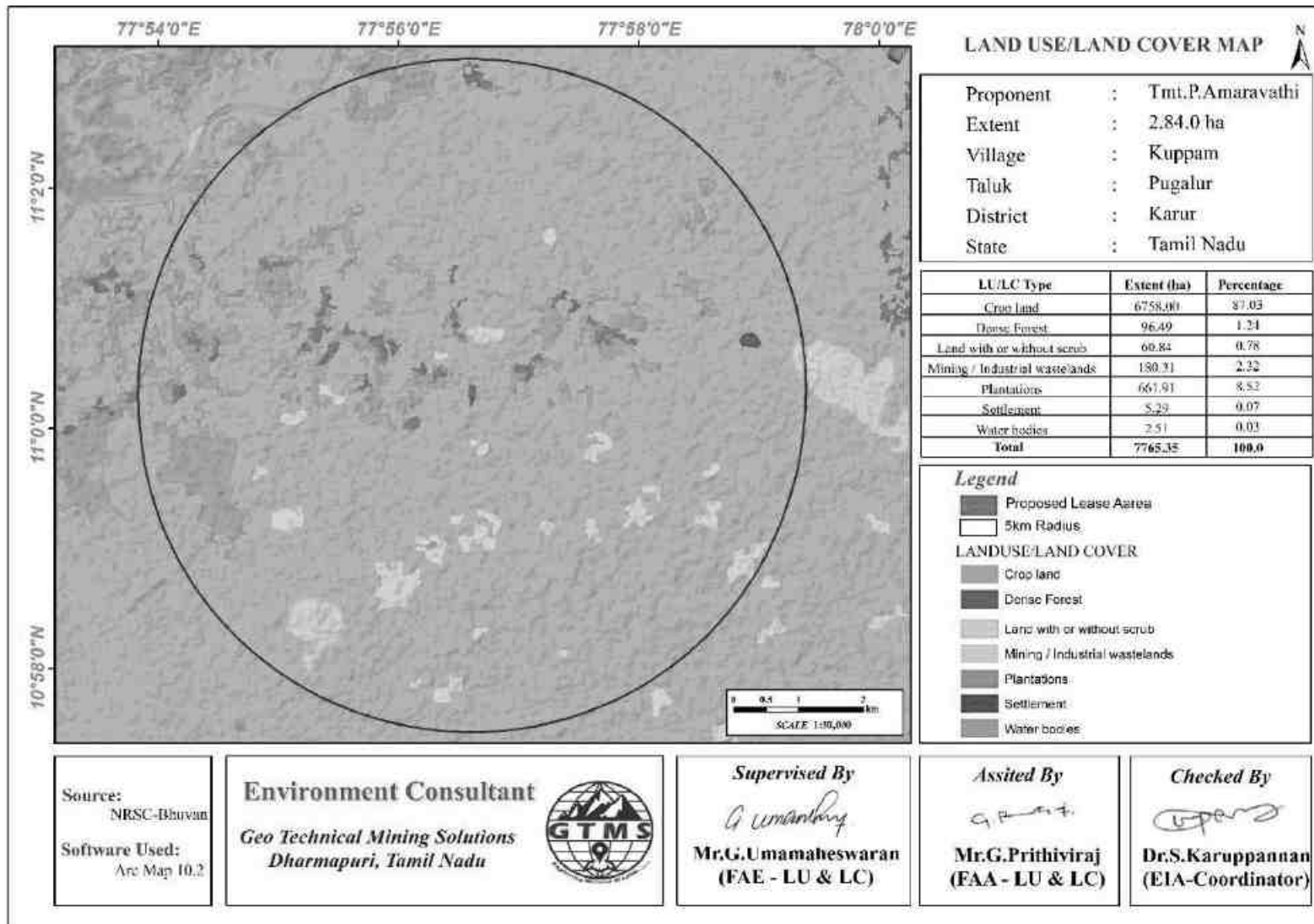


Figure 3.1 LULC Map of 5 km Radius from the Proposed Project Site

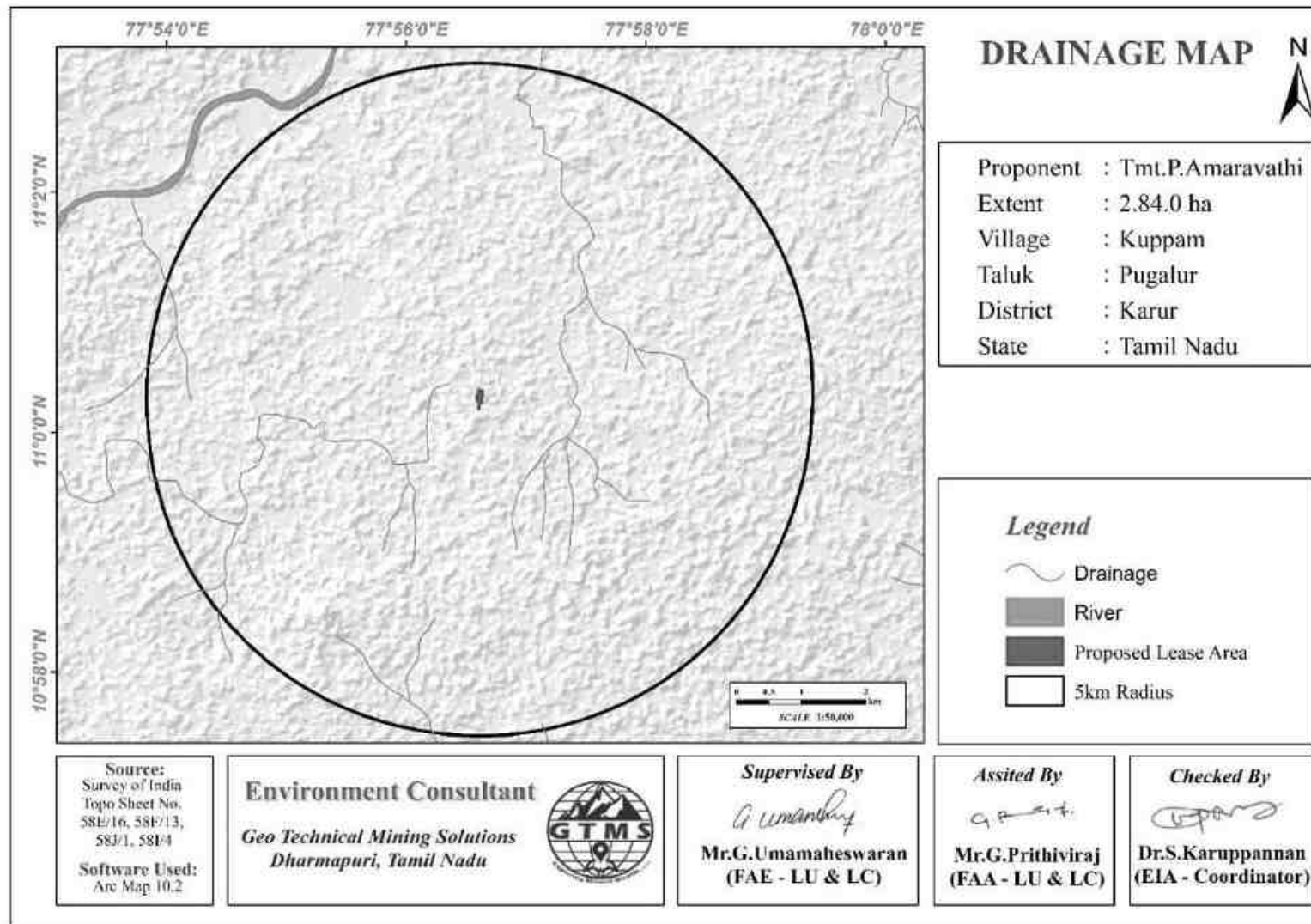


Figure 3.2 Drainage Map of 5 km Radius from the Proposed Project Site Showing a Portion of Dendritic Pattern

### 3.1.5.1 Methodology

Eight 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 3.3. 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**

S. No.	Sampling ID	Location	Distance (km)	Direction	Coordinates
1	S01	Near Rani Lease	0.64	NNW	11°0'41.88"N,77°56'29.60"E
2	S02	Near Star Blue Metals lease	0.69	NNE	11°0'43.99"N,77°56'40.41"E
3	S03	Core	---	---	11°0'11.59"N,77°56'35.92"E
4	S04	Vetamangalam	3.27	N	11°2'7.90"N,77°56'27.47"E
5	S05	Uppupalaiyam	2.33	NE	11° 0'40.39"N,77°57'52.96"E
6	S06	Valipuram	3.31	SE	10°58'56.01"N,77°57'55.53"E
7	S07	Kuppam	2.30	NW	11°0'45.84"N,77°55'23.83"E
8	S08	Munnur	4.33	SW	10°59'13.87"N,77°54'25.10"E

Source: On-site monitoring/sampling by *Excellence Laboratory (P) Limited*, in association with GTMS.

### 3.1.5.2 Results and Discussion

#### *Physical Characteristics*

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.5 to 7.7 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 143 to 247  $\mu\text{s}/\text{cm}$ . Bulk density ranges between 1.2 and 3.8  $\text{g}/\text{cm}^3$ .

#### *Chemical Characteristics*

Nitrogen ranges between 0.04 and 1.1 %. Phosphate ranges between 0.14 and 3.8 %. Potassium ranges between 0.12 and 0.26 %. Calcium ranges between 161 and 513  $\text{mg}/\text{kg}$ . Organic matter content ranges between 0.35 and 2.0 %.

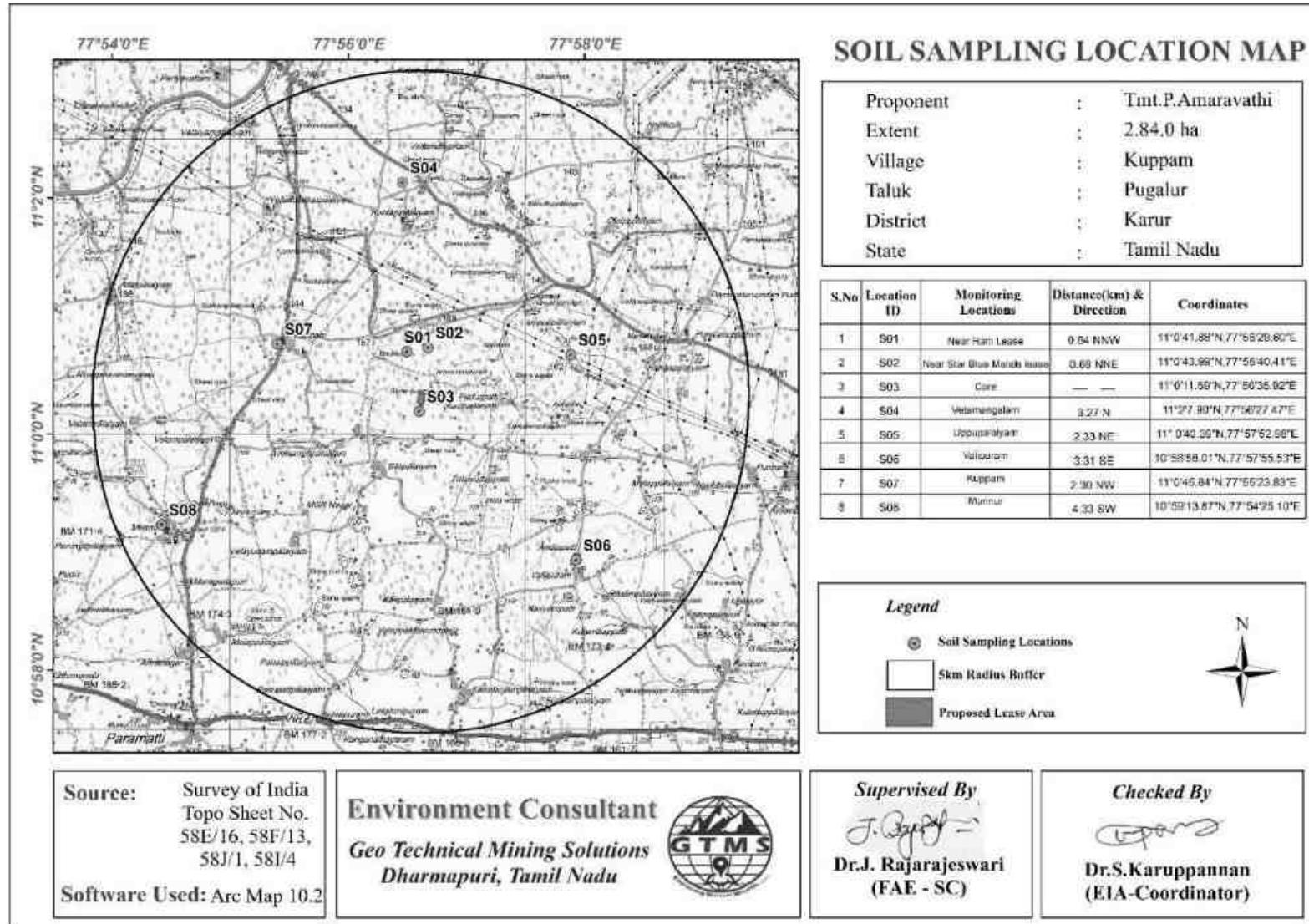


Figure 3.3 Toposheet Showing Soil Sampling Locations within 5 km Radius around the Proposed Project site

**Table 3.4 Soil Quality of the Study Area**

S. No	Parameters	Unit	S01	S02	S03	S04	S05	S06	S07	S08
1	Bulk Density	g/cm <sup>3</sup>	1.2	1.4	1.3	1.6	3.8	1.3	3.3	2.9
2	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	CEC	meq%	17.8	14	38	22.7	24	24.5	24	15
4	Chromium (Cr)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Copper (Cu)	mg/kg	1.6	3.2	1.3	10	1.8	2.3	12	10
6	Iron (Fe)	mg/kg	5345	20537	17648	25986	37397	16978	6734	9436
7	Lead (Pb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	Manganese (Mn)	mg/kg	1.36	2.63	1.58	114	1.7	2.00	76	23
9	Nitrogen (N)	%	1.03	1.06	1.03	0.04	1.02	1.05	1.05	1.1
10	Organic Matter @ 155°C	%	0.58	0.55	0.82	1.1	1.46	2.0	0.35	0.97
11	pH value @ 25°C	--	7.5	7.5	7.6	7.7	7.3	6.5	6.5	6.9
12	Phosphate (P)	%	2.3	1.0	1.9	2.0	1.2	0.14	2.14	3.8
13	Potassium (K)	%	0.23	0.22	0.25	0.16	0.12	0.26	0.26	0.13
14	EC @ 25°C	µS/Cm	165	168	143	161	247	237	237	154
15	Total Carbon	%	2.7	2.0	2.7	2.0	3.7	11.3	6.3	3.2
16	Sulphates (SO <sub>4</sub> )	%	0.17	0.15	0.17	0.19	0.28	0.15	0.15	0.25
17	Zinc (Zn)	mg/kg	14	18	16	17	30	33	33	22
18	Boron (B)	mg/kg	0.68	0.61	0.35	0.53	0.75	0.61	0.61	0.31
29	Calcium (Ca)	mg/kg	270	380	281	372	301	513	245	161
20	Chlorides (Cl)	mg/kg	197	291	297	318	296	115	215	390
21	Magnesium (Mg)	mg/kg	123	132	126	142	110	186	114	111
22	Texture	-	Sandy Clay Loam	Sandy Loam	Sandy Loam	Sandy Loam	Silty Loam	Sandy Loam	Sandy loam	Silty loam

Source: Sampling Results by **Excellence Laboratory (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**

S. No	Sampling ID	Location	Distance (km)	Direction	Coordinates
1	BW01	Near core	0.02	E	11°0'14.66"N,77°56'39.17"E
2	BW02	Arasampalaiyam	0.68	NNE	11°0'42.51"N,77°56'45.26"E
3	BW03	MGR Nagar	2.75	SW	10°58'50.44"N,77°55'53.77"E
4	BW04	Vedirimattam Pudur	3.16	NNE	11°02'3.05"N,77°54'80.38"E
5	BW05	Punnamchatram	4.08	NEN	11°0'50.37"N,77°58'49.79"E
6	BW06	Kalipalaiyam	5.19	NNE	11°2'59.51"N,77°57'38.63"E
7	BW07	Vallipuram	3.44	SE	10°58'52.44"N,77°57'57.82"E
8	OW01	Arasampalaiyam	0.79	NW	11° 0'31.10"N,77°56'11.47"E
9	OW02	Kuntanipalaiyam	2.97	NNW	11°1'55.41"N,77°56'11.47"E
10	SW01	Velaiyampalayiam	5.10	NNW	11°2'42.24"N,77°55'6.12"E

Source: On-site monitoring/sampling by **Excellence Laboratory (P) Limited**, in association with GTMS.

### 3.2.1 Surface Water Resources and Quality

Noyyal River is the prominent surface water resources present in the study area. This river was ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 4.48 km NW of Noyyal River, as shown in Table 3.5 and Figure 3.4. One surface water sample, known as SW1 were collected from the Noyyal River to assess the baseline water quality. Table 3.6 summarizes surface water quality data of the collected sample.

Result for surface water sample in the Table 3.6 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

### 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.

Nine groundwater samples, known as BW01, BW02, BW03, BW04, BW05, BW06, BW07, OW01 and OW02 collected from bore wells and open wells were 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 3.4. Table 3.6 summarizes ground water quality data of the nine samples.

Results for ground water samples in the Table 3.6 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

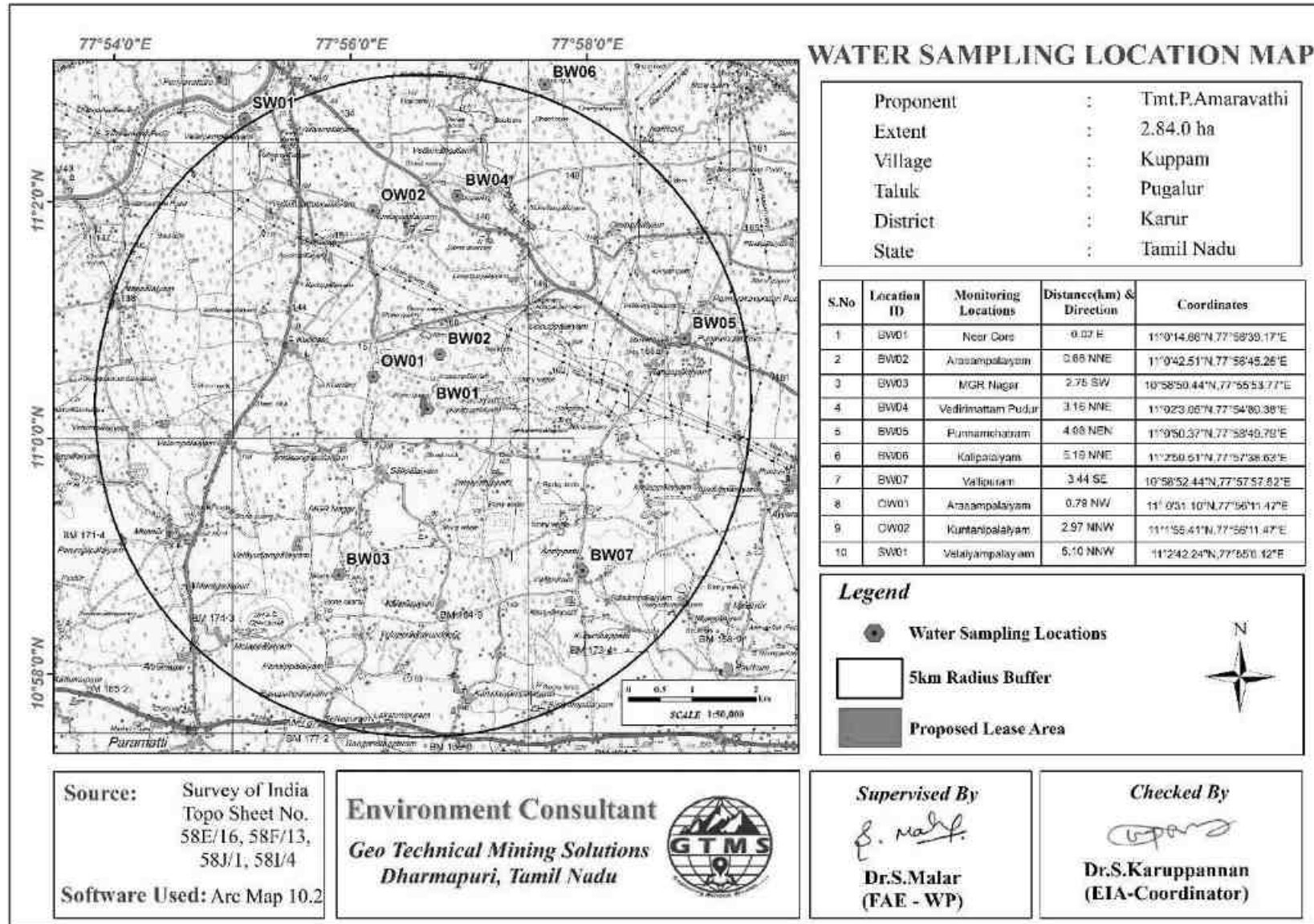
### **3.2.3 Hydrogeological Studies**

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**

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 April through June, 2022 (Pre-Monsoon Season) and from October through December, 2022 (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.7 and 3.8. According to the data, average depths to the static water table in open wells range from 11.3 to 14.7 m BGL in pre monsoon and 10.3 to 12.5 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.9 and 3.10. The average depths to static potentiometric surface in bore wells for the period of October through December 2022 (Post-Monsoon Season) vary from 61.8 to 65.7 m and from 63.5 to 70.8 m for the period of March through May, 2022 (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines.



**Figure 3.4 Toposheet showing water sampling locations within 5 km radius around the proposed project site**

**Table 3.6 Ground and Surface Water Quality Result**

S. No.	Parameters	Units	Results										Max. Permissible limits (IS:10500:2012)	
			OW01	OW02	BW01	BW02	BW03	BW04	BW05	BW06	BW07	SW01		
1	Coliforms Bacteria	MPN	Present	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Present	Absent
2	E.Coli	MPN	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
3	Aluminium (Al)	mg /l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.2
4	Ammonia (NH <sub>3</sub> )	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
5	Anionic Detergents	mg /l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.0
6	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
7	Boron (B)	mg /l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.0
8	Cadmium (Cd)	mg /l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003
9	Calcium (Ca)	mg /l	116	134	124	82	85	135	146	75	58	134	134	200
10	Chloride (Cl)	mg /l	241	203	239	150	297	214	228	223	175	442	442	1000
11	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	30	15
12	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.5
13	Cyanide (CN)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	0.05
14	Fluoride (F)	mg/l	1.0	1.2	1.1	0.9	0.31	0.19	0.72	0.31	0.7	1.1	1.1	1.5
15	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Min 1.0
16	Iron (Fe)	mg/l	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.0

17	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
18	Magnesium (Mg)	mg/l	24	48	88	26	74	45	64	45	14	58	100
19	Manganese (Mn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.3
20	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
21	Molybdenum	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
22	Nitrate (NO <sub>3</sub> )	mg/l	5.8	1.9	14	14	1.9	4.2	5.5	6.7	6.3	2.1	45
23	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
24	pH value @ 25°C	--	7.2	7.0	6.7	6.9	7.3	7.4	6.7	7.2	7.7	7.2	6.5-8.5
25	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
26	Selenium (Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
27	EC @ 25°C	mg/l	1160	2110	1890	1043	2400	3570	1578	1202	1705	2440	NA
28	Sulphates (SO <sub>4</sub> )	mg/l	141	102	204	69	196	210	104	90	124	344	400
29	Sulphide (H <sub>2</sub> S)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
30	Total Alkalinity	mg/l	185	615	279	316	458	283	381	242	385	467	600
31	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01
32	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
33	TDS	mg/l	754	1753	1880	678	560	720	1215	783	1108	1580	2000
34	TH (CaCO <sub>3</sub> )	mg/l	388	445	933	312	242	1022	426	366	204	571	600
35	TSS @ 105°C	mg/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA
36	Turbidity	NTU	<0.01	<0.01	0.1	1.1	<0.01	<0.01	<0.1	<0.1	<0.1	3.0	5.0
37	Zinc (Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15

Source: Sampling Results by **Excellence Laboratory (P) Limited**, in association with GTMS.

From the maps of open well groundwater flow direction shown in Figures 3.5-3.6, it is understood that most of the open well groundwater for the post and pre monsoon seasons flows towards the open well number 2 and 8 located in northwestern and southeastern direction of the proposed project site. The groundwater flow maps in Figure 3.7-3.8 show that most of the bore well groundwater for the post and pre monsoon seasons flow towards the bore well number 1 and 2. It is located in southeastern and eastern 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.

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

Station ID	Depth to Static Water Table BGL(m) Pre-Monsoon 2022					Latitude	Longitude
	Mar-2022	Apr-2022	May 2022	Average	EL		
DW1	11.5	12.5	13.0	12.3	161	11° 0'33.99"N	77°56'44.25"E
DW2	11.5	12.5	13.5	12.5	156	11° 0'32.29"N	77°56'15.91"E
DW3	11.0	12.5	15.0	12.8	157	11° 0'9.34"N	77°55'41.88"E
DW4	12.0	13.5	14.5	13.3	162	10°59'48.73"N	77°56'11.99"E
DW5	13.5	14.5	16.0	14.7	166	10°59'37.58"N	77°57'22.04"E
DW6	12.0	13.0	14.5	13.2	156	11° 0'38.56"N	77°58'11.58"E
DW7	10.5	11.5	12.0	11.3	151	11° 0'39.89"N	77°57'14.82"E
DW8	12.5	13.5	15.0	13.7	163	11° 0'6.95"N	77°56'55.96"E
DW9	11.0	12.5	13.5	12.3	160	11° 0'47.12"N	77°56'4.93"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) Post Monsoon 2022					Latitude	Longitude
	OCT-2022	NOV-2022	DEC-2022	Average	EL		
DW1	9.5	11.0	12.5	11.0	161	11° 0'33.99"N	77°56'44.25"E
DW2	9.0	10.5	11.5	10.3	156	11° 0'32.29"N	77°56'15.91"E
DW3	10.0	11.5	12.5	11.3	157	11° 0'9.34"N	77°55'41.88"E
DW4	10.5	11.5	13.0	11.7	162	10°59'48.73"N	77°56'11.99"E
DW5	11.5	12.5	13.5	12.5	166	10°59'37.58"N	77°57'22.04"E
DW6	10.5	11.5	13.0	11.7	156	11° 0'38.56"N	77°58'11.58"E
DW7	9.5	10.5	12.0	10.7	151	11° 0'39.89"N	77°57'14.82"E
DW8	11.0	12.0	13.0	12.0	163	11° 0'6.95"N	77°56'55.96"E
DW9	9.0	10.5	12.0	10.5	160	11° 0'47.12"N	77°56'4.93"E

Source: Onsite monitoring data

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

Station Code	Depth to Static Potentiometric Surface BGL(m)					Latitude	Longitude
	Pre-Monsoon 2022						
	Mar-2022	Apr-2022	May-2022	Average	EL		
BW1	65.3	66.5	68	66.6	169	11° 0'1.14"N	77°56'48.41"E
BW2	64.5	65.7	66.5	65.6	154	11° 0'24.89"N	77°57'24.02"E
BW3	66.2	77.2	68.9	70.8	153	11° 0'54.01"N	77°57'11.55"E
BW4	67.2	68.2	69.7	68.4	167	10°59'40.40"N	77°57'9.97"E
BW5	65.5	67.0	68.5	67.0	177	10°59'19.29"N	77°56'48.66"E
BW6	62.2	63.5	64.7	63.5	160	11° 0'37.74"N	77°56'15.98"E
BW7	65.5	66.7	67.9	66.7	157	11° 0'4.34"N	77°56'5.27"E
BW8	66.3	67.5	68.7	67.5	166	10°59'39.56"N	77°56'19.56"E
BW9	66.5	67.0	68.5	67.3	177	11° 1'0.73"N	77°56'25.23"E

Source: Onsite monitoring data

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

Station Code	Depth to Static Potentiometric Surface BGL(m) Post Monsoon 2022					Latitude	Longitude
	Oct-2022	Nov-2022	Dec-2022	Average	EL		
BW1	62.5	63.5	65.0	63.7	169	11° 0'1.14"N	77°56'48.41"E
BW2	61.5	62.5	64.0	62.7	154	11° 0'24.89"N	77°57'24.02"E
BW3	63.0	64.6	66.0	64.5	153	11° 0'54.01"N	77°57'11.55"E
BW4	64.0	65.5	67.5	65.7	167	10°59'40.40"N	77°57'9.97"E
BW5	63.5	64.5	66.0	64.7	177	10°59'19.29"N	77°56'48.66"E
BW6	60.0	61.5	64.0	61.8	160	11° 0'37.74"N	77°56'15.98"E
BW7	62.5	64.0	66.0	64.2	157	11° 0'4.34"N	77°56'5.27"E
BW8	64.0	65.5	67.5	65.7	166	10°59'39.56"N	77°56'19.56"E
BW9	63.5	65.0	66.5	65.0	177	11° 1'0.73"N	77°56'25.23"E

Source: Onsite monitoring data

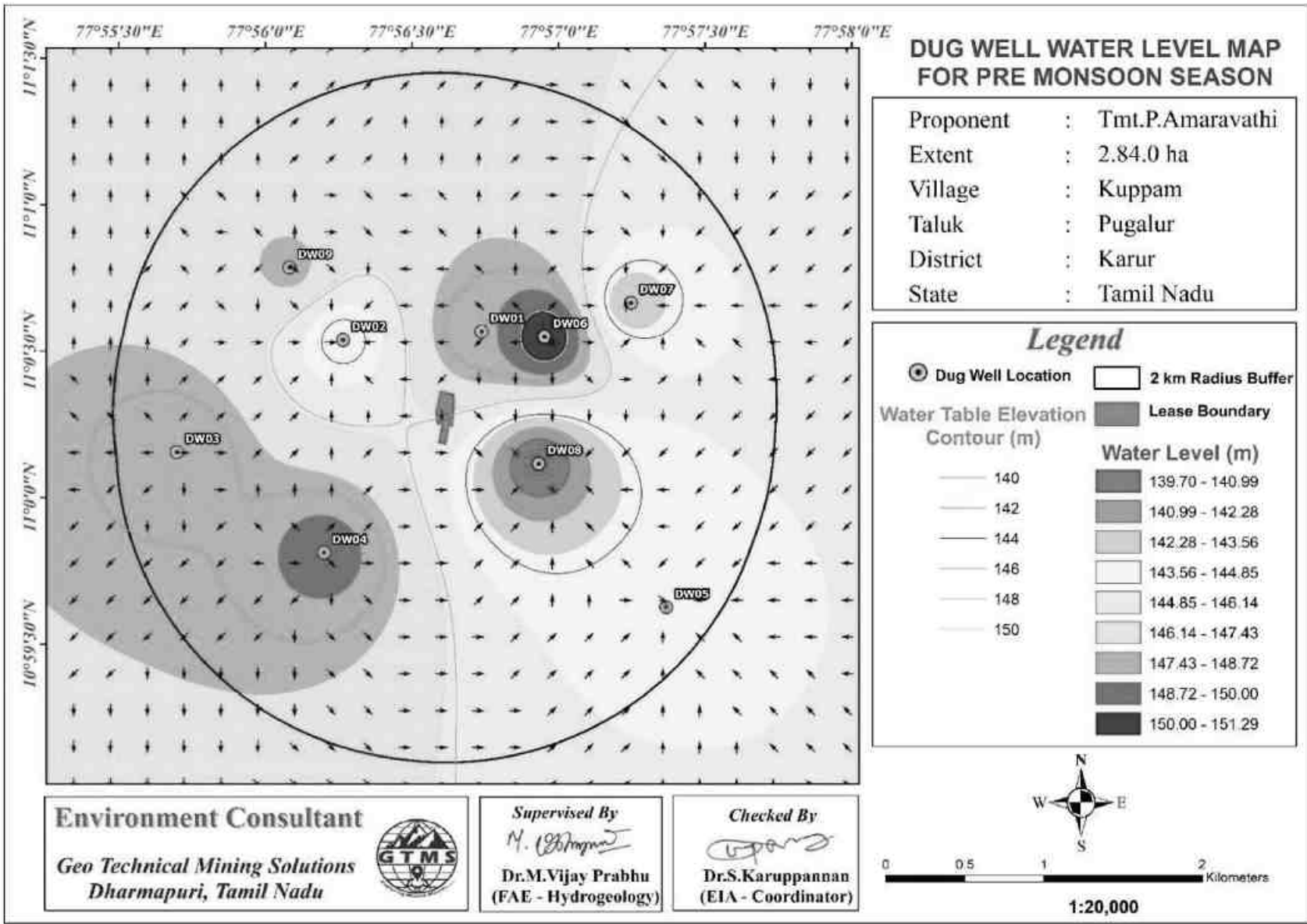


Figure 3.5 Open well static groundwater elevation map showing the direction of groundwater flow during pre-monsoon season



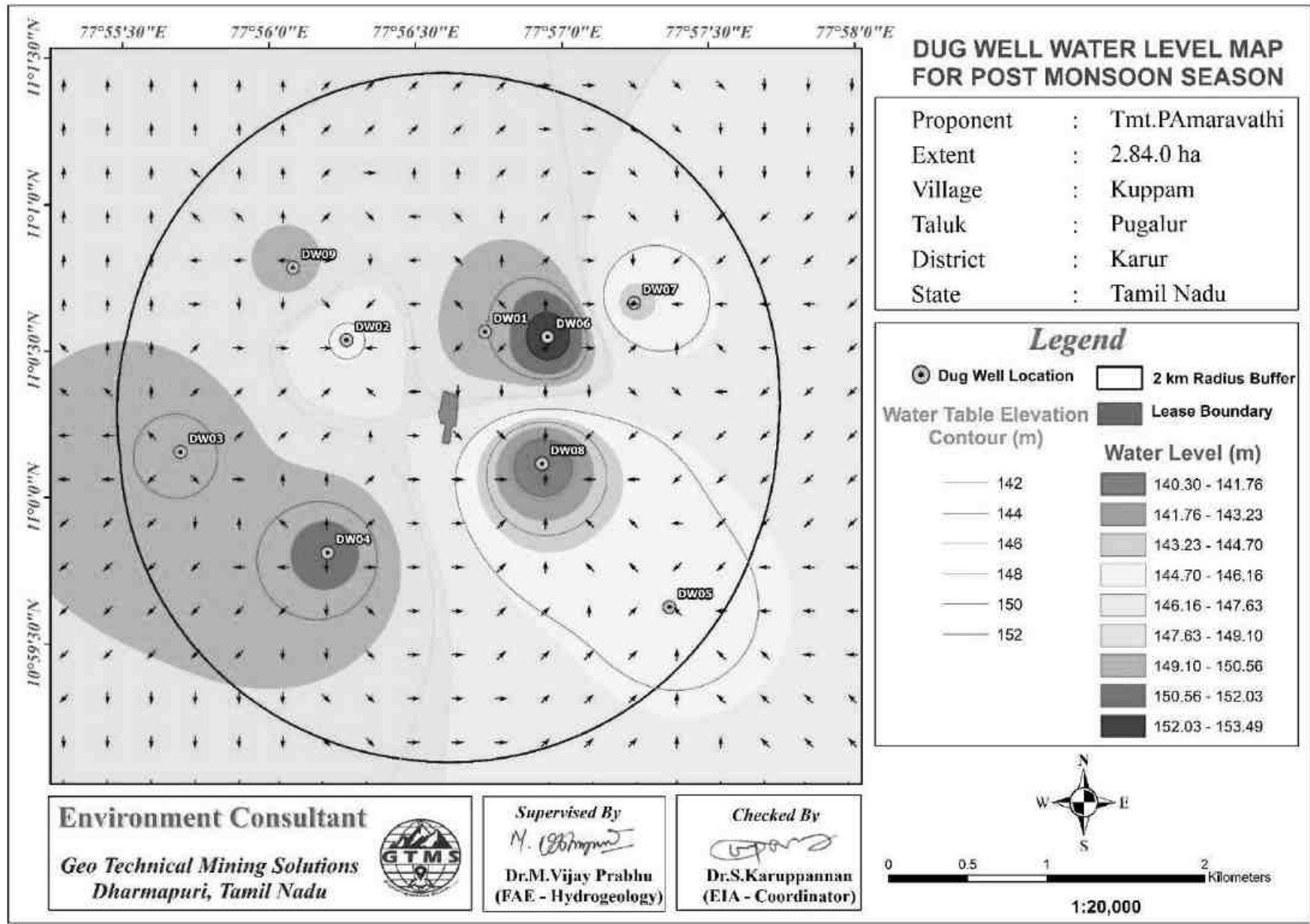
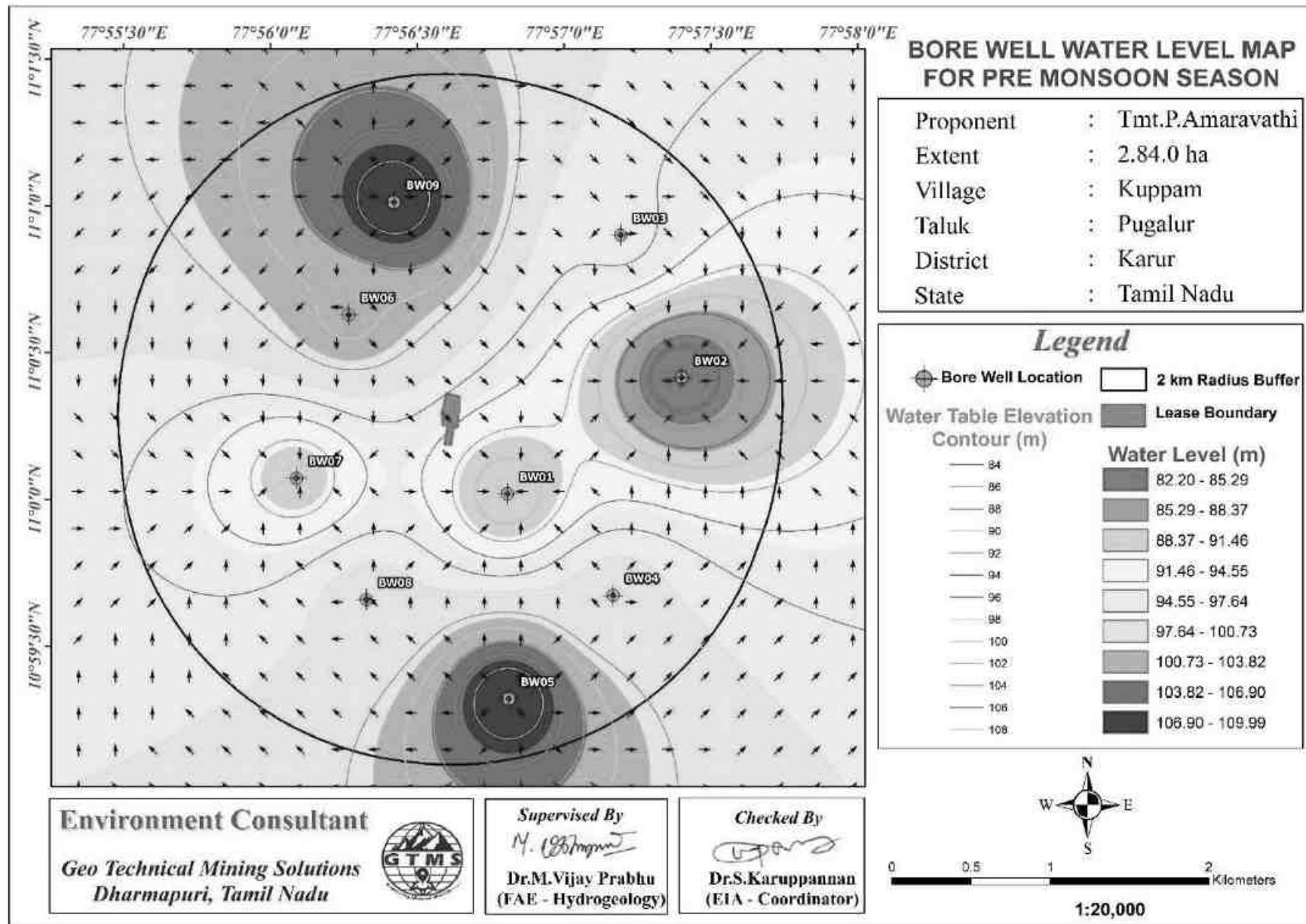
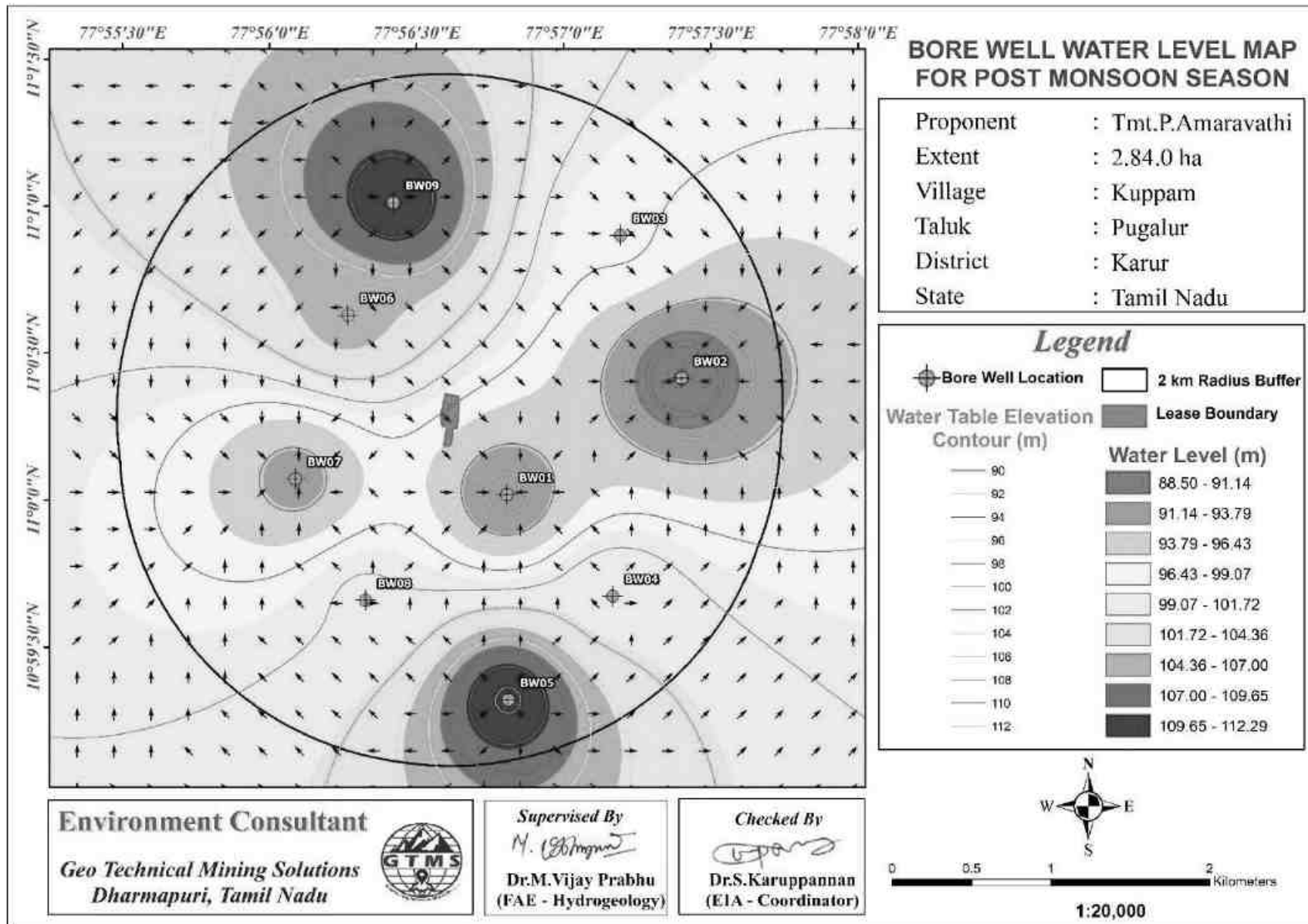


Figure 3.6 Open well static groundwater elevation map showing the direction of groundwater flow during post-monsoon season



**Figure 3.7 Borewell static groundwater elevation map showing the direction of groundwater flow during pre-monsoon season**



**Figure 3.8 Borewell static groundwater elevation map showing the direction of groundwater flow during post-monsoon season**

### 3.2.3.2 Electrical Resistivity Investigation

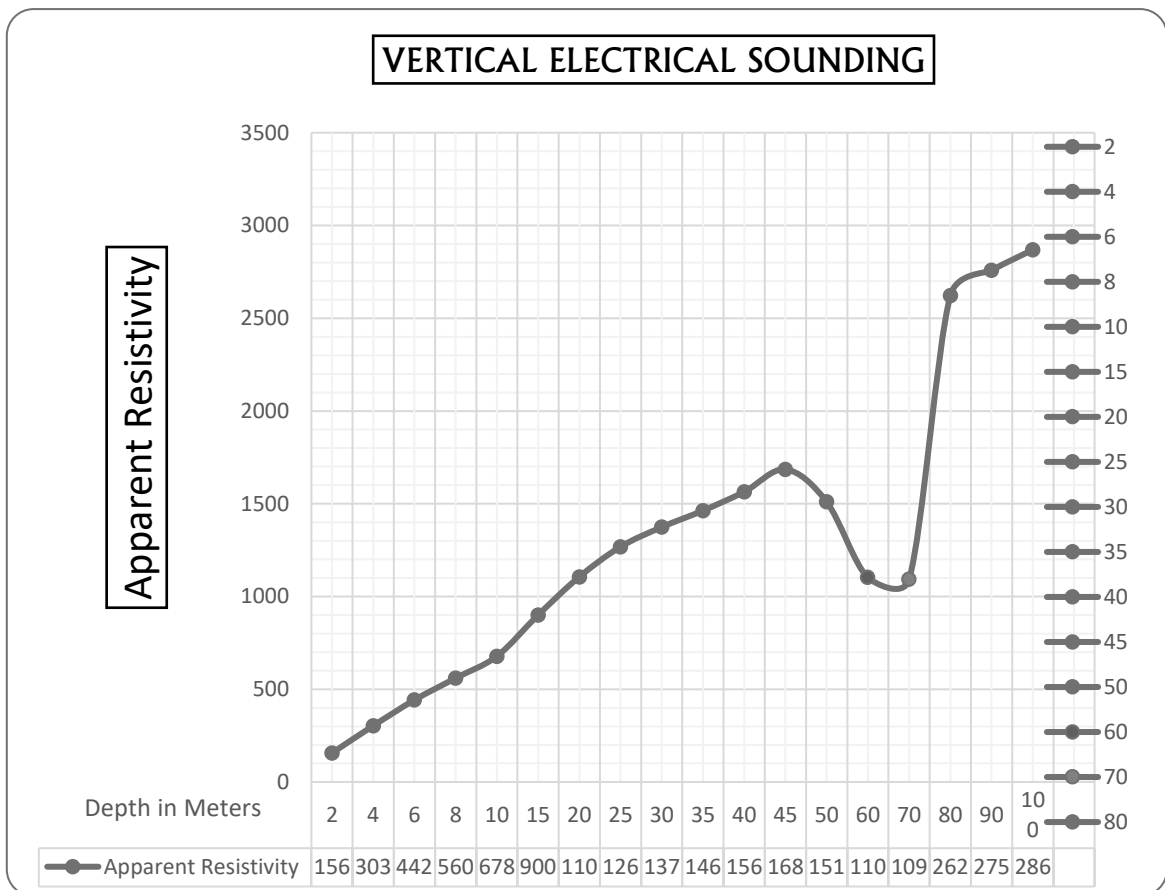
Electrical resistivity investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation uses 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 3.9.

**Table 3.11 Vertical Electrical Sounding Data**

Location Coordinates - 11° 0'16.14"N 77°56'35.55"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in $\Omega$	Apparent Resistivity in $\Omega m$
1	2	2	11.78	13.248	156.06
2	4	2	49.46	6.127	303.04
3	6	5	112.26	3.937	441.96
4	8	5	200.18	2.798	560.10
5	10	5	75.36	8.997	678.01
6	15	10	173.49	5.188	900.06
7	20	10	310.86	3.558	1106.03
8	25	10	487.49	2.603	1268.93
9	30	10	274.75	5.001	1374.02
10	35	10	376.8	3.883	1463.11
11	40	10	494.55	3.16	1562.77
12	45	10	628	2.683	1684.92
13	50	10	777.15	1.943	1510.00
14	60	20	575.47	1.915	1102.02
15	70	20	493.6	2.213	1092.33
16	80	20	989.1	2.651	2622.10
17	90	20	1256	2.196	2758.17
18	100	20	1554.3	1.846	2869.23



**Figure 3.9 Graph showing occurrence of water bearing fracture zones at the Depth of 60-70 m below ground level in proposed project**

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60-70 m below ground level. The maximum depth proposed for the proposed project is 45 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 3 m 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 October, 2022 varied from 15.91 to 31.30<sup>0</sup>C with the average of 24.71<sup>0</sup>C; in November, 2022 from 14.62 to 31.17<sup>0</sup>C with the average of 24.40<sup>0</sup>C; and in December, 2022 from 14.0 to 30.86<sup>0</sup>C with the average of 23.77<sup>0</sup>C. In October, 2022, relative humidity ranged from 49.25 to 100 % with the average of 85.83%; in November, 2022, from 51.31 to 100 % with the average of 85.08 %; and in December,2022, from 51.44 to 100 % with the average of 85.67 %. The wind speed in October, 2022 varied from 0.07 to 6.50 m/s with the average of 2.55 m/s; in November, 2022 from 0.02 to 6.55 m/s with the average of 2.69 m/s; and in December, 2022 from 0.04 to 6.66 m/s with the average of 2.55 m/s. In October,2022, wind direction varied from 0.07 to 359.70<sup>0</sup> with the average of 161.47<sup>0</sup>; in November, 2022, from 0.00 to 359.63<sup>0</sup> with the average of 145.59<sup>0</sup>; and in December, 2022, from 1.50 to 359.62<sup>0</sup> with the average of 110.36<sup>0</sup>. In October,2022, surface pressure varied from 97.92 to 99.20 kPa with the average of 98.57 kPa; in November, 2022, from 97.98 to 99.26 kPa with the average of 98.64 kPa; and in December, 2022, from 98.06 to 99.26 kPa with the average of 98.74 kPa

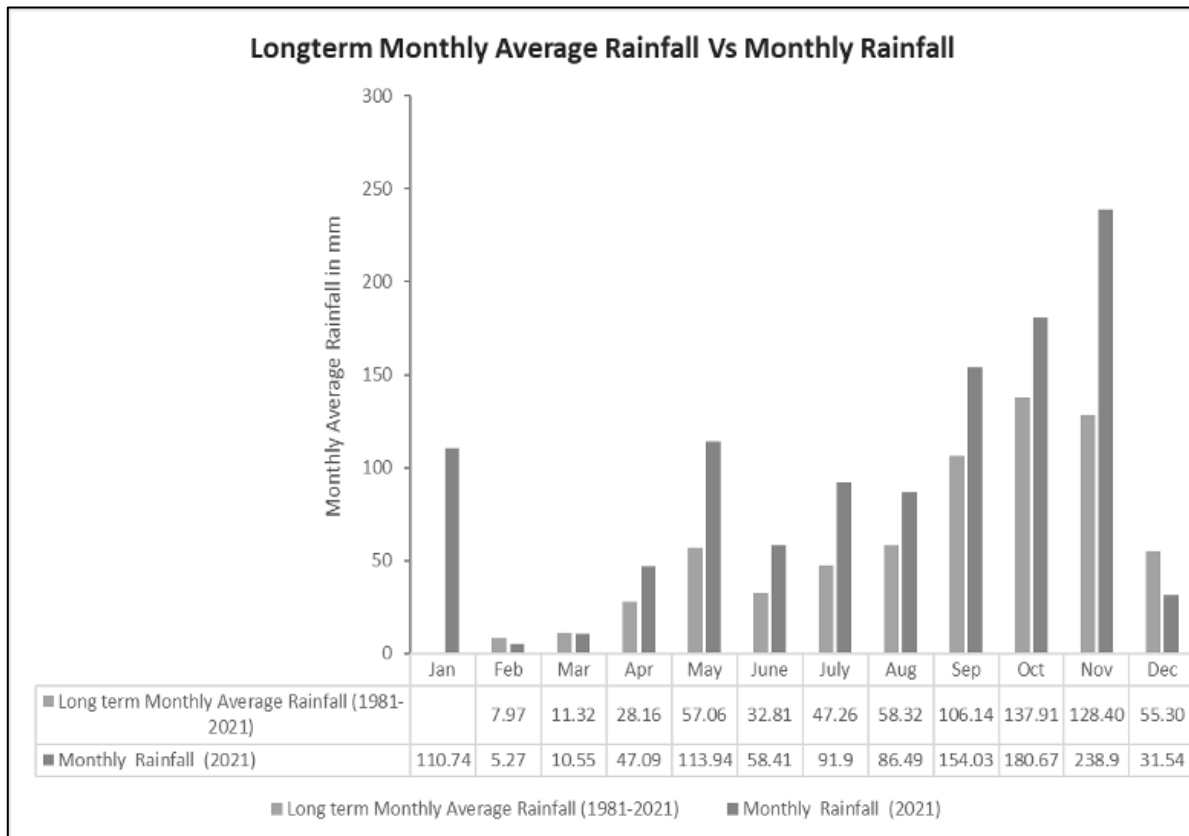
**Table 3.12 Onsite Meteorological Data**

S. No.	Parameters		OCT, 2022	NOV,2022	DEC,2022
1	Temperature ( <sup>0</sup> C)	Min	15.91	14.62	14.00
		Max	31.30	31.17	30.86
		Avg	24.71	24.40	23.77
2	Relative Humidity (%)	Min	49.25	51.31	51.44
		Max	100.00	100.00	100.00
		Avg	85.83	85.08	85.67
3	Wind Speed (m/s)	Min	0.07	0.02	0.04
		Max	6.50	6.55	6.66
		Avg	2.55	2.69	2.55
4	Wind Direction (degree)	Min	0.70	0.00	1.50
		Max	359.70	359.63	359.62
		Avg	161.47	145.59	110.36
5	Surface Pressure(kPa)	Min	97.92	97.98	98.06
		Max	99.20	99.26	99.26
		Avg	98.57	98.64	98.74

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

## Rainfall

Rainfall data for the study area were collected for the period of 1981-2021 (POWER | Data Access Viewer (nasa.gov)). Long term monthly average rainfall was estimated from the data of 1981-2021 and compared with the monthly rainfall for the year 2021, shown in Figure 3.10. The Figure 3.10 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 3.10 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 October through December of the years from 2018 to 2021 and the seasonal wind rose for the study period of October through December 2022. The wind rose diagrams thus produced are shown in Figures 3.11-3.11a. Figure 3.12 reveals that:

- ❖ The measured average wind velocity during the study period is 2.49m/s.
- ❖ Predominant wind was dominant in the directions ranging from northeast to southwest.

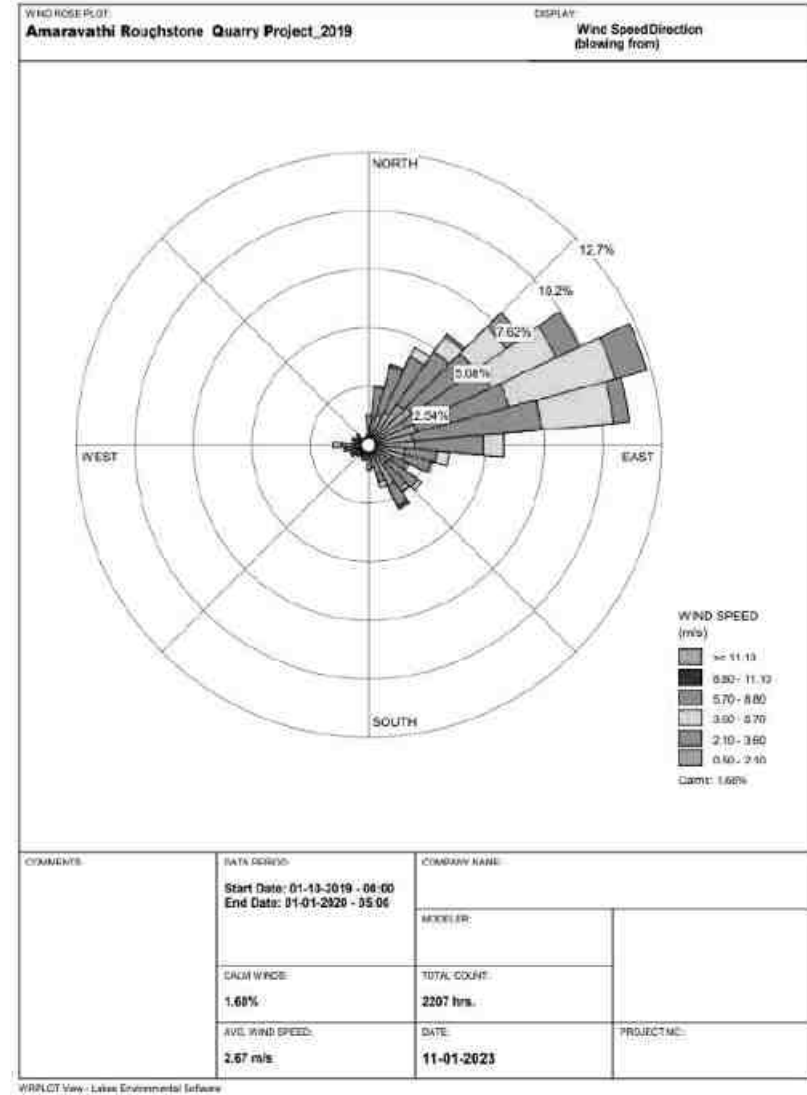
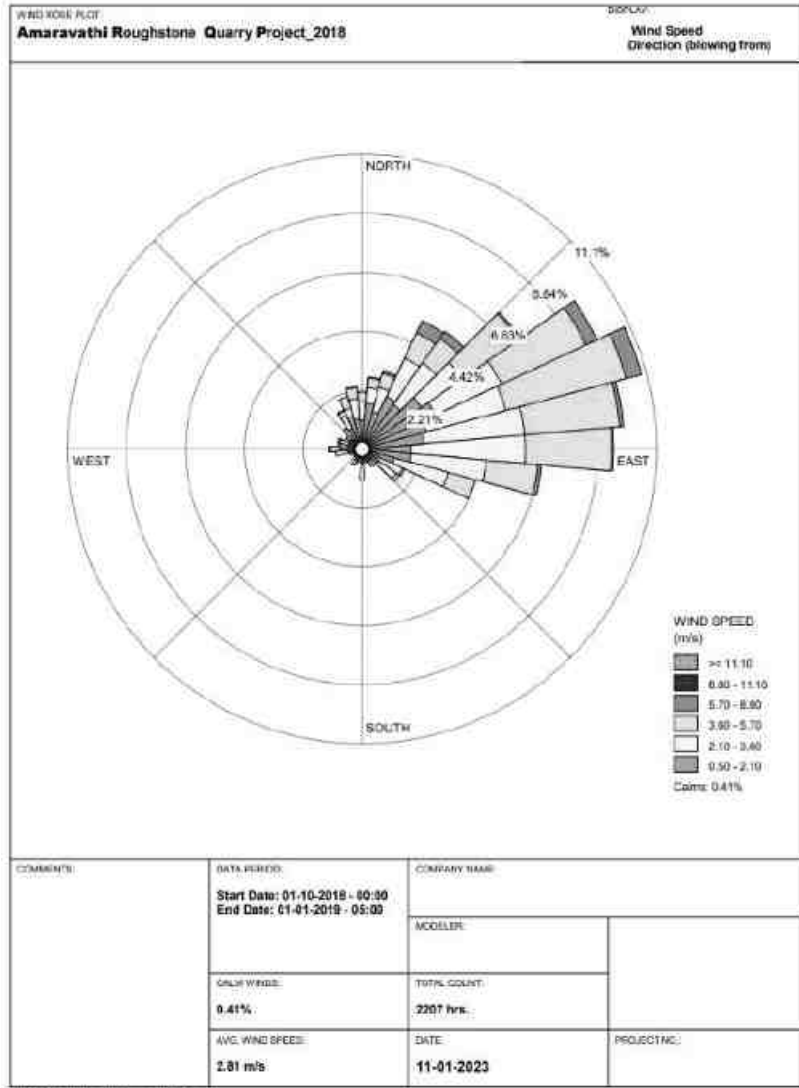


Figure 3.11 Windrose Diagram for 2018 and 2019 (October to December)



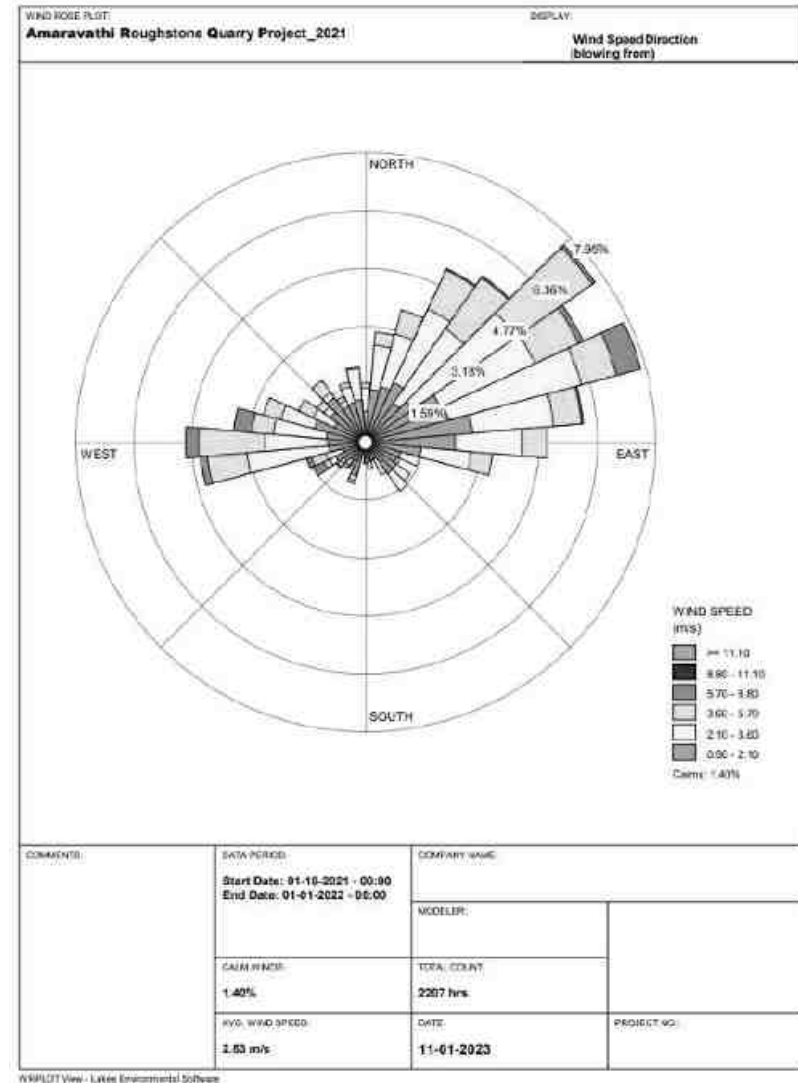
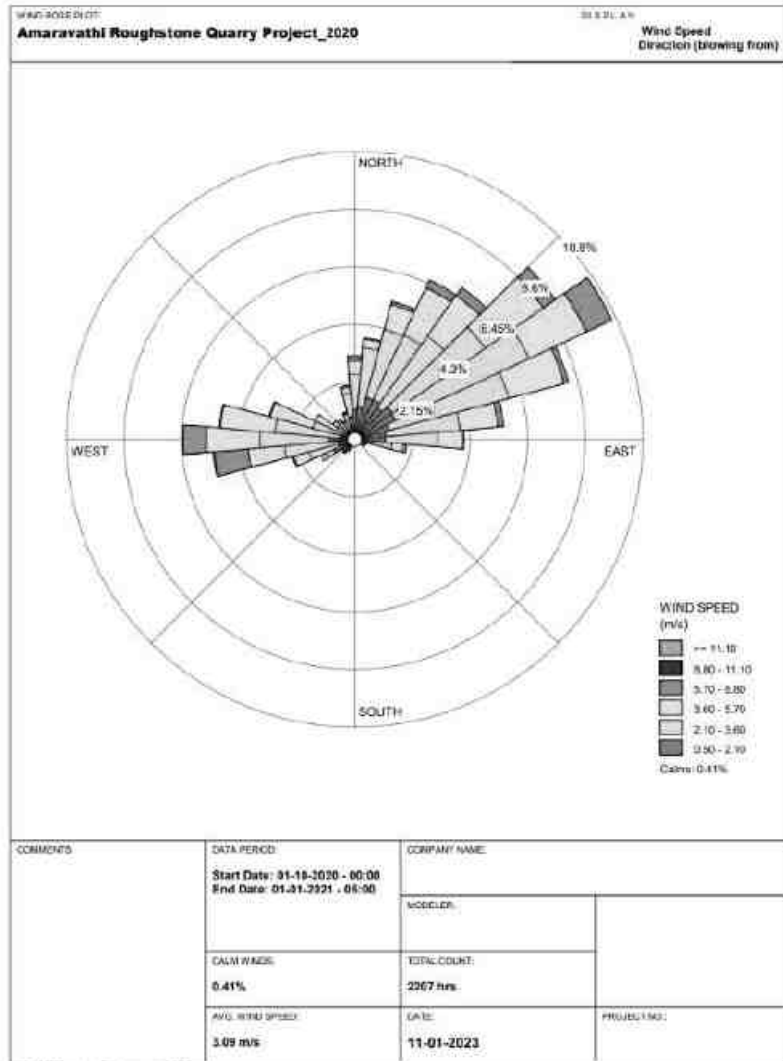
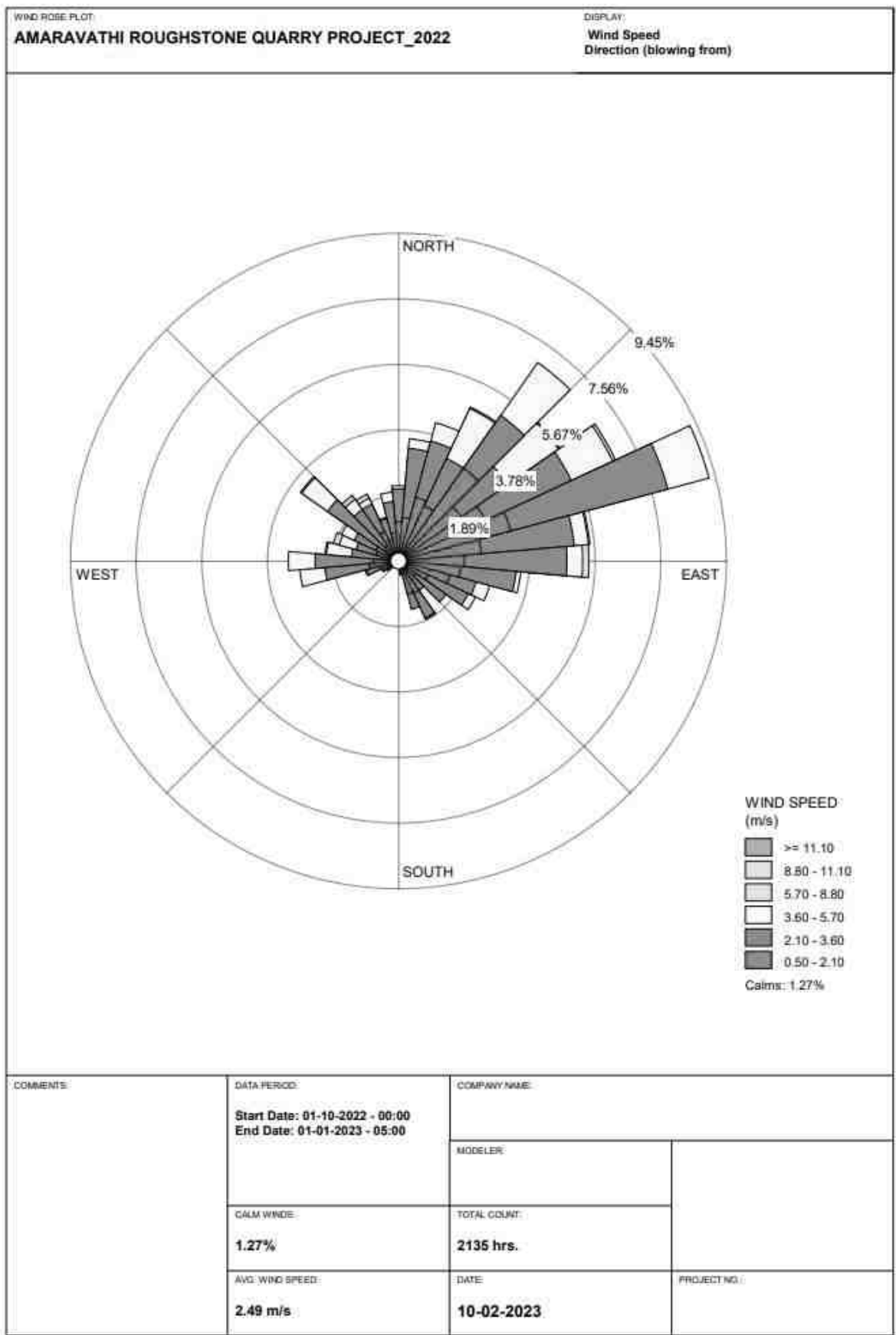


Figure 3.11(A) Windrose Diagram for 2020 and 2021 (October to December)



**Figure 3.12 Onsite Wind Rose Diagram**

### 3.3.2 Ambient Air Quality Study

The baseline ambient air quality is studied through a scientifically designed ambient air quality monitoring network considering the followings:

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

**Table 3.13 Methodology and Instrument Used for AAQ Analysis**

Parameter	Method	Instrument
PM <sub>2.5</sub>	Gravimetric method Beta attenuation method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM <sub>10</sub>	Gravimetric method Beta attenuation method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO <sub>2</sub>	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO <sub>x</sub>	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 *Excellence Laboratory (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 <sub>2</sub> (µg/m <sup>3</sup> )	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	NO <sub>2</sub> (µg/m <sup>3</sup> )	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	PM <sub>10</sub> (µg/m <sup>3</sup> )	Annual Avg. 24 hours	60.0 10 <sup>o</sup> .0	60.0 10 <sup>o</sup> .0
4	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

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

## Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at ten (10) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October-December, 2022 as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least  $3 \pm 0.5$ 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<sub>10</sub>, PM<sub>2.5</sub>, sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>x</sub>). The sampling locations are shown in Figure 3.13 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
1	AAQ1	Between NTC and rani leases	0.67	NNW	11° 0'41.49"N, 77°56'26.24"E
2	AAQ2	New star Blue metals lease	0.68	NNE	11° 00'43.39"N, 77°56'41.17"E
3	AAQ3	Core	--	--	11° 00'14.81"N, 77°56'38.02"E
4	AAQ4	Andisangilipalayam	0.91	SWS	11° 00'02.46"N, 77°56'06.69"E
5	AAQ5	Velampalayam	4.38	W	11° 00'3.65"N, 77°54'11.26"E
6	AAQ6	Athipalayam	5.05	NW	11° 1'13.29"N, 77°53'57.51"E
7	AAQ7	Munnur	4.04	SW	10°59'7.06"N, 77°54'39.06"E
8	AAQ8	Punnachatram	3.99	NE	11° 0'48.65"N, 77°58'47.07"E
9	AAQ9	Karudayampalayam	3.91	SSE	10°58'09.04"N, 77°57'14.40"E
10	AAQ10	Kunthanipalayam	2.61	N	11° 1'46.52"N, 77°56'29.26"E

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

## Results

As per the monitoring data, PM<sub>10</sub> ranges from 32.9 µg/m<sup>3</sup> to 37.9µg/m<sup>3</sup>; PM<sub>2.5</sub> from 16.1 µg/m<sup>3</sup> to 20.2 µg/m<sup>3</sup>; SO<sub>2</sub> from 6.7 µg/m<sup>3</sup> to 11 µg/m<sup>3</sup>; NO<sub>2</sub> from 13.9 µg/m<sup>3</sup> to 20.3 g/m<sup>3</sup>. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

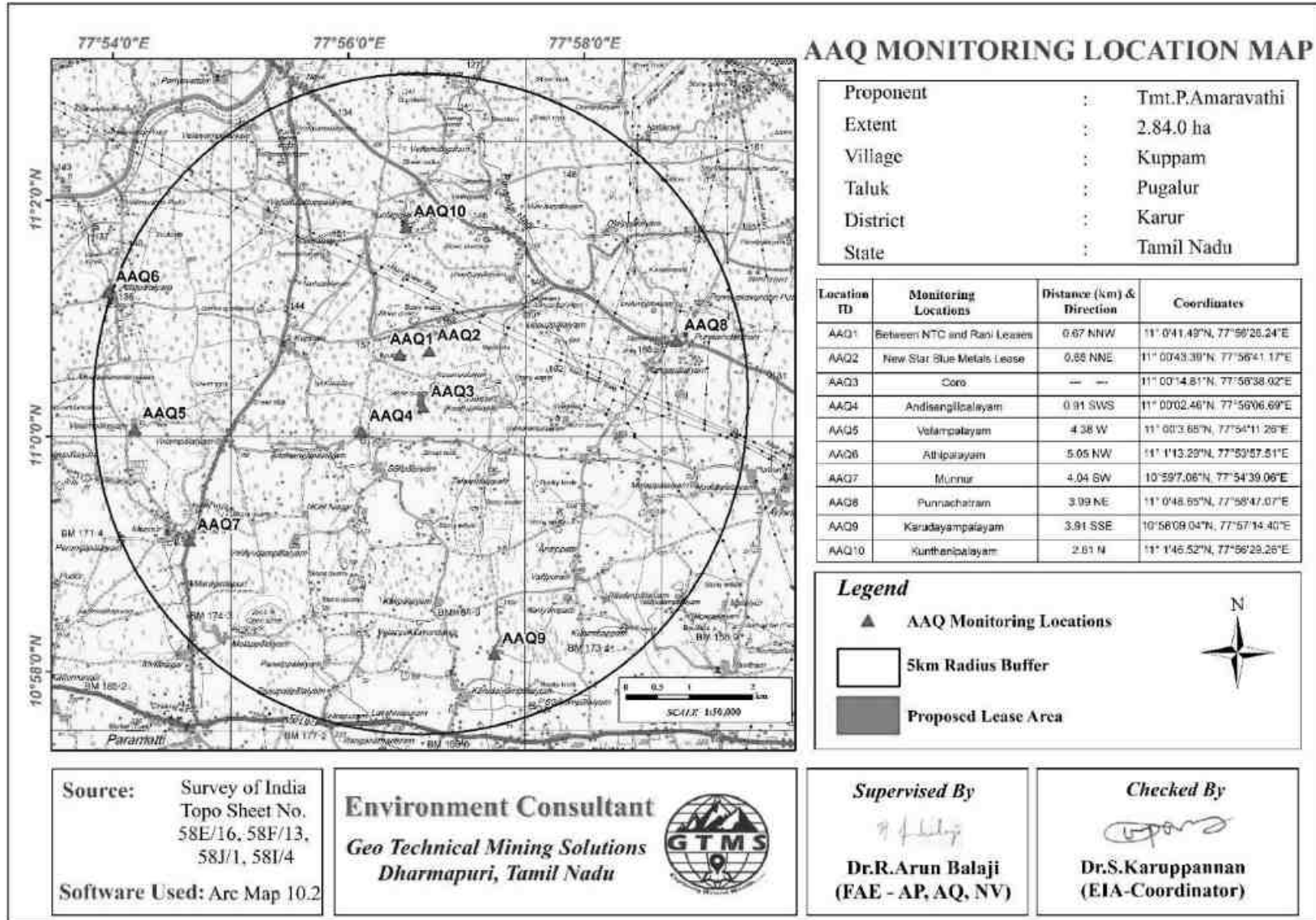
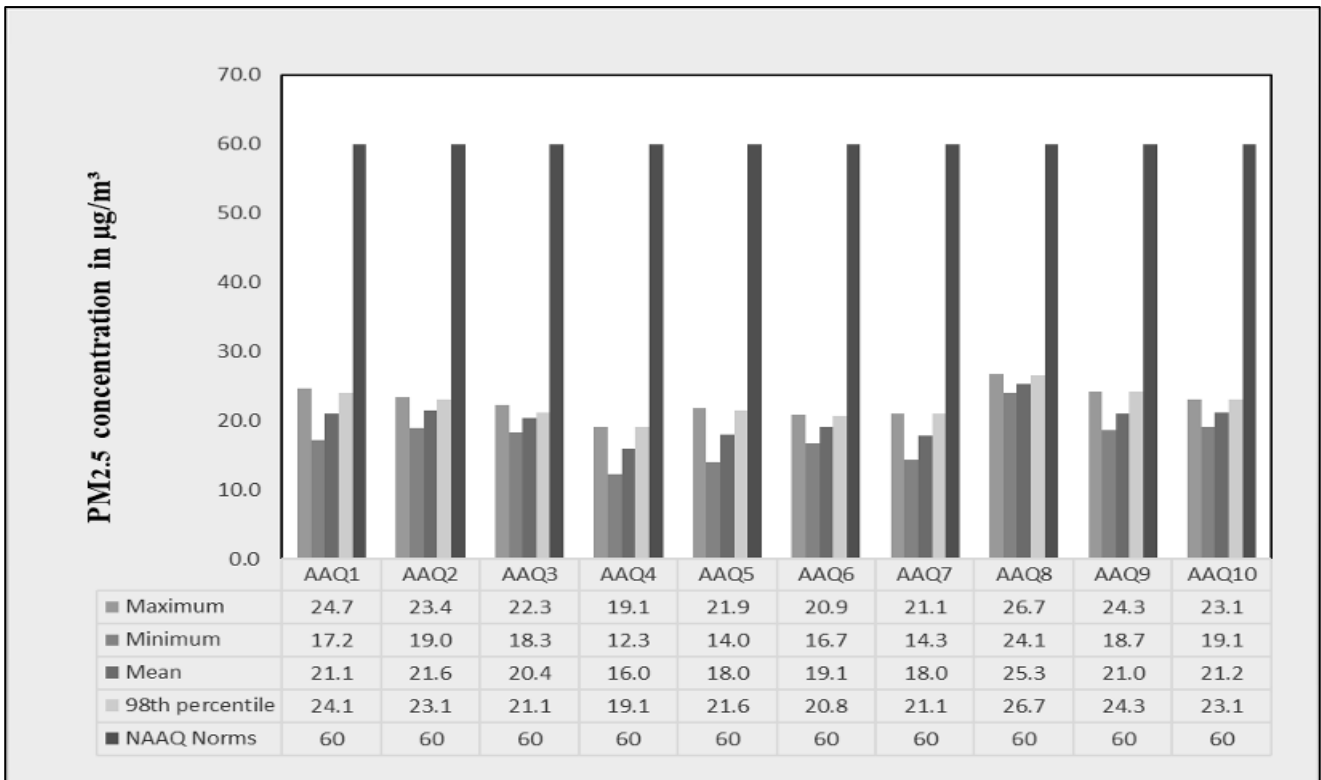


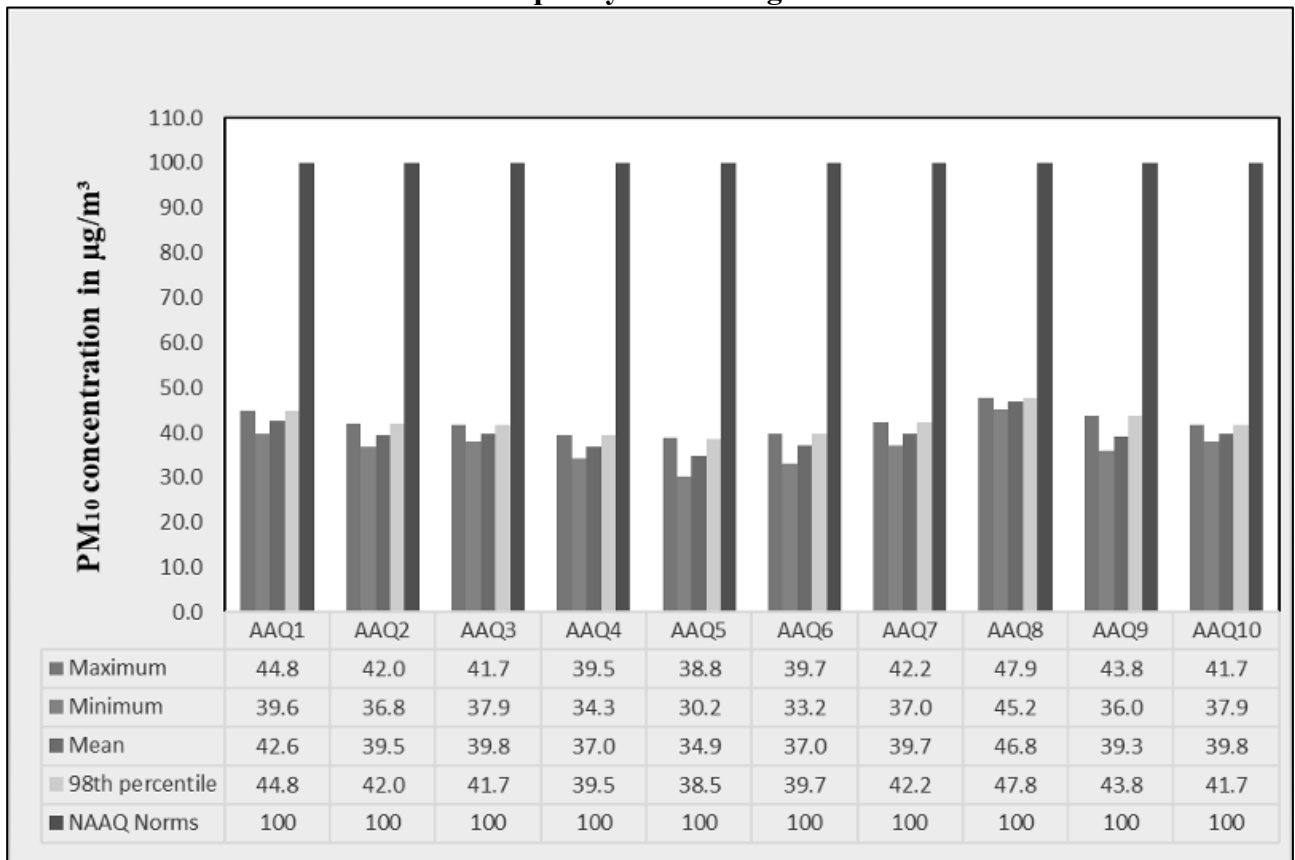
Figure 3.13 Toposheet showing ambient air quality monitoring station locations around 5 km radius from the proposed project site

**Table 3.16 Summary of AAQ Result**

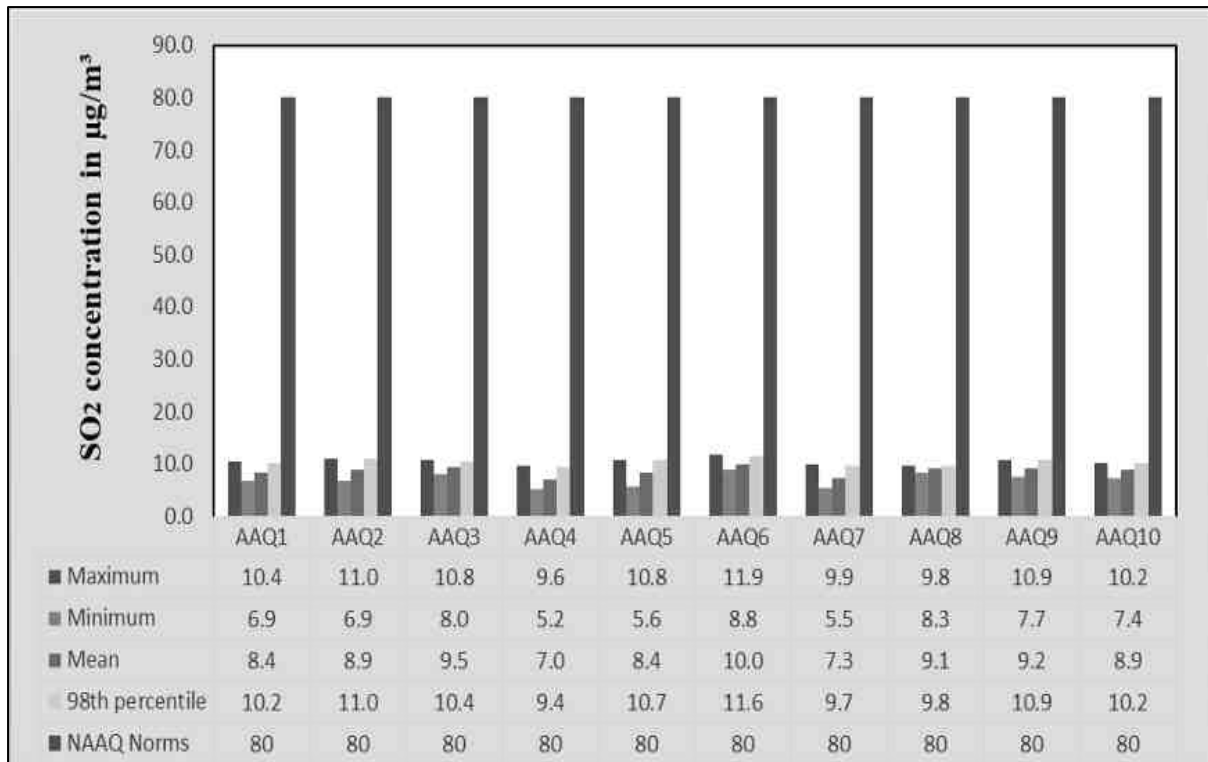
<b>PM<sub>2.5</sub></b>					<b>PM<sub>10</sub></b>			
<b>Station ID</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>98<sup>th</sup> Percentile</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>98<sup>th</sup> Percentile</b>
AAQ1	24.7	17.2	21.1	24.1	44.8	39.6	42.6	44.8
AAQ2	23.4	19	21.6	23.1	42.0	36.8	39.5	42.0
AAQ3	22.3	18.3	20.4	21.1	41.7	37.9	39.8	41.7
AAQ4	19.1	12.3	16.0	19.1	39.5	34.3	37.0	39.5
AAQ5	21.9	14	18.0	21.6	38.8	30.2	34.9	38.5
AAQ6	20.9	16.7	19.1	20.8	39.7	33.2	37.0	39.7
AAQ7	21.1	14.3	18.0	21.1	42.2	37.0	39.7	42.2
AAQ8	26.7	24.1	25.3	26.7	47.9	45.2	46.8	47.8
AAQ9	24.3	18.7	21.0	24.3	43.8	36.0	39.3	43.8
AAQ10	23.1	19.1	21.2	23.1	41.7	37.9	39.8	41.7
<b>SO<sub>2</sub></b>					<b>NO<sub>x</sub></b>			
AAQ1	10.4	6.9	8.4	10.2	18.7	12.2	16.3	18.6
AAQ2	11	6.9	8.9	11.0	20.1	14.2	16.9	19.9
AAQ3	10.8	8	9.5	10.4	20	13.5	16.6	19.6
AAQ4	17.1	5.2	7.4	13.7	15.1	8.6	11.0	14.4
AAQ5	10.8	5.6	8.4	10.7	20.6	12.8	17.0	20.5
AAQ6	11.9	8.8	10.0	11.6	21.8	17.3	19.1	21.8
AAQ7	17.4	5.5	7.7	14.0	18.1	11.6	14.0	15.7
AAQ8	9.8	8.3	9.1	9.8	27.6	25.3	26.6	27.6
AAQ9	10.9	7.7	9.2	10.9	22.1	15	18.2	22.1
AAQ10	10.2	7.4	8.9	10.2	19.4	12.9	16.0	19.0



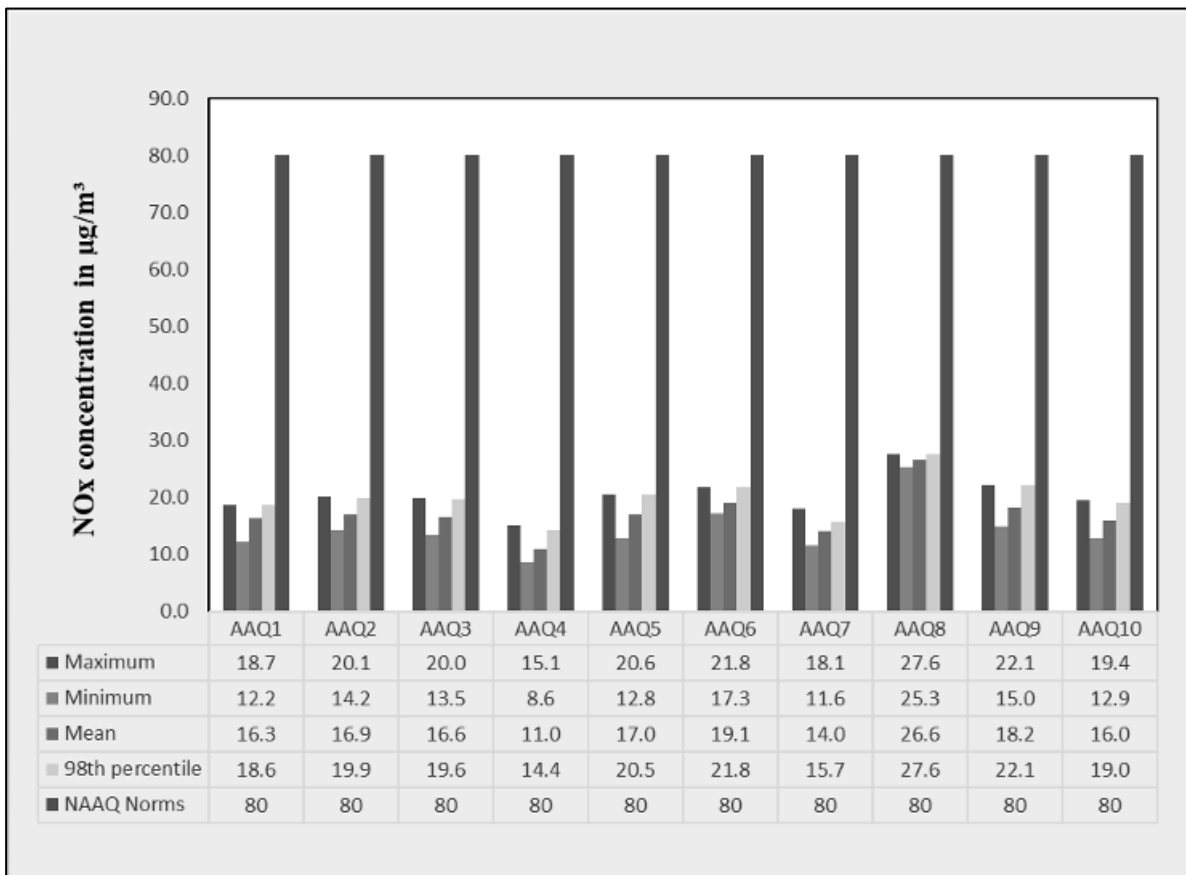
**Figure 3.14 Bar chart showing maximum, minimum, and the average concentrations of PM<sub>2.5</sub> measured from the ten air quality monitoring stations within 5 km radius**



**Figure 3.15 Bar chart showing maximum, minimum, and the average concentrations of PM<sub>10</sub> measured from the ten air quality monitoring stations within 5km radius**

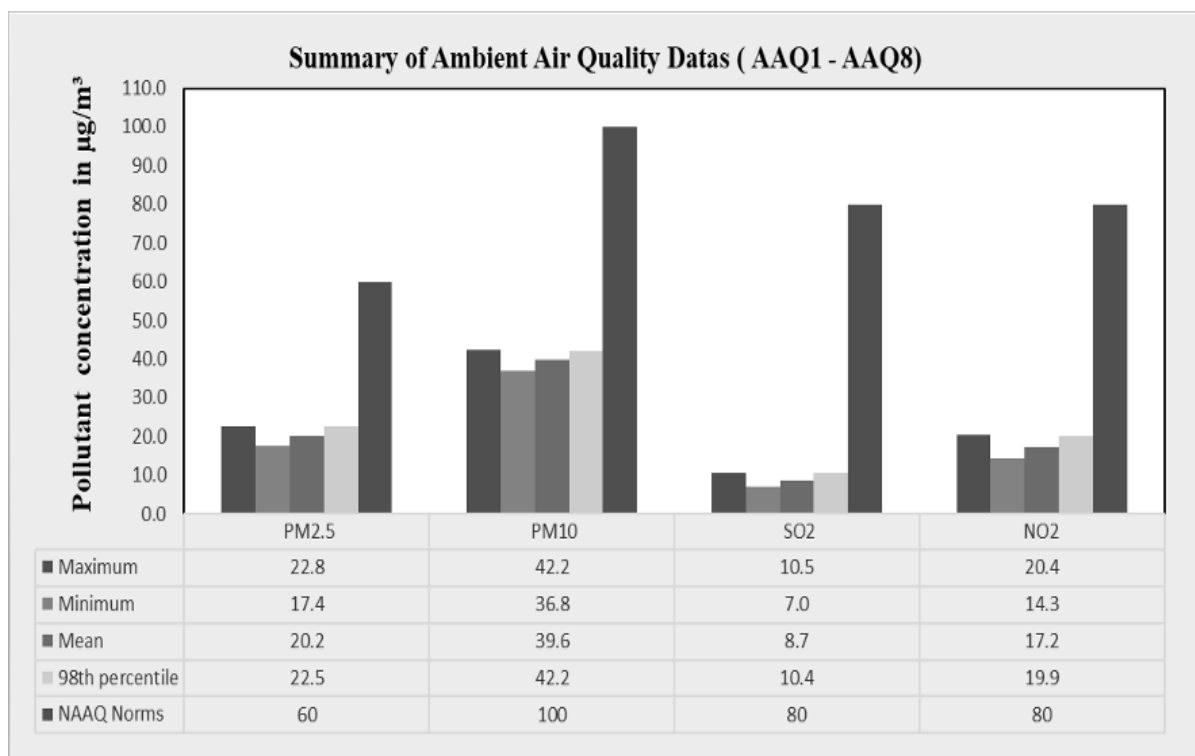


**Figure 3.16 Bar chart showing maximum, minimum, and the average concentrations of SO<sub>2</sub> measured from the ten air quality monitoring stations within 5 km radius**



**Figure 3.17 Bar chart showing maximum, minimum, and the average concentrations of NO<sub>x</sub> measured from the ten air quality monitoring stations within 5km radius**





**Figure 3.18 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 Twelve (12) 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 3.22.

**Table 3.17 Noise Monitoring Locations**

S. No	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates
1	N1	Between NTC and Rani Leases	0.65	NNW	11° 0'41.52"N, 77°56'28.14"E
2	N2	New star blue metals lease	0.66	NNE	11° 0'42.76"N, 77°56'41.52"E
3	N3	Core	--		11° 0'13.89"N, 77°56'36.49"E
4	N4	Kuppam	1.90	NW	11° 0'41.35"N, 77°55'36.27"E

5	N5	Puthurpatti	0.88	NEN	11° 0'24.93"N, 77°57'07.40"E
6	N6	Andisangilipalayam	0.89	SW	11° 00'0.11"N, 77°56'08.14"E
7	N7	Velampalayam	4.42	W	11° 00'4.03"N, 77°54'09.66"E
8	N8	Athipalayam	4.99	NW	11° 1'12.49"N, 77°53'59.34"E
9	N9	Munnur	3.93	SW	10°59'10.74"N,77°54'40.96"E
10	N10	Punna chatram	3.99	NEN	11° 0'48.65"N 77°58'47.07"E
11	N11	Karudayampalayam	3.96	SSE	10°58'07.55"N 77°57'14.55"E
12	N12	Kunthanipalayam	2.68	N	11° 1'48.61"N, 77°56'29.50"E

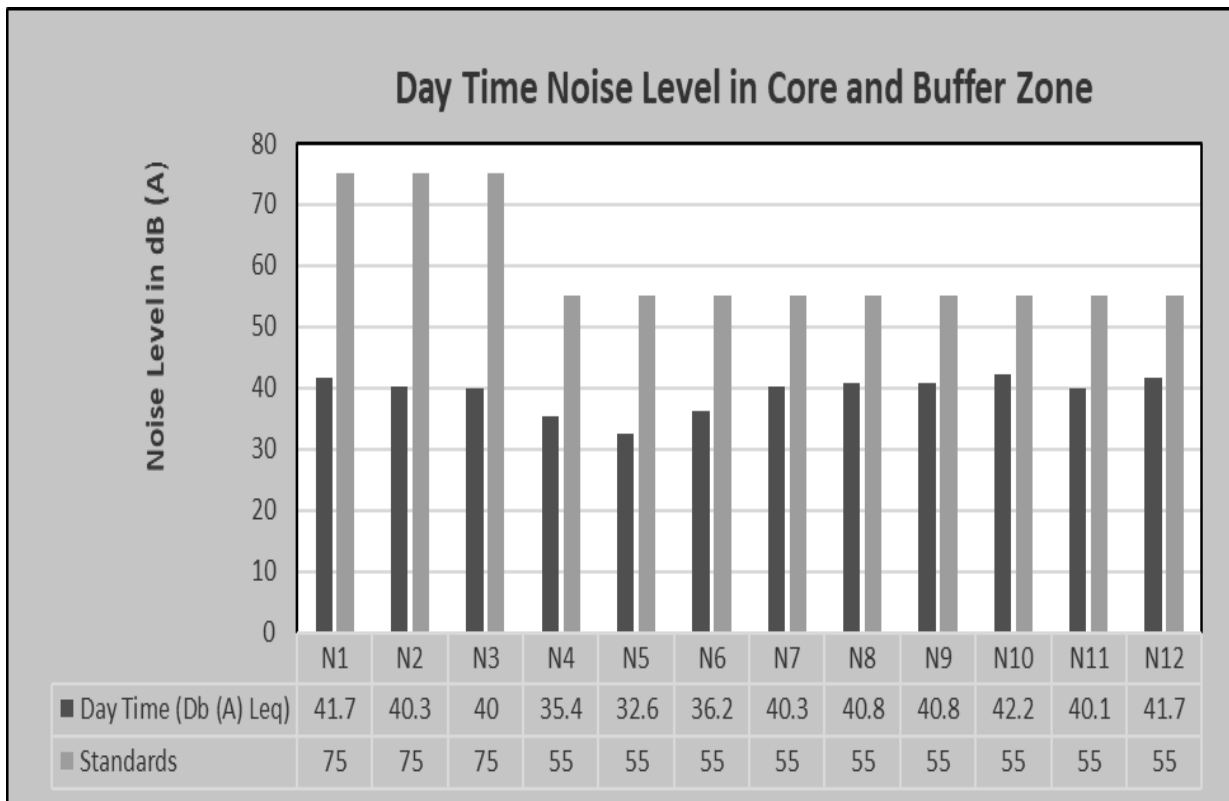
Source: On-site monitoring/sampling by **Excellence Laboratory (P) Limited** in association with GTMS

**Table 3.18 Ambient Noise Quality Result**

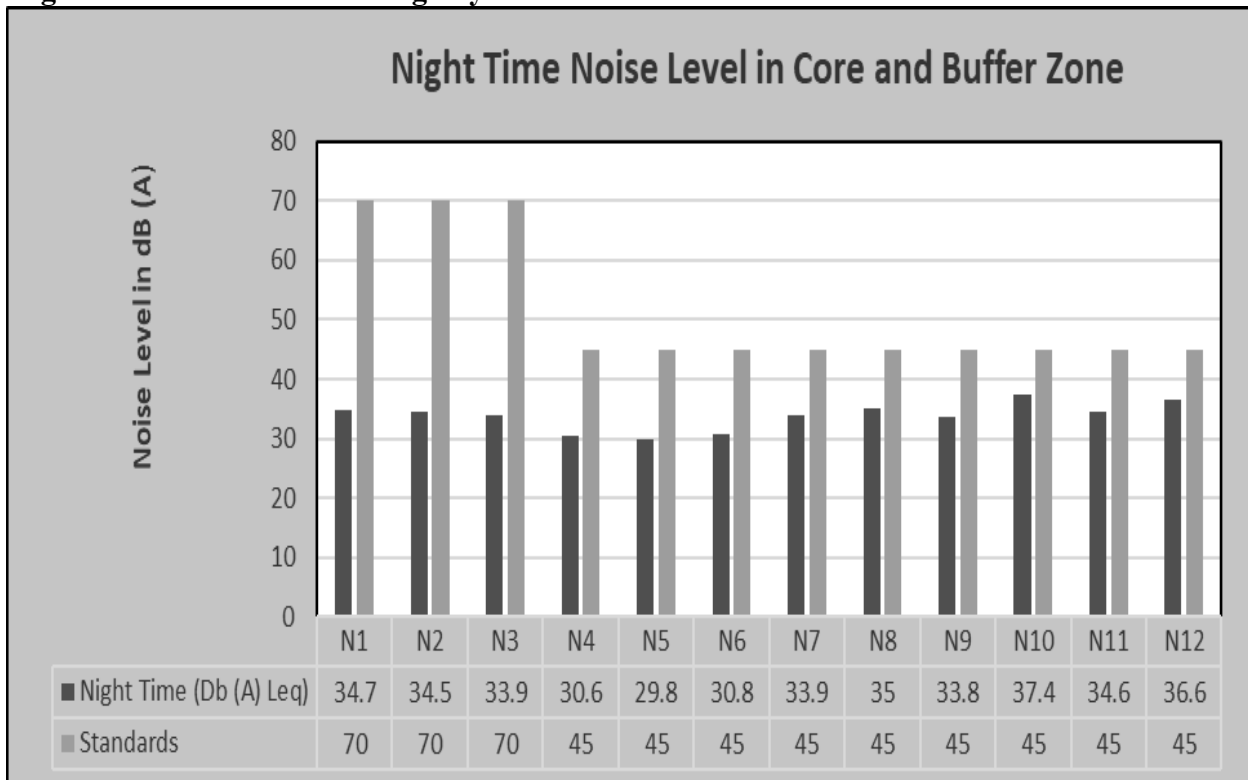
Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard ( $L_{eq}$ in dB(A))	
N1	Between NTC and Rani Leases	Industrial area	41.7	34.7	75	70
N2	New star blue metals lease		40.3	34.5	75	70
N3	Core		40.0	33.9	75	70
N4	Kuppam	Residential area	35.4	30.6	55	45
N5	Puthurpatti		32.6	29.8	55	45
N6	Andisangilipalayam		36.2	30.8	55	45
N7	Velampalayam		40.3	33.9	55	45
N8	Athipalayam		40.8	35.0	55	45
N9	Munnur		40.8	33.8	55	45
N10	Punna chatram		42.2	37.4	55	45
N11	Karudayampalayam		41.2	32.4	55	45
N12	Kunthanipalayam		41.7	36.6	55	45

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

The Table 3.18 shows that noise level in core zone was 40.0 dB (A)  $L_{eq}$  during day time and 33.9 dB (A)  $L_{eq}$  during night time. Noise levels recorded in buffer zone during day time varied from 32.6 to 42.2dB (A)  $L_{eq}$  and during night time from 29.8 to 37.4dB (A)  $L_{eq}$ . Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.19 and 3.20.



**Figure 3.19 Bar chart showing day time noise levels measured in core and buffer zones**



**Figure 3.20 Bar chart showing night time noise levels measured in core and buffer zones**

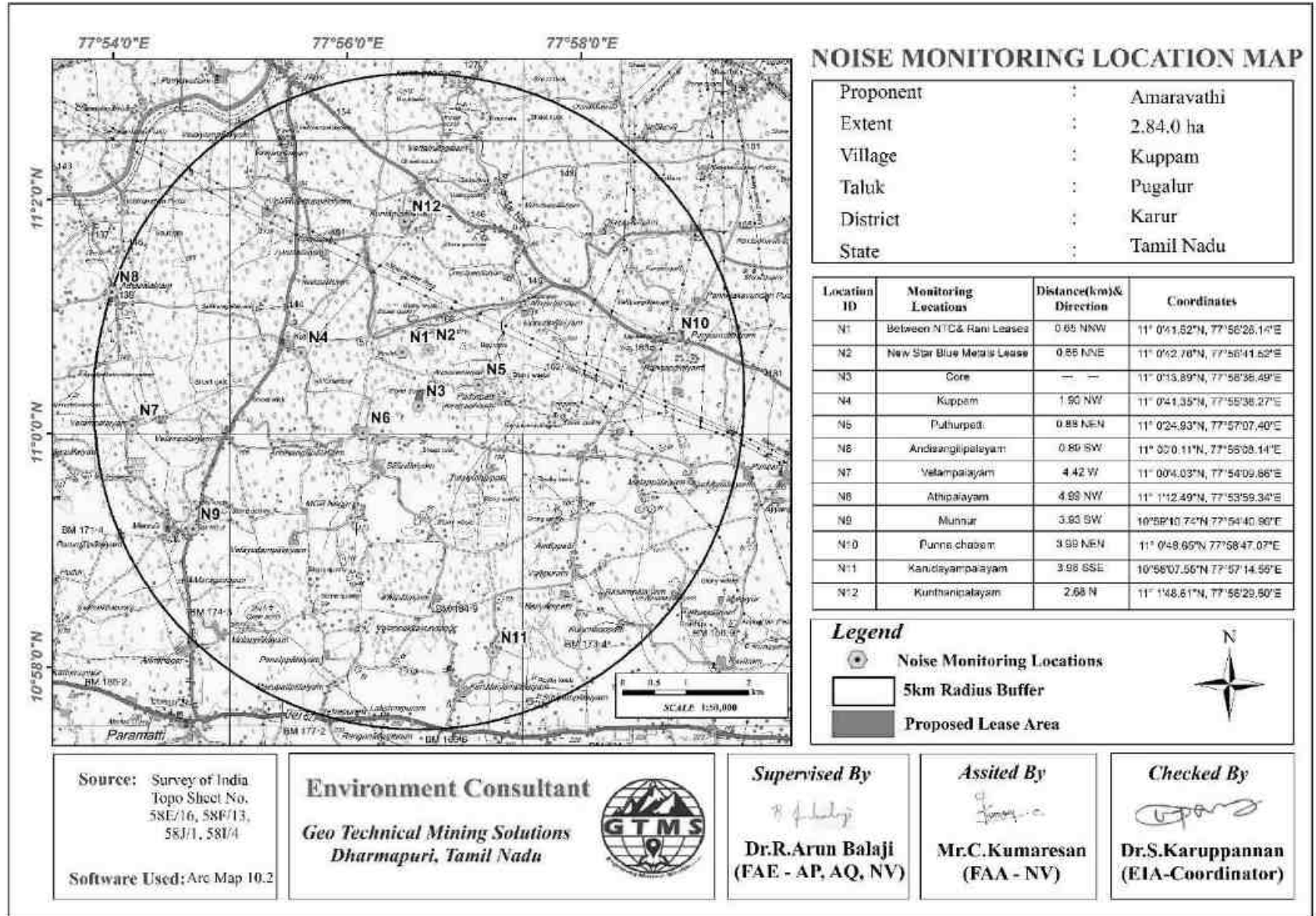


Figure 3.21 Toposheet showing noise level monitoring station locations around 5 km radius from the proposed project site

### 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*

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



**Figure 3.22** Quadrates sampling methods of flora

#### *Phyto-Sociological Studies*

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

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

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

***Shannon – Wiener Index, Evenness and Richness***

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

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

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

**3.5.1 Flora**

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

### ***Crop Patterns in Pugalur taluk***

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

### ***Flora in mine lease area***

*Prosopis juliflora* (3), *Azadirachta indica* (1), *Vachellia leucoploa* (1), *Albizia amara* (3), *Wrightia tinctoria* (1), these five tree species, a total of 9 trees are present in the mining lease area. We recommend uprooting and planting 9 trees in the 7.5-meter safety zone to prevent general damage during quarrying. As the survival rate due to uprooting was only 30%, 90 seedlings were procured at the rate of 10 seedlings per tree. Seedlings are planted and protected in 7.5-meter safety zone. The remaining five trees are protected from public impact by the quarry as they are in conservation zones. Details of vegetation with scientific name and details of mining lease area indicated in Table 3.21 and Figure 3.23

**Table 3.21 Flora in mine lease area**

<b>Local name</b>	<b>Scientific name</b>	<b>Family name</b>	<b>No of Trees</b>
Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	3
Vembu	<i>Azadirachta indica</i>	Meliaceae	1
Vealli vealan	<i>Vachellia leucophloea</i>	Babesiae	1
Unjai maram	<i>Albizia amara</i>	Fabaceae	3
Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	1

### ***Flora in lease area and 300 m radius (core zone)***

Vegetation species within mine lease area and 300 meters radius around the lease area. It is an arid landscape. There is no agricultural land nearby. It contains a total of 36 species belonging to 22 families have been recorded from the buffer zone. 7 Trees (19%), 6 Shrubs (16%) and 24 Herbs and Climbers, Creeper, Grass & Cactus (66%) were identified. Details of flora with the scientific name details and of diversity species Rich ness index were mentioned in Table 3.22-3.24 and figure 3.24. There is no threat to the Flora species in 300-meter radius.

### ***Flora in 10 km radius zone***

Similar type of environment also in buffer area but with more flora diversity compare than core zone area. It contains a total of species belonging to 38 families have been recorded from the buffer zone. The floral (75) varieties among them 35 Trees (46%), 20 Shrubs (15%) Herbs and Climbers, Creeper, Grass & Cactus, 25 (33%) were identified. Details of flora with the scientific name details of diversity species Rich ness index were mentioned in Table 3.25-3.27 and Figure 3.24



**Figure 3.23 mine lease area**



**Table 3.22 Flora in 300-meter radius**

S.No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
<b>Tree</b>													
1	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	4	3	5	0.8	60.0	1.3	14.8	15.0	29.8	Not Listed
2	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	3	2	5	0.6	40.0	1.5	11.1	10.0	21.1	Not Listed
3	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	5	1.0	80.0	1.3	18.5	20.0	38.5	Not Listed
4	Vealli vealan	<i>Vachellia leucophloea</i>	Babesiae	3	2	5	0.6	40.0	1.5	11.1	10.0	21.1	Not Listed
5	Unjai maram	<i>Albizia amara</i>	Fabaceae	4	3	5	0.8	60.0	1.3	14.8	15.0	29.8	Not Listed
6	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	3	2	5	0.6	40.0	1.5	11.1	10.0	21.1	Not Listed
7	Neruppu Kondrai	<i>Delonix regia</i>	Fabaceae	5	4	5	1.0	80.0	1.3	18.5	20.0	38.5	Not Listed
<b>Shrubs</b>													
1	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	10	0.8	70.0	1.1	17.0	17.1	34.1	Not Listed
2	Uumaththai	<i>Datura metel</i>	Solanaceae	9	8	10	0.9	80.0	1.1	19.1	19.5	38.7	Not Listed
3	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	10	0.7	60.0	1.2	14.9	14.6	29.5	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	19.1	19.5	38.7	Not Listed
5	Unichadi	<i>Lantana camara</i>	Verbenaceae	6	5	10	0.6	50.0	1.2	12.8	12.2	25.0	Not Listed
6	suraimullu	<i>Zizyphus Oenoplia</i>	Rhamnaceae	8	7	10	0.8	70.0	1.1	17.0	17.1	34.1	Not Listed
<b>Herbs, Climber, Creeper &amp; Grasses</b>													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	9	8	15	0.6	53.3	1.1	4.9	5.0	10.0	Not Listed

2	Nearunji mull	<i>Tribulus zeyheri</i> Sond	Zygophyllaceae	7	8	15	0.5	53.3	0.9	3.8	5.0	8.9	
3	pill	<i>Cenchrus ciliaris</i>	Poaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
4	pulapoo	<i>Aerva lanata</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
5	kapok bush	<i>Aerva javani</i>	Amaranthaceae	5	4	15	0.3	26.7	1.3	2.7	2.5	5.3	Not Listed
6	Rail poondu	<i>Croton bonplandianus</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
7	Yanai neariji	<i>pedalium murex</i>	Pedaliaceae	8	7	15	0.5	46.7	1.1	4.4	4.4	8.8	Not Listed
8	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	4.9	5.0	10.0	Not Listed
9	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
10	Umathai	<i>Datura metel</i>	Solanaceae	8	7	15	0.5	46.7	1.1	4.4	4.4	8.8	Not Listed
11	Sethamutti	<i>Sida cordata</i>	Malvaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
12	Annam	<i>Iva annua</i>	Asteraceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
13	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	9	8	15	0.6	53.3	1.1	4.9	5.0	10.0	Not Listed
14	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	8	7	15	0.5	46.7	1.1	4.4	4.4	8.8	Not Listed
15	Ishappukol Vitai	<i>Plantago coronopus</i>	Plantaginaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
16	vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
17	Seppu nerinji	<i>Indigofera linnaei</i> Ali	Fabaceae	8	7	15	0.5	46.7	1.1	4.4	4.4	8.8	Not Listed
18	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
19	Pal kodi	<i>Cynanchum viminale</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
20	Ilia perandai	<i>Cissus rotundifolia</i>	Vitaceae	9	8	15	0.6	53.3	1.1	4.9	5.0	10.0	Not Listed
21	Katralai	<i>Aloe vera</i>	Asphodelaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
22	Seammulli	<i>Barleria prionitis</i>	Acanthaceae	6	5	15	0.4	33.3	1.2	3.3	3.1	6.4	Not Listed
23	Mudukkathan	<i>Cardiospermum halicacabum</i>	Sapindaceae	7	6	15	0.5	40.0	1.2	3.8	3.8	7.6	Not Listed
24	Thatha pundu	<i>Tridax procumbens</i>	Asteraceae	9	8	15	0.6	53.3	1.1	4.9	5.0	10.0	Not Listed

**Table 3.23 Calculation of Species Diversity in 300-meter radius**

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
<b>Tree</b>						
1	Karuvealan	<i>Prosopis juliflora</i>	4	0.15	-1.91	-0.28
2	Palm tree	<i>Borassus flabellifer</i>	3	0.11	-2.20	-0.24
3	Vembu	<i>Azadirachta indica</i>	5	0.19	-1.69	-0.31
4	Vealli vealan	<i>Vachellia leucophloea</i>	3	0.11	-2.20	-0.24
5	Unjai maram	<i>Albizia amara</i>	4	0.15	-1.91	-0.28
6	Vetpalai	<i>Wrightia tinctoria</i>	3	0.11	-2.20	-0.24
7	Neruppu Kondrai	<i>Delonix regia</i>	5	0.19	-1.69	-0.31
H (Shannon Diversity Index) =1.92						
<b>Shrubs</b>						
1	Erukku	<i>Calotropis gigantea</i>	8	0.17	-1.77	-0.30
2	Uumaththai	<i>Datura metel</i>	9	0.19	-1.65	-0.32
3	Thuthi	<i>Abutilon indicum</i>	7	0.15	-1.90	-0.28
4	Avarai	<i>Senna auriculata</i>	9	0.19	-1.65	-0.32
5	Unichadi	<i>Lantana camara</i>	6	0.13	-2.06	-0.26
6	suraimullu	<i>Zizyphus Oenoplia</i>	8	0.17	-1.77	-0.30
H (Shannon Diversity Index) =1.78						
<b>Herbs, Climber, Creeper &amp; Grasses</b>						
1	Nayuruv	<i>Achyranthes aspera</i>	9	0.05	-3.01	-0.15
2	Nearunji mull	<i>Tribulus zeyheri Sond</i>	7	0.04	-3.26	-0.13
3	pill	<i>Cenchrus ciliaris</i>	6	0.03	-3.41	-0.11
4	pulapoo	<i>Aerva lanata</i>	7	0.04	-3.26	-0.13
5	kapok bush	<i>Aerva javani</i>	5	0.03	-3.59	-0.10
6	Rail poondu	<i>Croton bonplandianus</i>	6	0.03	-3.41	-0.11
7	mookuthi poondu	<i>pedalium murex</i>	8	0.04	-3.12	-0.14
8	Perandai	<i>Cissus quadrangularis</i>	9	0.05	-3.01	-0.15
9	Thumbai chadi	<i>Leucas aspera</i>	7	0.04	-3.26	-0.13
10	Umathai	<i>Datura metel</i>	8	0.04	-3.12	-0.14
11	Sethamutti	<i>Sida cordata</i>	6	0.03	-3.41	-0.11
12	Annanm	<i>Iva annua</i>	7	0.04	-3.26	-0.13
13	Kolunji	<i>Tephrosia purpurea</i>	9	0.05	-3.01	-0.15
14	Nayuruvi	<i>Achyranthes aspera</i>	8	0.04	-3.12	-0.14
15	Ishappukol Vitai	<i>Plantago coronopus</i>	6	0.03	-3.41	-0.11
16	Vealiparuthi	<i>Pergularia daemia</i>	7	0.04	-3.26	-0.13
17	Seppu nerinji	<i>Indigofera linnaei Ali</i>	8	0.04	-3.12	-0.14
18	Sapathikalli	<i>Opuntia ficus-indica</i>	7	0.04	-3.26	-0.13
19	Pal kodi	<i>Cynanchum viminalis</i>	6	0.03	-3.41	-0.11
20	Ilia perandai	<i>Cissus rotundifolia</i>	9	0.05	-3.01	-0.15
21	Katralai	<i>Aloe vera</i>	7	0.04	-3.26	-0.13
22	Seammulli	<i>Barleria prionitis</i>	6	0.03	-3.41	-0.11
23	Mudukkathan	<i>Cardiospermum halicacabum</i>	7	0.04	-3.26	-0.13
24	Thatha pundu	<i>Tridax procumbens</i>	9	0.05	-3.01	-0.15
H (Shannon Diversity Index) =3.21						

**Table 3.24 Species Richness (Index) in 300-meter radius**

Details	H	H max	Evenness	Species Richness
<b>Tree</b>	1.92	1.95	0.99	1.82
<b>Shrubs</b>	1.78	1.79	0.99	1.30
<b>Herbs</b>	3.21	3.22	1.00	4.61

**Table 3.25 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
<b>TREE</b>													
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
2	Thekku	<i>Tectona grandis</i>	Verbenaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
3	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
5	Manga	<i>Mangifera indica</i>	Anacardiaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
7	Vadanarayani	<i>Delonix elata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
8	Thenpazham	<i>Muntingia calabura</i>	Tiliaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
9	Punnai	<i>Calophyllu inophyllum</i>	Calophyllaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
10	Ilanthai	<i>Ziziphus jujubha</i>	Rhamnaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
11	Karovelam	<i>Acacia nilotica</i>	Mimosaceae	6	5	10	0.6	50.0	1.2	4.4	4.9	9.3	Not Listed
12	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
13	Arai nelli	<i>Phyllanthus acidus</i>	Euphorbiaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
14	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
15	Sapota	<i>Manilkara zapota</i>	Sapotaceae	6	5	10	0.6	50.0	1.2	4.4	4.9	9.3	Not Listed
16	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
17	Alamaram	<i>Ficus benghalensis</i>	Moraceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
18	Vazhaimaram	<i>Musa</i>	Musaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
19	Karovelam maram	<i>Vachellia nilotica</i>	Fabaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
20	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed

21	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
22	Maramalli	<i>Millingtonia hortensis</i>	Bignoniaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
23	Kuduka puli	<i>Pithecellobium dulce</i>	Mimosaceae	2	1	10	0.2	10.0	2.0	1.5	1.0	2.4	Not Listed
24	Karungali	<i>Acacia sundra</i>	Legumes	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
25	Nochi	<i>Vitex negundo</i>	Lamiaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
26	Karimurungai	<i>Moringa olefera</i>	Moraginaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
27	Pappali maram	<i>Carica papaya L</i>	Caricaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
28	Poovarasu	<i>Thespesia populnea</i>	Malvaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
29	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	2	1	10	0.2	10.0	2.0	1.5	1.0	2.4	Not Listed
30	Vilvam	<i>Aegle marmelos</i>	Rutaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
31	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	2	1	10	0.2	10.0	2.0	1.5	1.0	2.4	Not Listed
32	Nettilingam	<i>Polyalthia longifolia</i>	Annonaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
33	Koyya	<i>Psidium guajava</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	3.6	3.9	7.6	Not Listed
34	Seethapazham	<i>Annona reticulata</i>	Annonaceae	4	3	10	0.4	30.0	1.3	2.9	2.9	5.9	Not Listed
35	Savukku	<i>Casuarina L.</i>	Casuarinaceae	3	2	10	0.3	20.0	1.5	2.2	2.0	4.2	Not Listed
<b>SHRUBS</b>													
1	Avarai	<i>Senna auriculata</i>	Fabaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	7	8	15	0.5	53.3	0.9	7.3	9.6	16.9	Not Listed
3	Puramuttai	<i>Chrozophora rotleri</i>	Euphorbiaceae	5	4	15	0.3	26.7	1.3	5.2	4.8	10.0	Not Listed
4	Arali	<i>Nerium indicum</i>	Apocynaceae	8	7	15	0.5	46.7	1.1	8.3	8.4	16.8	Not Listed
5	Seemaigaththi	<i>Cassia alata</i>	Caesalpinaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	9	8	15	0.6	53.3	1.1	9.4	9.6	19.0	Not Listed
7	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	5	4	15	0.3	26.7	1.3	5.2	4.8	10.0	Not Listed
8	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
9	Idlipoo	<i>xoracoc cineia</i>	Rubiaceae	7	6	15	0.5	40.0	1.2	7.3	7.2	14.5	Not Listed
10	Thuthi	<i>Abutilon indicum</i>	Meliaceae	5	4	15	0.3	26.7	1.3	5.2	4.8	10.0	Not Listed
11	Nithyakalyani	<i>Cathranthus roseus</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
12	Uumaththai	<i>Datura metel</i>	Solanaceae	7	6	15	0.5	40.0	1.2	7.3	7.2	14.5	Not Listed
13	Kundumani	<i>Abrus precatorius</i>	Fabaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
14	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	7.3	7.2	14.5	Not Listed

15	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	6	5	15	0.4	33.3	1.2	6.3	6.0	12.3	Not Listed
<b>Herbs, Climber, Creeper &amp; Grasses</b>													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
2	Veetukaayapoond	<i>Tridax procumbens</i>	Asteraceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
3	Mukkirattai	<i>Boerhaavia diffusa</i>	Nyctaginaceae	8	7	20	0.4	35.0	1.1	4.5	4.5	9.0	Not Listed
4	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	9	8	20	0.5	40.0	1.1	5.0	5.2	10.2	Not Listed
5	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	8	7	20	0.4	35.0	1.1	4.5	4.5	9.0	Not Listed
6	Korai	<i>Cyperus rotundus</i>	Cyperaceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
7	Thumbai	<i>Leucas aspera</i>	Lamiaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
8	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	8	7	20	0.4	35.0	1.1	4.5	4.5	9.0	Not Listed
9	Partiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
10	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	9	8	20	0.5	40.0	1.1	5.0	5.2	10.2	Not Listed
11	Arugampul	<i>Cynodon dactylon</i>	Poaceae	10	9	20	0.5	45.0	1.1	5.6	5.8	11.4	Not Listed
12	Thoiya keerai	<i>Digeria muricata</i>	Amaranthaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
13	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
14	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	20	0.5	40.0	1.1	5.0	5.2	10.2	Not Listed
15	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
16	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
17	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
18	Sangupoo	<i>Clitoria ternatea</i>	Fabaceae	8	7	20	0.4	35.0	1.1	4.5	4.5	9.0	Not Listed
19	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	5	4	20	0.3	20.0	1.3	2.8	2.6	5.4	Not Listed
20	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
21	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
22	mookuthi poond	<i>Wedelia trilobata</i>	Asteraceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed
23	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae	7	6	20	0.4	30.0	1.2	3.9	3.9	7.8	Not Listed
24	Musthakasu	<i>Kyllinga brevifolia</i>	Cyperaceae	8	7	20	0.4	35.0	1.1	4.5	4.5	9.0	Not Listed
25	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	6	5	20	0.3	25.0	1.2	3.4	3.2	6.6	Not Listed

**Table 3.26 Calculation of Species Diversity in buffer Zone**

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
<b>Tree</b>						
1	Vembu	<i>Azadirachta indica</i>	5	0.04	-3.31	-0.12
2	Thekku	<i>Tectona grandis</i>	4	0.03	-3.53	-0.10
3	Pongam oiltree	<i>Pongamia pinnata</i>	3	0.02	-3.82	-0.08
4	Thennai maram	<i>Cocos nucifera</i>	4	0.03	-3.53	-0.10
5	Manga	<i>Mangifera indica</i>	5	0.04	-3.31	-0.12
6	Puliyamaram	<i>Tamarindus indica</i>	3	0.02	-3.82	-0.08
7	Vadanarayani	<i>Delonix elata</i>	4	0.03	-3.53	-0.10
8	Thenpazham	<i>Muntingia calabura</i>	3	0.02	-3.82	-0.08
9	Punnai	<i>Calophyllum inophyllum</i>	4	0.03	-3.53	-0.10
10	Ilanthai	<i>Ziziphus jujubha</i>	5	0.04	-3.31	-0.12
11	Karuvelam	<i>Acacia nilotica</i>	6	0.04	-3.13	-0.14
12	Nettilinkam	<i>Polylathia longifolia</i>	4	0.03	-3.53	-0.10
13	Arai nelli	<i>Phyllanthus acidus</i>	5	0.04	-3.31	-0.12
14	Panai maram	<i>Borassus flabellifer</i>	4	0.03	-3.53	-0.10
15	Sapota	<i>Manilkara zapota</i>	6	0.04	-3.13	-0.14
16	Navalmaram	<i>Syzygium cumini</i>	5	0.04	-3.31	-0.12
17	Alamaram	<i>Ficus benghalensis</i>	3	0.02	-3.82	-0.08
18	Vazhaimaram	<i>Musa</i>	4	0.03	-3.53	-0.10
19	Karuvelam maram	<i>Vachellia nilotica</i>	5	0.04	-3.31	-0.12
20	Nelli	<i>Emblica officinalis</i>	4	0.03	-3.53	-0.10
21	Eucalyptus	<i>Eucalyptus globules</i>	5	0.04	-3.31	-0.12
22	Maramalli	<i>Millingtonia hortensis</i>	4	0.03	-3.53	-0.10
23	Kuduka puli	<i>Pithecellobium dulce</i>	2	0.01	-4.23	-0.06
24	Karungali	<i>Acacia sundra</i>	4	0.03	-3.53	-0.10
25	Nochi	<i>Vitex negundo</i>	3	0.02	-3.82	-0.08
26	Karimurungai	<i>Moringa olefera</i>	4	0.03	-3.53	-0.10
27	Pappali maram	<i>Carica papaya L</i>	3	0.02	-3.82	-0.08
28	Poovarasu	<i>Thespesia populnea</i>	4	0.03	-3.53	-0.10
29	Arasanmaram	<i>Ficus religiosa</i>	2	0.01	-4.23	-0.06
30	Vilvam	<i>Aegle marmelos</i>	3	0.02	-3.82	-0.08
31	Nuna maram	<i>Morinda citrifolia</i>	2	0.01	-4.23	-0.06
32	Nettilingam	<i>Polyalthia longifolia</i>	3	0.02	-3.82	-0.08
33	Koyya	<i>Psidium guajava</i>	5	0.04	-3.31	-0.12
34	Seethapazham	<i>Annona reticulata</i>	4	0.03	-3.53	-0.10
35	Savukku	<i>Casuarina L.</i>	3	0.02	-3.82	-0.08
H (Shannon Diversity Index) =3.52						
<b>Shrubs</b>						
1	Avarai	<i>Senna auriculata</i>	6	0.06	-2.77	-0.17
2	Sundaika	<i>Solanum torvum</i>	7	0.07	-2.62	-0.19
3	Puramuttai	<i>Chrozophora rottleri</i>	5	0.05	-2.95	-0.15
4	Arali	<i>Nerium indicum</i>	8	0.08	-2.48	-0.21
5	Seemaigaththi	<i>Cassia alata</i>	6	0.06	-2.77	-0.17
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	9	0.09	-2.37	-0.22

7	Kattamanakku	<i>Jatropha curcas</i>	5	0.05	-2.95	-0.15
8	Chaturakalli	<i>Euphorbia antiquorum</i>	6	0.06	-2.77	-0.17
9	Idlipoo	<i>xoracoc cinea</i>	7	0.07	-2.62	-0.19
10	Thuthi	<i>Abutilon indicum</i>	5	0.05	-2.95	-0.15
11	Nithyakalyani	<i>Cathranthus roseus</i>	6	0.06	-2.77	-0.17
12	Uumaththai	<i>Datura metel</i>	7	0.07	-2.62	-0.19
13	Kundumani	<i>Abrus precatorius</i>	6	0.06	-2.77	-0.17
14	Erukku	<i>Calotropis gigantea</i>	7	0.07	-2.62	-0.19
15	Neermulli	<i>Hydrophila auriculata</i>	6	0.06	-2.77	-0.17

H (Shannon Diversity Index) =2.69

**Herbs,Climber,Creeper &Grasses**

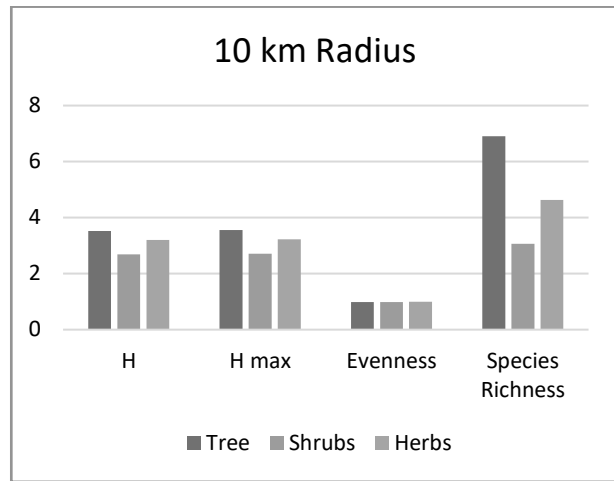
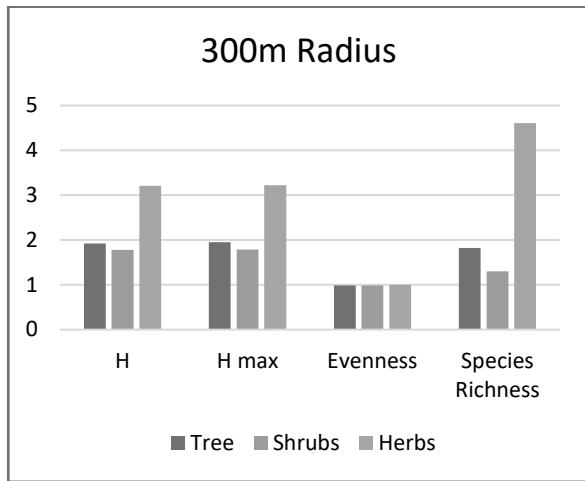
1	Nayuruv	<i>Achyranthes aspera</i>	7	0.04	-3.24	-0.13
2	Veetukaayapoond	<i>Tridax procumbens</i>	6	0.03	-3.40	-0.11
3	Mukkirattai	<i>Boerhaavia diffusa</i>	8	0.04	-3.11	-0.14
4	Kuppaimeni	<i>Acalypha indica</i>	9	0.05	-2.99	-0.15
5	Karisilanganni	<i>Eclipta prostrata</i>	8	0.04	-3.11	-0.14
6	Korai	<i>Cyperus rotundus</i>	6	0.03	-3.40	-0.11
7	Thumbai	<i>Leucas aspera</i>	7	0.04	-3.24	-0.13
8	Nai kadugu	<i>Celome viscosa</i>	8	0.04	-3.11	-0.14
9	Parttiniyam	<i>Parthenium hysterophorus</i>	6	0.03	-3.40	-0.11
10	Thulasi	<i>Ocimum tenuiflorum</i>	9	0.05	-2.99	-0.15
11	Arugampul	<i>Cynodon dactylon</i>	10	0.06	-2.88	-0.16
12	Thoiya keerai	<i>Digeria muricata</i>	7	0.04	-3.24	-0.13
13	Kovai	<i>Coccinia grandis</i>	6	0.03	-3.40	-0.11
14	Perandai	<i>Cissus quadrangularis</i>	9	0.05	-2.99	-0.15
15	Mudakkotan	<i>Cardiospermum helicacabum</i>	7	0.04	-3.24	-0.13
16	Karkakartum	<i>Clitoria ternatea</i>	6	0.03	-3.40	-0.11
17	Kovakkai	<i>Trichosanthes dioica</i>	7	0.04	-3.24	-0.13
18	Sangupoo	<i>Clitoriaternatia</i>	8	0.04	-3.11	-0.14
19	Siru puladi	<i>Desmodium triflorum</i>	5	0.03	-3.58	-0.10
20	Sithrapaalavi	<i>Euphorbia prostrata</i>	6	0.03	-3.40	-0.11
21	Thumattikai	<i>Cucumis callosus</i>	7	0.04	-3.24	-0.13
22	mookuthi poond	<i>Wedelia trilobata</i>	6	0.03	-3.40	-0.11
23	Kattu kanchippul	<i>Apluda mutica</i>	7	0.04	-3.24	-0.13
24	Musthakasu	<i>Kyllinga brevifolia</i>	8	0.04	-3.11	-0.14
25	Nagathali	<i>Opuntia dillenii</i>	6	0.03	-3.40	-0.11

H (Shannon Diversity Index) =3.20

**Table 3.27 Species Richness (Index) in Buffer Zone**

Details	H	H max	Evenness	Species Richness
Tree	3.52	3.56	0.99	6.91
Shrubs	2.69	2.71	0.99	3.07
Herbs	3.20	3.22	1.00	4.63





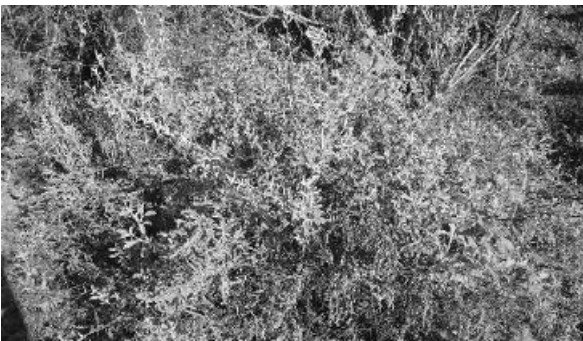
**Figure 3.24 Floral diversity species Richness (Index) in buffer zone and 300m radius**



*Albizia amara*



*Aerva lanata*



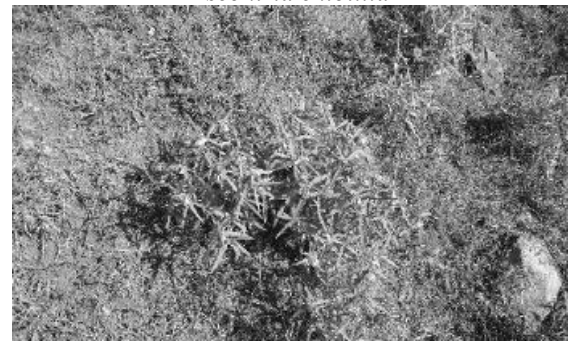
*Aerva javanica*



*Escontria chiotilla*



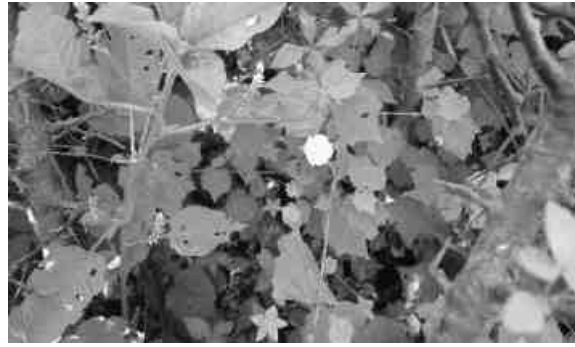
*Datura metel*



*Leucas aspera*



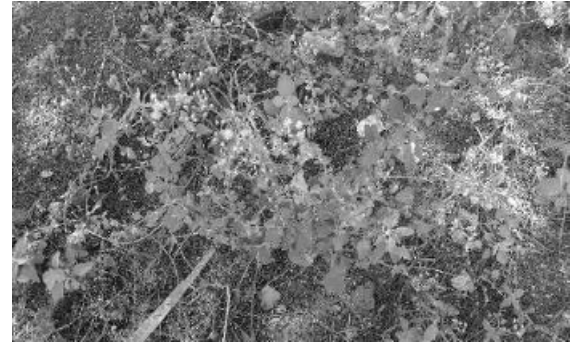
*Calotropis gigantea*



*Sida cordata*



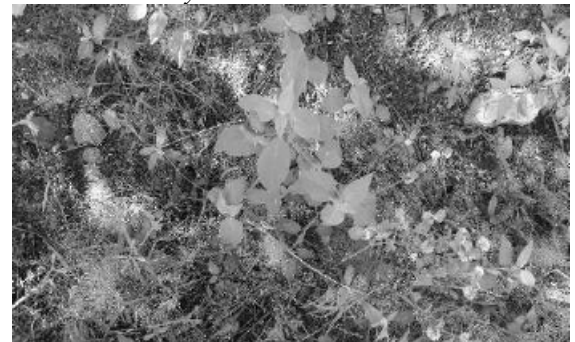
*Iva annua*



*Cyanthillium cinereum*



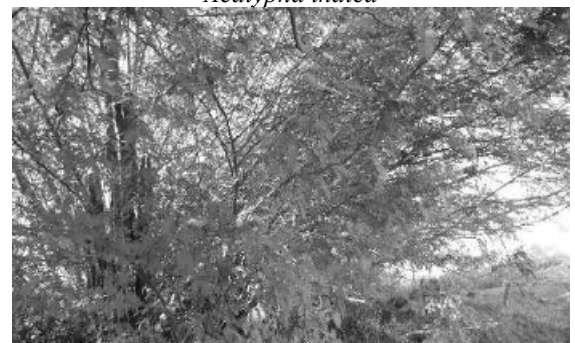
*Tephrosia purpurea*



*Acalypha indica*



*Achyranthes aspera*



*Prosopis juliflora*



*Pergularia daemia*



*Plantago coronopus*



*Cenchrus polystachios*



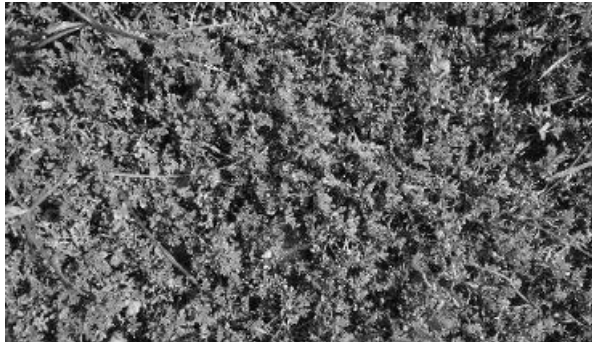
*Vachellia leucophloea*



*Azadirachta indica*



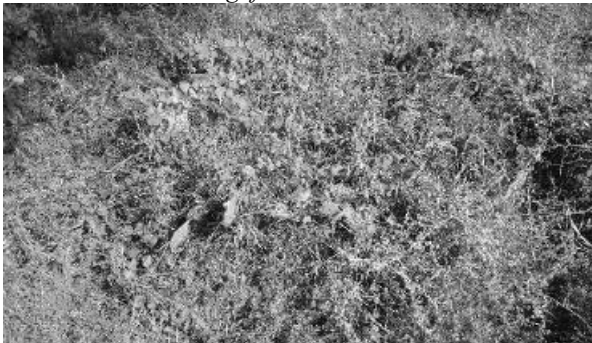
*Achyranthes aspera*



*Indigofera linnaei Ali*



*Pedalium murex*



*Opuntia ficus-indica*



*Wrightia tinctoria*



*Cynanchum viminalis*



*Cissus rotundifolia*





*Borassus flabellifer*



*Millettia Pinnatta*



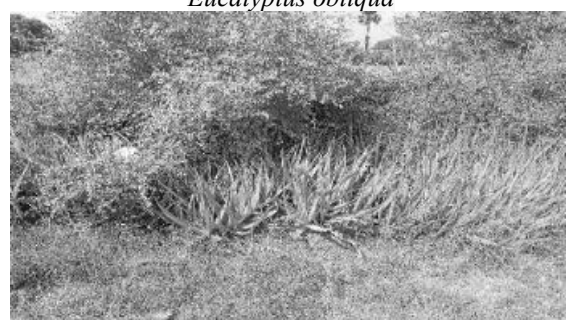
*Zizyphus Oenoplia*



*Eucalyptus obliqua*



*Ailanthus excelsa*



*Aloe vera*



*Croton bonplandianus*



*Commelina benghalensis L*

**Figure 3.25 Flora in Core and buffer Area**

### ***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 3.28

**Table 3.28 Aquatic Vegetation**

<b>S.No.</b>	<b>Scientific name</b>	<b>Common Name</b>	<b>Vernacular Name (Tamil)</b>	<b>IUCN Red List of Threatened Species</b>
1	<i>Eichornia crassipe</i>	Water hyacinth	Agayatamarai	NA
2	<i>Aponogeton natans</i>	Floating lace plant	Kottikizhnagu	NA
3	<i>Carex cruciata</i>	Cross Grass	Koraipullu	NA
4	<i>Cynodon dactylon</i>	Scutch grass	Arugampul	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. Thathampalayam R.F. located on 9.33 km South-eastern side of the lease area. There are few plants and no endangered species in Thampalayam reserve forest. the *Azadirachta indica*, *Vachellia leucophloea*, *albizia amara* these three types of plants are abundant in thampalayam reserve forest. the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive.

### ***Endangered and endemic species as per the IUCN Red List***

There is no rare flora fauna, endangered and endemic species found in the study area.

### **3.5.2 Fauna**

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

### ***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 3.29 and 3.30

### ***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 × 100 m 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

30m 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 recorded 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 × 100 m were laid within each quartile at minimum interval of 1 km. 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 have been recorded from the core mining lease area. Among them numbers of Insects 8 (41%), Reptiles 3 (14%), Mammals 1 (4%) and Avian 9 (41%). Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and seven species are under schedule IV according to Indian wild life Act 1972. A total eight species of bird were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table. 3.29.

**Table 3.29 Fauna in Core Zone**

<b>Sl. No</b>	<b>Common name/English Name</b>	<b>Family Name</b>	<b>Scientific Name</b>	<b>Schedule list wildlife Protection act 1972</b>	<b>IUCN Red List data</b>
<b>INSECTS</b>					
1	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	NL	NL
2	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
3	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
4	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
5	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
6	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
7	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC

8	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
<b>REPTILES</b>					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
2	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
3	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
<b>MAMMALS</b>					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
<b>AVES</b>					
1	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
2	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
3	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
4	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
5	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
6	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	Schedule IV	LC
7	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	Schedule IV	LC
8	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
9	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

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

### ***Fauna in Buffer Zone***

A total of 47 species belonging to 34 families were recorded in the buffer zone. Based on habitat classification the majority of species were Birds 18 (40%), followed by Insects 15 (31%), Reptiles 7 (15%), 4 Mammals (8%) and amphibians 3 (6%). There are 4 schedule II species and 24 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.30.

**Table 3.30 Fauna in Buffer Zone**

S. No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
<b>INSECTS</b>					
1	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC

4	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
10	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
11	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
12	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
13	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
14	Lesser grass blue	Lycaenidae	<i>Zizina Otis indica</i>	Schedule IV	LC
15	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
<b>REPTILES</b>					
16	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
17	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
18	Indian chameleon	Chamaeleonidae	<i>Chamaeleo zeylanicus</i>	Sch II (Part I)	LC
19	Olive keelback water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
20	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
21	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
22	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
<b>MAMMALS</b>					
23	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
24	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC
25	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
26	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
<b>AVES</b>					
27	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
28	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
29	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
30	Red-breasted parakeet	Psittaculidae	<i>Psittacula alexandri</i>	NL	LC
31	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
32	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
33	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
34	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC
35	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
36	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
37	Brahminy starling	Sturnidae	<i>Sturnia pagodarum</i>	Schedule IV	LC
38	Indian golden oriole	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC



39	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameria</i>	NL	LC
40	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
41	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
42	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
43	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
44	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
<b>AMPHIBIANS</b>					
45	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
46	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
47	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	Schedule IV	LC

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

### **Results**

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

## **3.6 SOCIO ECONOMICS ENVIRONMENT**

### **3.6.1 Introduction**

An essential part of environmental study is socio-economic environment incorporating various facts related to socio-economic conditions in the area, which deals with the total environment. Socio economic study includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, historical monuments etc. at the baseline level. This would help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. Socio-economic study of an area provides a good opportunity to assess the socio-economic condition and possibly makes a change in living and social standards of the particular area benefitted due to the project.

### 3.6.2 Objectives of the Study

The main objectives of the study are as follows:

- ❖ To know the current socio-economic condition in the region to cover the sub sectors education, health, sanitation, and water & food security.
- ❖ To recommend practical strategic interventions in the sector.
- ❖ To help in providing better living standards.
- ❖ To understand skill sets and plan for employment opportunities which shall be created.

### 3.6.3 Scope of Work

- ❖ To study the socio-economic environment of the area from the secondary sources
- ❖ Data collection & Analysis
- ❖ Prediction of project impact
- ❖ Mitigation Measures

### 3.6.4 Methodology & Analyse

Data for this project was collected via a combination of secondary sources and primary source interviews, questionnaires, field research) in the study area.

### 3.6.5 Socio-Economic Status of Study area

Kuppam is located in Pugalur Taluk of Karur District in the State of Tamil Nadu in India. It is governed by Kuppam Gram Panchayat. As per available data from the year 2011, 3503 persons live in 1120 households in the village Kuppam. There are 1806 female individuals and 1697 male individuals in the village. Females constitute 51.56% and males constitute 48.44% of the total population. Kuppam is 166.06 persons per square kilometre.

### 3.6.6 Presentation of Details

The collected data were presented in a suitable, concise form for further analysis. The collected data were presented in the form of tabular or diagrammatic or graphic form. These tabulated data were interpreted and analysed with the help of various qualitative techniques and ideographic approaches

**Table 3.31 Kuppam Village Population Facts**

Number of Households	1,120
Population	3,503
Male Population	1,697
Female Population	1,806
Children Population	264
Sex-ratio	1,064
Literacy	60.11%
Male Literacy	72.80%
Female Literacy	48.17%

Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	17.13%
Total Workers	2,246
Main Worker	1,941
Marginal Worker	305

Source: <https://www.census2011.co.in/data/village/635497-kuppam-tamil-nadu.html>

**Table 3.32 Population and Literacy Data of Study Area**

S.No.	Village Name	No of House Holds	Total Population	Male	Female	Total Literate Population	Male Literate	Female Literate	Total Illiterate Population	Male Illiterate	Female Illiterate
1	Athipalayam	730	2062	1014	1048	1271	757	514	791	257	534
2	K.Paramathi	1093	3488	1709	1779	2554	1380	1174	934	329	605
3	Karudayampalayam	577	2347	1211	1136	1614	977	637	733	234	499
4	Kuppam	1120	3503	1697	1806	1947	1143	804	1556	554	1002
5	Munnur	826	2582	1289	1293	1649	980	669	933	309	624
6	Nedungur	403	1190	586	604	800	469	331	390	117	273
7	Pavithiram	1799	5881	2862	3019	3738	2165	1573	2143	697	1446
8	Punnam	1452	5446	2839	2607	3679	2208	1471	1767	631	1136
9	Vettamangalam (East)	807	2657	1310	1347	1521	900	621	1136	410	726
10	Vettamangalam(west)	1827	5882	2887	2995	3953	2225	1728	1929	662	1267

**Table 3.33 Workers Profile of Study Area**

S.No.	Village Name	Total Workers Population	Male Workers	Female Workers	Total Main Workers	Main Workers Male	Main Workers Female	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Non-Worker Population
1	Athipalayam	1372	713	659	1309	701	608	442	551	281	690
2	K. Paramathi	1782	1118	664	1723	1108	615	315	448	938	1706
3	Karudayampalayam	1176	646	530	847	501	346	301	265	251	1171
4	Kuppam	2246	1198	1048	1941	1049	892	822	529	565	1257
5	Munnur	1577	882	695	1434	805	629	420	638	355	1005
6	Nedungur	753	432	321	734	418	316	409	241	81	437
7	Punnam	2718	1531	1187	2665	1504	1161	731	632	1269	2728
8	Vettamangalam(East)	1609	894	715	1593	886	707	419	940	210	1048
9	Vettamangalam(west)	3541	1966	1575	3455	1920	1535	1268	1410	729	2341
10	Pavithiram	3293	1875	1418	2879	1682	1197	747	829	1242	2588

**Table 3.34 Communication & Transport Facilities in the Study Area**

S.No	Village Name	PO	SPO	PTO	T	PCO	MP	IC /CSC	PCF	BS	PBS	RS	NH	SH	MDR	BTR	GR	NWR	FP
1	Athipalayam	2	1	2	1	1	1	2	2	2	1	2	2	2	1	1	1	2	1
2	K. Paramathi	2	1	2	1	1	1	2	2	1	1	2	2	1	1	1	1	2	1
3	Karudayampalayam	2	1	2	1	1	1	2	2	1	1	2	1	2	2	1	1	2	1
4	Kuppam	2	1	2	1	2	1	2	2	1	1	2	2	1	1	1	1	2	1
5	Munnur	2	1	2	1	1	1	2	2	1	1	2	2	2	1	1	1	2	1

6	Nedungur	2	2	2	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1
7	Pavithiram	2	1	2	1	1	1	2	2	1	1	2	1	1	1	1	1	2	1
8	Punnam	2	2	2	1	1	1	2	2	1	1	2	2	1	2	1	1	2	1
9	Vettamangalam (East)	2	2	2	1	2	1	2	2	1	1	2	2	2	1	1	1	2	1
10	Vettamangalam (west)	2	1	2	1	1	1	2	2	1	2	2	1	1	1	1	1	2	1

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

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

**Table 3.35 Water & Drainage Facilities in the Study Area**

S.No.	Village Name	TP	CW	UCW	HP	TW/BH	S	R/C	T/P/L	CD	OD	CT
1	Athipalayam	1	2	1	2	1	2	2	2	1	1	1
2	K.Paramathi	1	1	1	1	1	2	2	2	1	1	2
3	Karudayampalayam	1	2	1	2	1	2	2	2	1	1	2
4	Kuppam	1	1	1	1	1	2	2	2	1	1	1
5	Munnur	1	1	1	2	1	2	2	2	1	1	1
6	Nedungur	1	2	1	1	1	2	2	2	1	1	1
7	Pavithiram	1	1	1	1	1	2	1	2	1	1	1
8	Punnam	1	1	1	1	1	1	1	1	1	1	1
9	Vettamangalam (East)	1	1	1	1	1	2	1	2	1	1	2
10	Vettamangalam (west)	1	1	1	1	1	2	1	2	1	1	1

**Table 3.36 Other Facilities in the Study Area**

S.No.	Village Name	ATM	CB	COB	ACS	SHG	PDS	RM	AMS	NC	NC-AC	CC	SF	PL	APS	BDRO	PS
1	Athipalayam	2	2	2	2	1	1	2	2	1	1	1	1	2	1	1	1
2	K. Paramathi	2	1	1	1	1	1	2	1	1	1	2	2	1	1	1	1
3	Karudayampalayam	1	2	1	2	1	1	2	2	1	1	1	1	2	1	1	1
4	Kuppam	2	2	1	2	1	1	2	2	1	1	1	1	2	1	1	1
5	Munnur	2	2	2	2	1	1	2	2	1	1	2	2	2	1	1	1
6	Nedungur	2	2	2	2	1	1	2	2	1	1	1	1	2	1	1	1
7	Pavithiram	2	2	2	2	1	1	2	2	1	1	1	1	1	1	1	1
8	Punnam	2	2	2	1	1	1	2	2	1	1	1	1	2	1	1	1
9	Vettamangalam (East)	2	2	2	1	1	1	2	2	1	1	1	1	2	1	1	1
10	Vettamangalam (west)	2	1	2	1	1	1	2	2	1	1	1	1	1	1	1	1

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

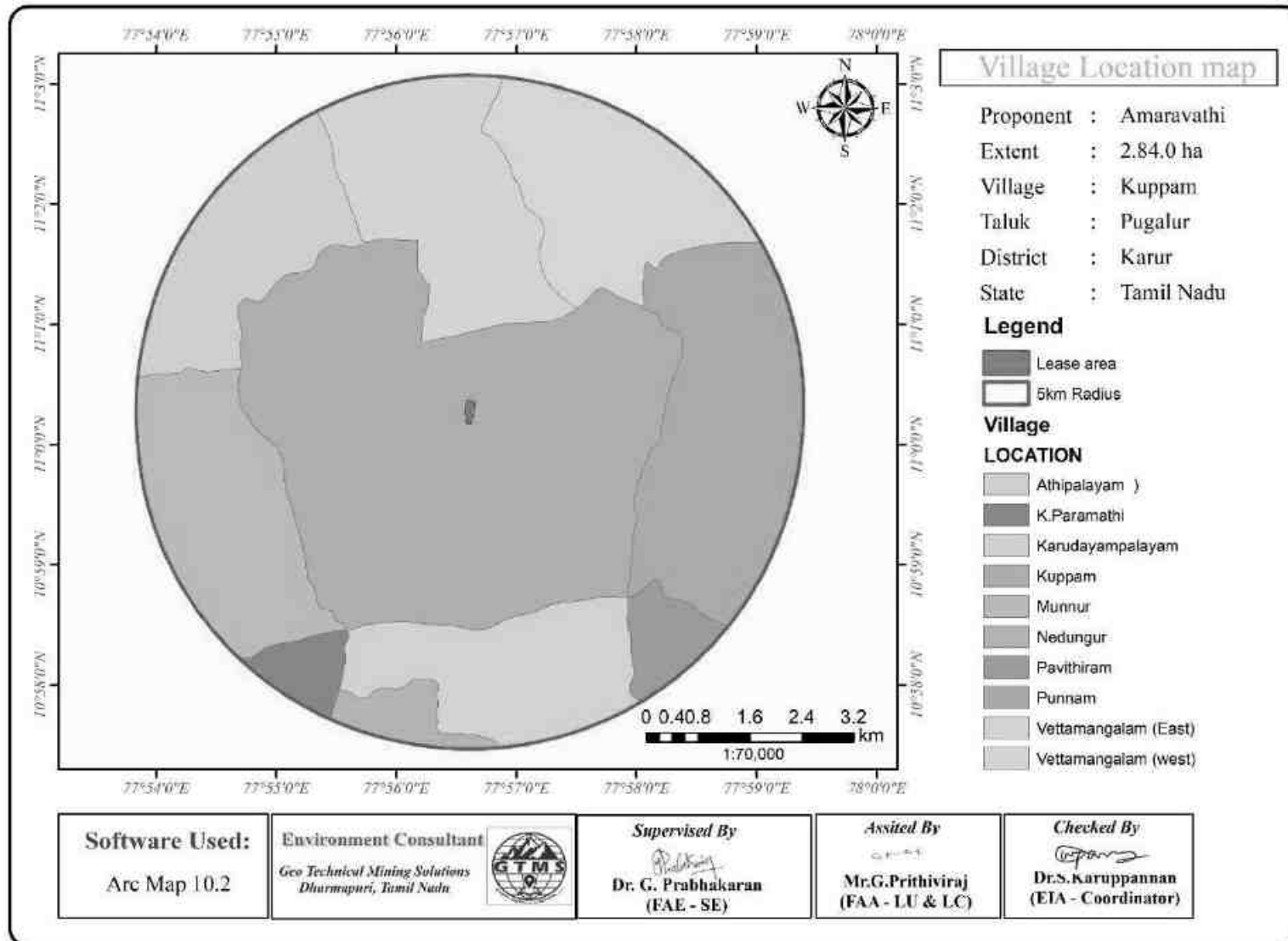


Figure 3.26 village Location map

### 3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through Village Road and Paramathi to Noyyal (SH) and Paramathi to Karur Road (NH-67) as shown in Table 3.40 and in Figure 3.27. Traffic density measurements were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station. During each shift one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

**Table 3.37 Traffic Survey Locations**

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	1.13 Km-SE	Village Road
TS2	Paramathi to Noyyal (SH)	2.8 Km-NW	Paramathi to Noyyal (SH)
TS3	Paramathi to Karur Road (NH-67)	5.95 km-SSW	Paramathi to Karur Road (NH67)

Source: On-site monitoring by GTMS FAE & TM

**Table 3.38 Existing Traffic Volume**

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	38	114	32	32	61	31	177
TS2	105	315	41	41	104	52	408
TS3	175	525	50	50	117	59	634

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 3.39 Rough Stone Transportation Requirement**

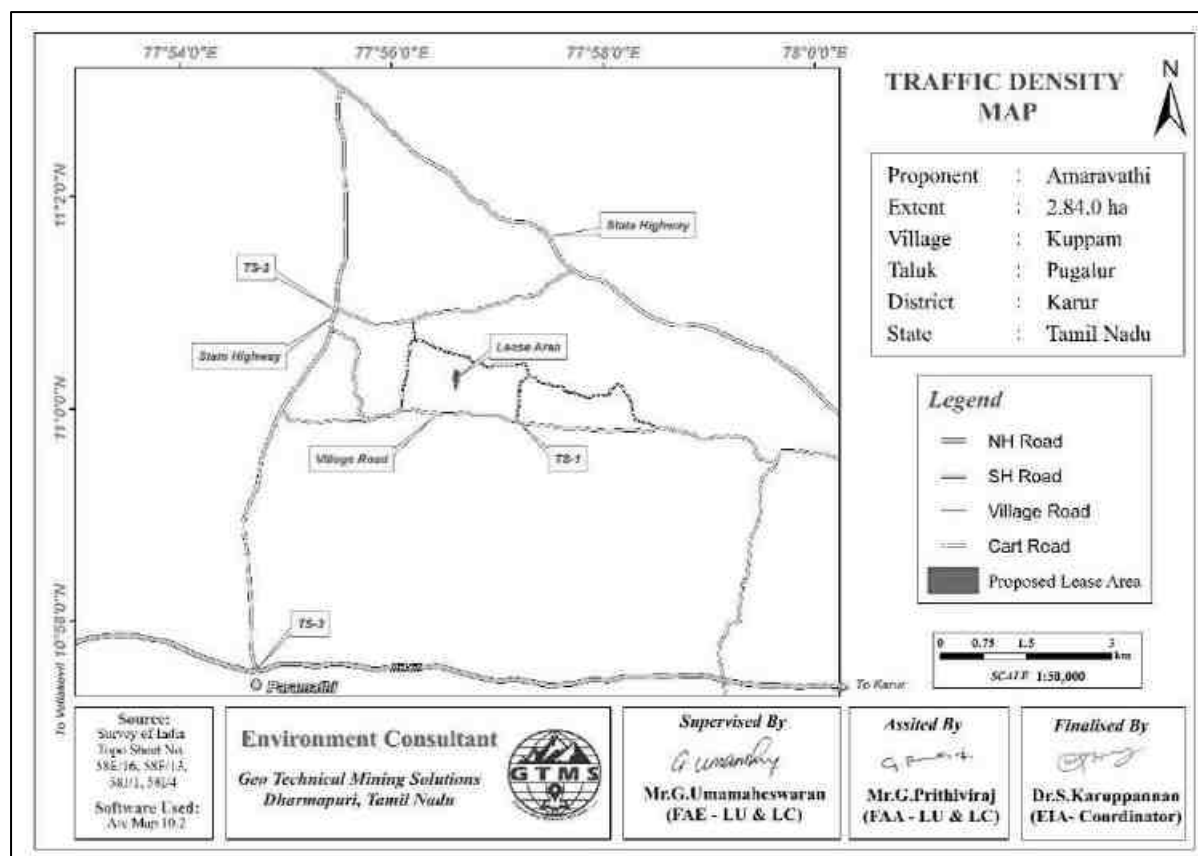
Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	34	102

Source: Approved Mining Plan

**Table 3.40 Summary of Traffic Volume**

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Village Road	177	102	279	1200
Paramathi to Noyyal (SH)	408	102	510	1200
Paramathi to Karur Road (NH-67)	634	102	736	1500

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



**Figure 3.27 Traffic Density Map**

- 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.

### 3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, Reserve Forest, National Park within the project area to 10km radius. There is no Protected and Reserved Forest area is found within 10km 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 3.41.

**Table 3.41 Details of Environmentally Sensitive Ecological Features in the Study Area**

SI. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10km radius
		None	Nil within 10km radius
2	Reserve Forest	Thampalayam R. F	9.33 km SE
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Topur canal	3.35 km NW
		Noyyal River	5.93 km NW
		Kavari River	6.37km NW
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10km radius
5	Critically Polluted Areas	None	Nil within 10km radius
6	Mangroves	None	Nil within 10km radius
7	Mountains/Hills	None	Nil within 10km radius
8	Notified Archaeological Sites	None	Nil within 10km radius
9	Industries/ Thermal Power Plants	TNPL Paper mill	7.81 NE
10	Defence Installation	None	Nil within 10km radius

Source: Survey of India Toposheet







**Figure 3.28 Baseline study field Photographs**





Figure 3.29 Socio Economic study and field 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. The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail: land, soil, water, air, noise, biological and socio-economic environments. Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

#### 4.1 LAND ENVIRONMENT

##### 4.1.1 Anticipated Impact

The proposed project would result in:

- ❖ Permanent impact on mineral resources due to removal of 272149 m<sup>3</sup> of rough stone and 8506 m<sup>3</sup> of topsoil in the five years.
- ❖ Substantial change to topographic features or significant change in surface relief
- ❖ Permanent or temporary change on land use and land cover.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ 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 for the proposed Project

In order to minimize the adverse effects, the following control measures will be implemented:

- ❖ After completion of the quarrying operation, the land will be partially backfilled with dumped material and part of the area will be allowed to collect rainwater which will act as temporary reservoir
- ❖ Topsoil will be utilized for greenbelt development in the safety barrier to prevent noise and sound propagation to the nearby lands
- ❖ Garland drains will be constructed all around the quarry pit and check dams will be constructed at suitable locations in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water within the proposed area
- ❖ Barbed wire fencing will be reconstructed at the conceptual stage
- ❖ Security will be posted round the clock, to prevent inherent entry of the public and cattle

## **4.2 SOIL ENVIRONMENT**

### **4.2.1 Anticipated Impact**

This project will remove about 8506 m<sup>3</sup> of topsoil and preserve it in the safety margin area. Therefore, some of the common mitigation measures have been discussed in the following sections to protect the immediate soil environment surrounding the lease area.

### **4.2.2 Mitigation Measures for Soil Conservation**

- ❖ The top soil will be preserved in the safety barrier and kept in moisture condition. The preserved topsoil will be utilized for greenbelt development in the safety barrier and utilized for plantation on the top bench
- ❖ Garland drains will be constructed around the project area to arrest any soil from the quarry area being carried away by the rainwater. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches
- ❖ Retaining wall with weep hole, garland drain will be provided around the dump areas
- ❖ Proper angle of repose will be maintained
- ❖ Grasses will be grown over the dump areas for stability.

## **4.3 WATER ENVIRONMENT**

### **4.3.1 Anticipated Impact**

- ❖ As the water required for the mining operations, as given in Table 2.11 is obtained from the approved water supplying agency, the project does not develop any abstraction structures in the lease area. Therefore, no impact responsible for the water table declination is anticipated.
- ❖ Surface and ground water resources may be contaminated due to mine pit water discharge, domestic sewage, waste water from vehicle washing, washouts from surface exposure or

working areas, discharge of oil & grease, and suspended solids due to waste from washing of machineries. To address this impact, some of the important mitigation measures is provided as below.

#### **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, blasting excavation, loading and transportation.

### 4.4.1 Anticipated Impact from Proposed Project

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

#### 4.4.1.1 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chaulya et al., 2001. The equations used for SPM, SO<sub>2</sub>, and NO<sub>x</sub> 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	$E = [0.4a0.2\{9.7 + 0.01p + b/(4 + 0.3b)\}]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); E = Emission rate(g/s).
Overall Mine	SO <sub>2</sub>	Area	$E = a0.14\{u/(1.83 + 0.93u)\} [p/(0.48 + 0.57p) + b/(14.37 + 1.15b)]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); E = Emission rate(g/s).
Overall Mine	NO <sub>x</sub>	Area	$E = a0.25\{u/(4.3 + 32.5u)\} [1.5p + b/(0.06 + 0.08b)]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); 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 PM<sub>10</sub> keeping in mind that proper control measures are followed. It is important to note that PM<sub>10</sub> emission rate is derived from the SPM estimation in the background that PM<sub>10</sub> constitutes 52% of SPM emission. The PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> 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 <sup>2</sup>	Calculated Value (g/s/m <sup>2</sup> )
Overall Mine	PM <sub>2.5</sub>	0.016413804	28400	5.77951E-07
Overall Mine	PM <sub>10</sub>	0.039425467	28400	1.38822E-06
Overall Mine	SO <sub>2</sub>	0.015804093	28400	5.56482E-07
Overall Mine	NO <sub>x</sub>	0.016545788	28400	5.82598E-07

#### 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, blasting, 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 5 km radius around the project site and the maximum incremental GLC at the project site. All the prediction models in Figures 4.1- 4.4 shows the maximum concentrations of PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> 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 PM<sub>10</sub> and PM<sub>2.5</sub> generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions of sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) 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 500m 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 4.4-4.6.

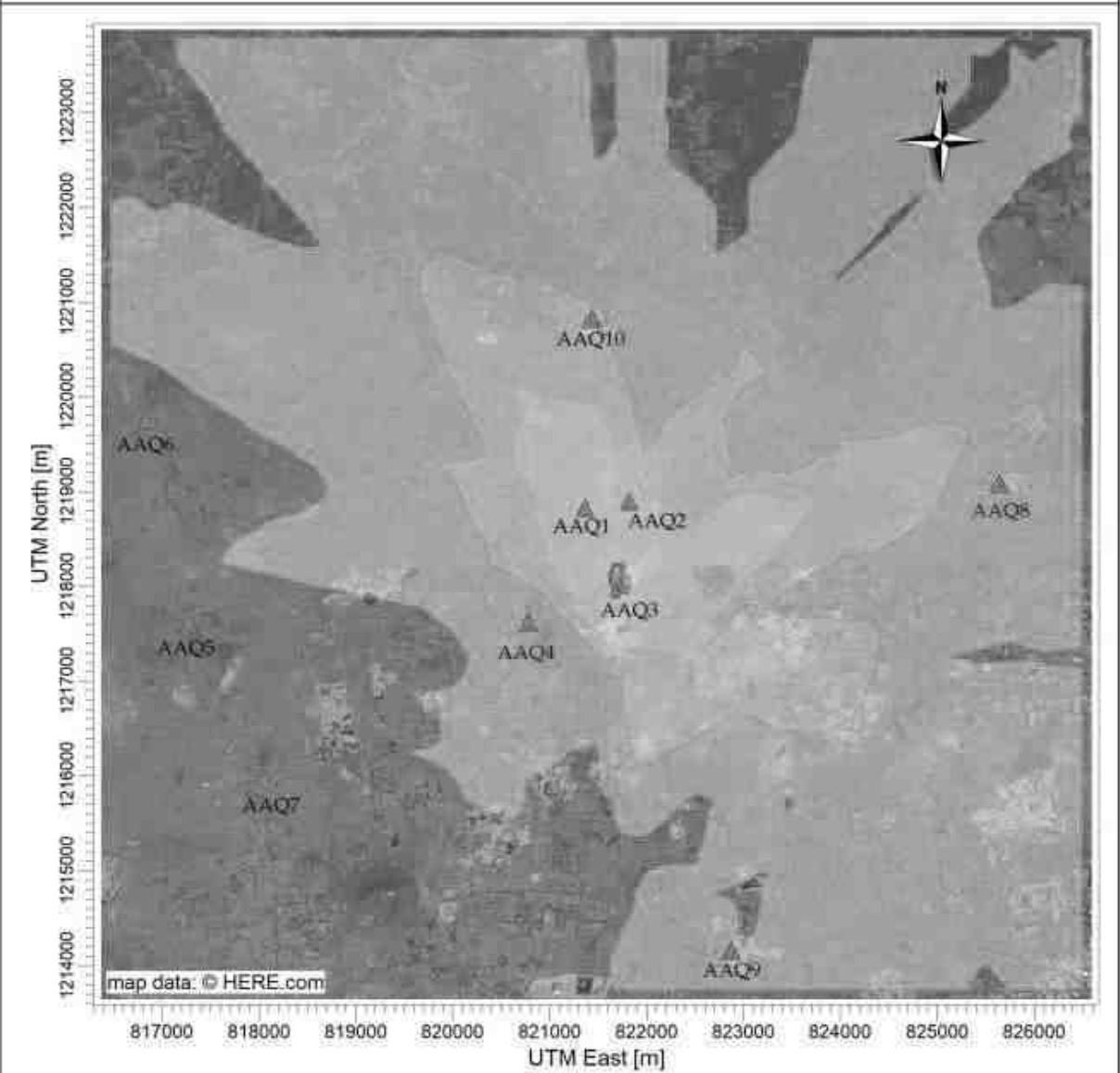
#### 4.4.2.3 Model Results

The post project resultant concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>& NO<sub>x</sub> (GLC) is given in Table 4.3.

**Table 4.3 Incremental & Resultant PM<sub>2.5</sub>**


Station ID	Distance to core area (km)	Direction	PM <sub>2.5</sub> concentrations (µg/m <sup>3</sup> )			Comparison against standard (60 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	21.1	5	26.1	Below standard	23.70	Not significant
AAQ2	---	---	21.6	5	26.6		23.15	
AAQ3	0.83	S	20.4	6.61	27.01		32.40	
AAQ4	1.58	SW	16.0	0.5	16.5		3.13	
AAQ5	4.65	W	18.0	0	18		0.00	
AAQ6	5.03	W	19.1	0	19.1		0.00	
AAQ7	4.69	SW	18.0	0	18		0.00	
AAQ8	3.75	E	25.3	0.5	25.8		1.98	
AAQ9	4.75	S	21.0	0.5	21.5		2.38	
AAQ10	1.87	N	21.2	1	22.2		4.72	





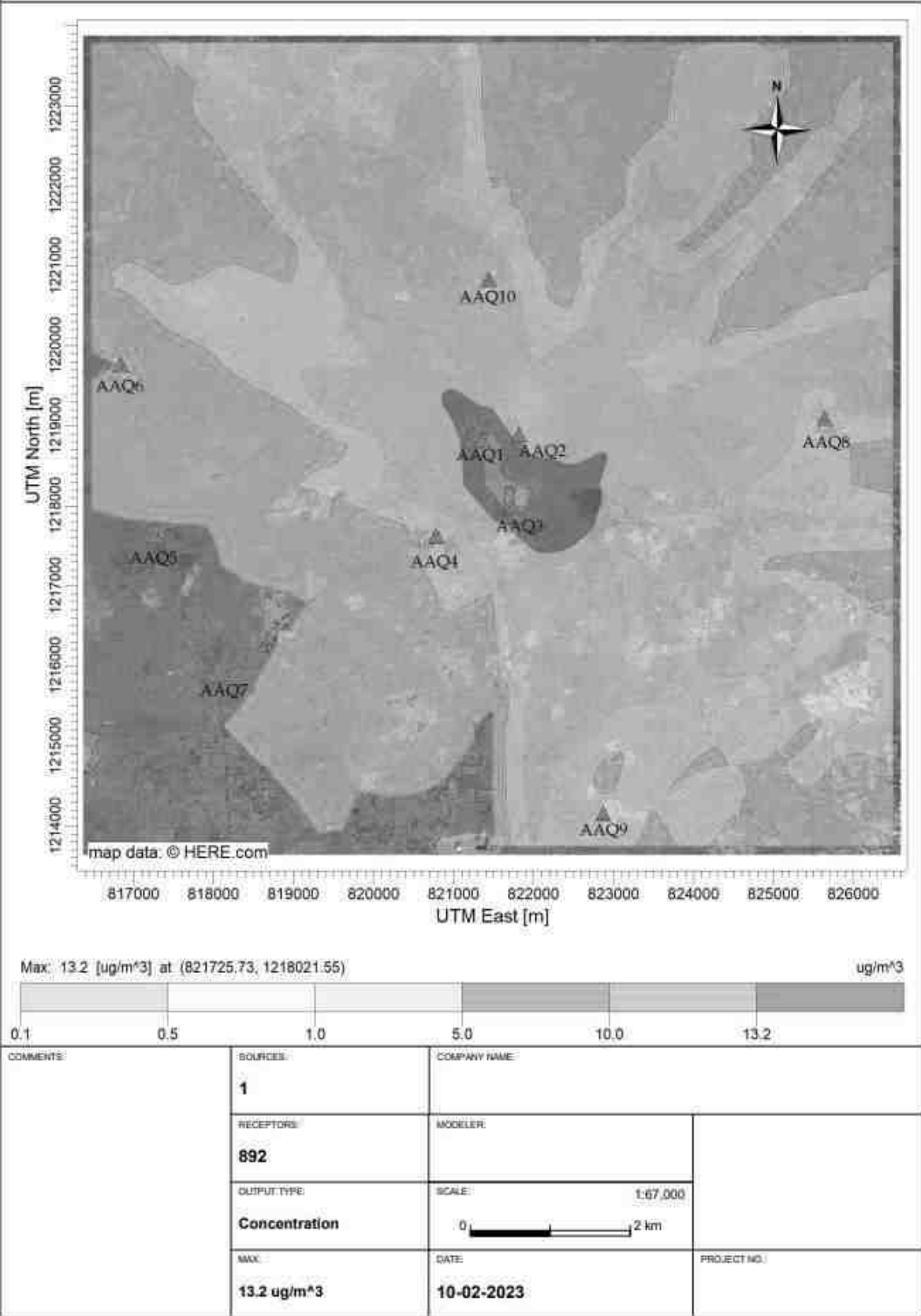
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m<sup>3</sup>  
 Max: 6.62 [ug/m<sup>3</sup>] at (821725.73, 1218021.55)



COMMENTS	SOURCES	COMPANY NAME	
	1	MODELER:	
	RECEPTORS	SCALE: 1:67,000	
	892	0  2 km	
OUTPUT TYPE	CONCENTRATION	DATE:	PROJECT NO.:
	6.62 ug/m <sup>3</sup>	10-02-2023	

**Figure 4.1 Predicted Incremental Concentration of PM<sub>2.5</sub>**

PROJECT TITLE:  
**P.AMARAVATHI ROUGHSTONE QUARRY PROJECT\_PM10**

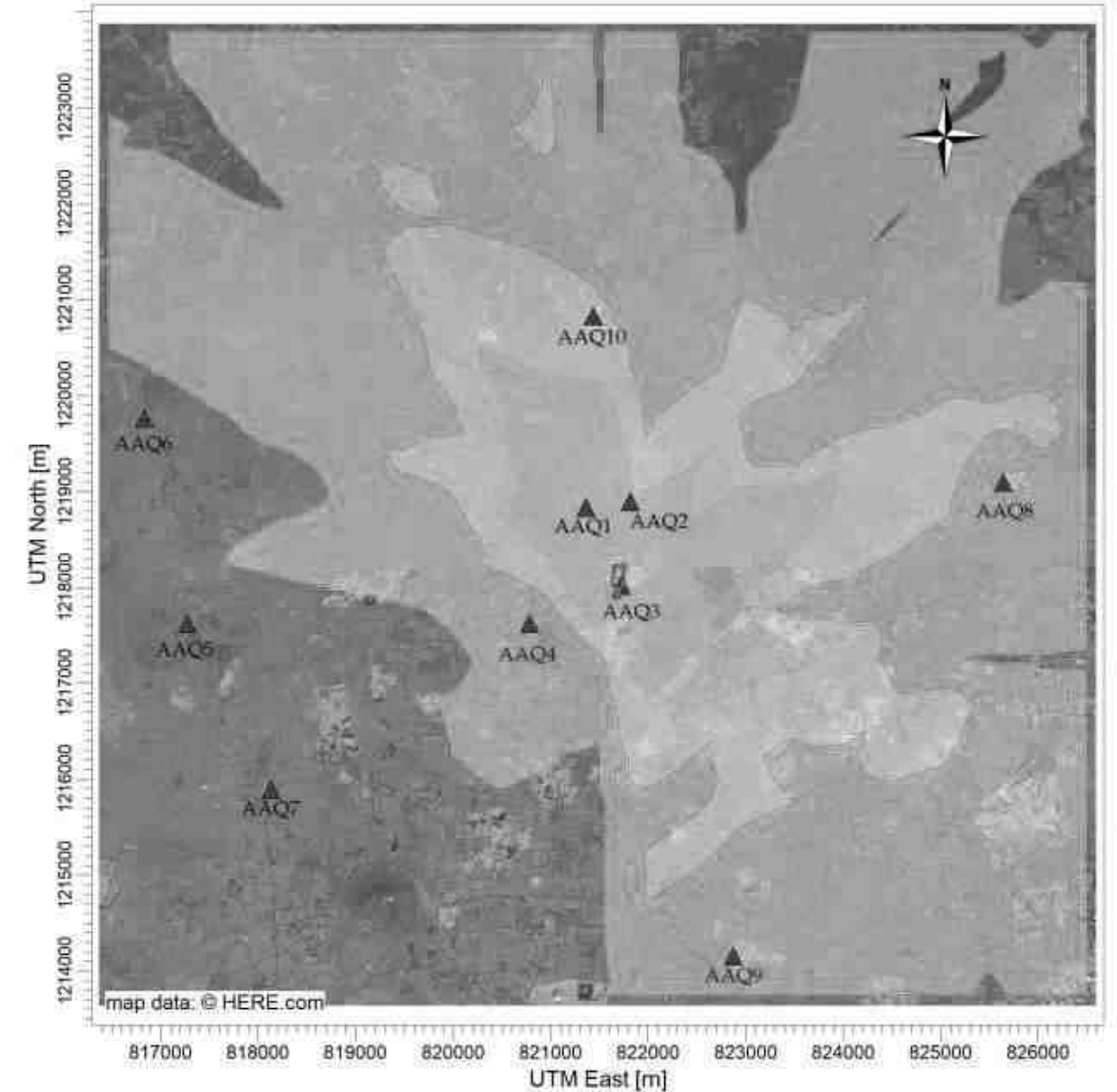


AERMOD View - Lakes Environmental Software

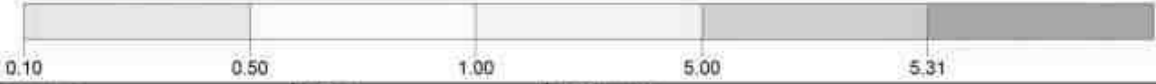
C:\Users\VTMS\Desktop\Amaravathi\_almoad\PM10\PM 10\PM 10.30

**Figure 4.2 Predicted Incremental Concentration of PM<sub>10</sub>**

PROJECT TITLE:  
**P.AMARAVATHI ROUGHSTONE QUARRY PROJECT\_SO2**



Max: 5.31 [ $\mu\text{g}/\text{m}^3$ ] at (821725.73, 1218021.55)  $\mu\text{g}/\text{m}^3$



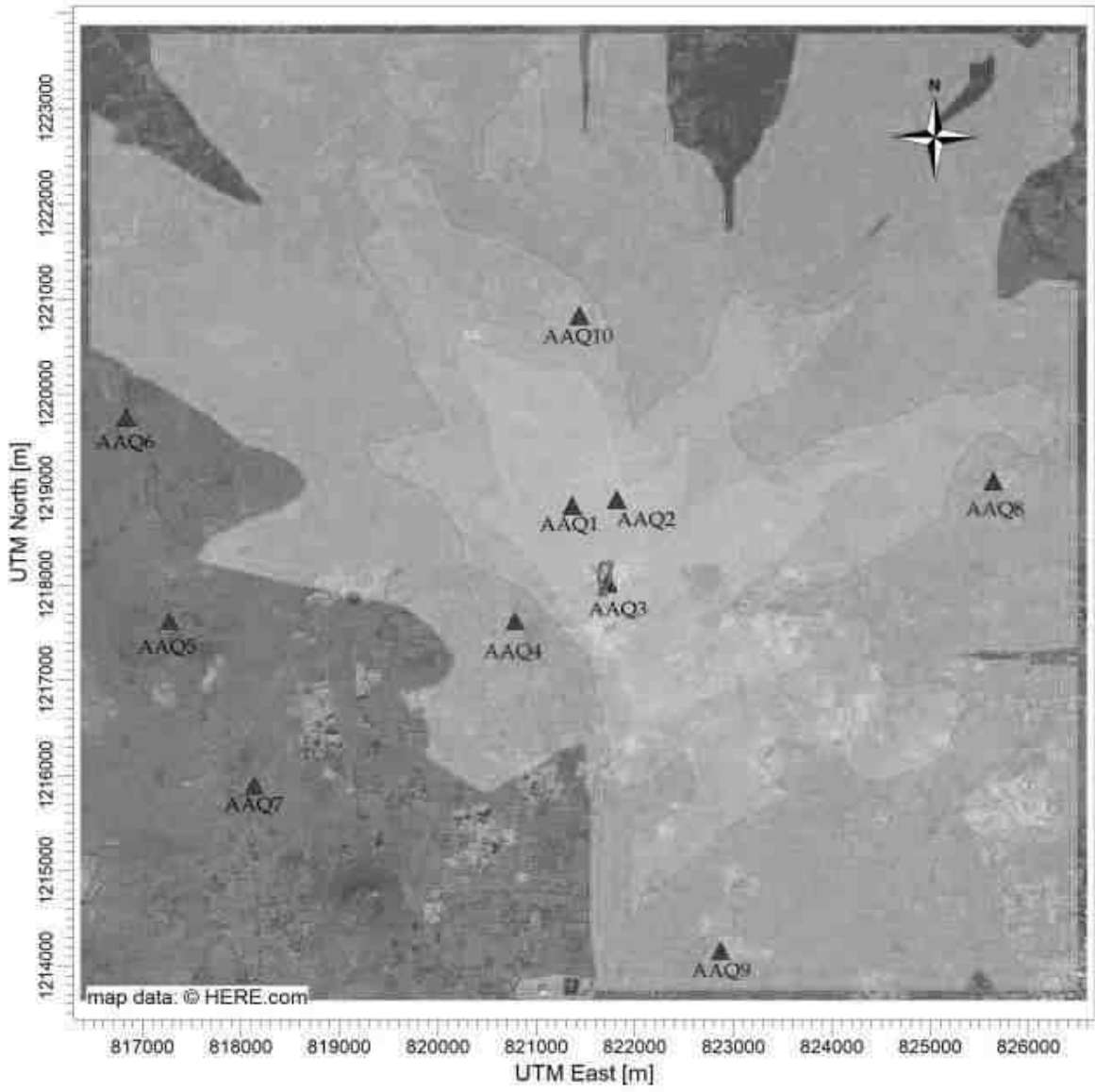
COMMENTS	SOURCES	COMPANY NAME	
	RECEPTORS	MODELER	
	OUTPUT TYPE	SCALE:	1:67,000
	MAX:	DATE:	PROJECT NO.
	1		
	892		
	Concentration	0	2 km
	5.31 $\mu\text{g}/\text{m}^3$	10-02-2023	

AERMOD v9.5.0 - Lakes Environmental Software

C:\Users\GTMR\Desktop\Amravathi air\mod\SO2SO2.kst

**Figure 4.3 Predicted Incremental Concentration of SO<sub>2</sub>**

PROJECT TITLE  
**P.AMARAVATHI ROUGHSTONE QUARRY PROJECT\_NOx**



COMMENTS:	SOURCES	COMPANY NAME:	
	RECEPTORS	MODELER:	
	OUTPUT TYPE:	SCALE:	1:67,000
	MAX:	DATE:	
	1		
	892		
	Concentration		
	5.56 $\mu\text{g}/\text{m}^3$	10-02-2023	PROJECT NO.:

AERMOD View - Lakes Environmental Software

C:\Users\GTMS\Desktop\Amravathi\airpoll\mod\nox.as

**Figure 4.4 Predicted Incremental Concentration of NOx**

**Table 4.4 Incremental and Resultant PM<sub>10</sub>**

Station ID	Distance to core area (km)	Direction	PM <sub>10</sub> concentrations (µg/m <sup>3</sup> )			Comparison against standard (100 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	42.6	10	52.6	Below standard	23.47	Not significant
AAQ2	---	---	39.5	5	44.5		12.66	
AAQ3	0.83	S	39.8	13.2	53		33.17	
AAQ4	1.58	SW	37.0	0.5	37.5		1.35	
AAQ5	4.65	W	34.9	0	34.9		0.00	
AAQ6	5.03	W	37.0	0.5	37.5		1.35	
AAQ7	4.69	SW	39.7	0	39.7		0.00	
AAQ8	3.75	E	46.8	5	51.8		10.68	
AAQ9	4.75	S	39.3	1	40.3		2.54	
AAQ10	1.87	N	39.8	5	44.8		12.56	

**Table 4.5 Incremental & Resultant SO<sub>2</sub>**

Station ID	Distance to core area (km)	Direction	SO <sub>2</sub> concentrations (µg/m <sup>3</sup> )			Comparison against standard (80 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	8.4	5	13.4	Below standard	59.52	Not significant
AAQ2	---	---	8.9	5	13.9		56.18	
AAQ3	0.83	S	9.5	5.3	14.8		55.79	
AAQ4	1.58	SW	7.4	0.5	7.9		6.76	
AAQ5	4.65	W	8.4	0	8.4		0.00	
AAQ6	5.03	W	10.0	0	10		0.00	
AAQ7	4.69	SW	7.7	0	7.7		0.00	
AAQ8	3.75	E	9.1	1	10.1		10.99	
AAQ9	4.75	S	9.2	0.5	9.7		5.43	
AAQ10	1.87	N	8.9	1	9.9		11.24	

**Table 4.6 Incremental & Resultant NO<sub>2</sub>**

Station ID	Distance to core area (km)	Direction	NO <sub>x</sub> concentrations (µg/m <sup>3</sup> )			Comparison against standard (80 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.42	W	16.3	5	21.3	Below standard	30.67	Not significant
AAQ2	---	---	16.9	5	21.9		29.59	
AAQ3	0.83	S	16.6	5.56	22.16		33.49	
AAQ4	1.58	SW	11.0	0.5	11.5		4.55	
AAQ5	4.65	W	17.0	0	17		0.00	
AAQ6	5.03	W	19.1	0	19.1		0.00	
AAQ7	4.69	SW	14.0	0	14		0.00	
AAQ8	3.75	E	26.6	1	27.6		3.76	
AAQ9	4.75	S	18.2	0.5	18.7		2.75	
AAQ10	1.87	N	16.0	1	17		6.25	

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.

### ***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 4.7.

**Table 4.7 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
<b>Total</b>			<b>95.8</b>

\*50 feet from source = 15.24 meters

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

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



**Table 4.8 Predicted Noise Incremental Values**

<b>Noise Monitoring Location</b>	<b>Distance From Project Site(m)</b>	<b>Baseline Noise Level (dBA)m During Day Time</b>	<b>Predicted Noise Level(dBA)</b>	<b>Total(dBA)</b>
Between NTC and Rani Leases	650	41.7	40.9	44.3
New Star Blue Metals Lease	660	40.3	40.8	43.6
Core	100	40.0	57.2	57.2
Kuppam	1900	35.4	31.6	36.9
Puthurpatti	880	32.6	38.3	39.3
Andisangilipalayam	890	36.2	38.2	40.3
Velampalayam	4420	40.3	24.3	40.4
Athipalayam	4990	40.8	23.2	40.9
Munnur	3930	40.8	25.3	40.9
Punna chatram	3990	42.2	25.1	42.3
Karudayampalayam	3960	41.2	25.2	41.3
Kunthanipalayam	2680	41.7	28.6	41.9
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

The incremental noise level is found to be 57.2 dB (A) in core zone and ranges between 23.2 and 40.9 dB (A) in buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000(The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986.).

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

#### 4.5.3 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, as shown in Tables 4.9-4.10. 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 4.9 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	51	880	0.22	23	0.11	135

**Table 4.10 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	51	100	7.32	23	1.46	157
		200	2.41		0.63	150
		300	1.26		0.39	146
		400	0.79		0.28	143
		500	0.55		0.21	140

The peak particle velocity produced by the charge of 51 kg is well below that of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the project proponent ensures that the charge per blast shall be less than 72 kg and that the proponent shall carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

#### 4.5.3.1 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, 2<sup>nd</sup> Class Mines Manager/ 1<sup>st</sup> 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 1.09mm/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 Anticipated Impact on Flora**

- A total of 9 trees belonging to 5 species such as Prosopis juliflora, Azadirachta indica, Vachelia leucoploa, Albizia amara, Wrightia tinctoria, are present in the mining lease 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
- 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 2318 kg per day, **625984** kg per year and **3129919** kg over five years, as provided in Table 4.10.

**Table 4.11 Carbon Released During Five Years of Rough Stone and Gravel Production**

	Per day	Per year	Per five years
Fuel consumption of excavator	162	43827	219137
Fuel consumption of compressor	30.8	8316	41580
Fuel consumption of tipper	672	181433	907163
Total fuel consumption in liters	865	233576	1167880
CO <sub>2</sub> emission in kg	<b>2318</b>	<b>625984</b>	<b>3129919</b>

#### 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.
- ❖ None of the plants in the lease area will be cut during operational phase of the mine. We recommend uprooting and planting 9 trees in the 7.5-meter safety zone to prevent general damage during quarrying. As the survival rate due to uprooting was only 30%, 90 seedlings were procured at the rate of 10 seedlings per tree. Seedlings are planted and protected in 7.5-meter safety zone.

#### ***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 4.13), about 1420 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 72 kg of the total carbon, as provided in Table 4.11.

**Table 4.12 CO<sub>2</sub> Sequestration**

CO <sub>2</sub> sequestration in kg	126	34046	170230
Remaining CO <sub>2</sub> not sequestered in kg	2192	591938	2959689
Trees required for environmental compensation	24664		
area required for environmental compensation in hectares	49		

#### ***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 4.13-4.14. For greenbelt development, species are recommended, as shown in Table 4.12 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 4.13 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 present at lower epidermis Many vascular bundles arranged almost parallel series
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	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	
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 4.14 Greenbelt Development Plan**

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m <sup>2</sup> )
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	568	454	5112
	Number of plants outside the mine lease area		
	852	682	7668
<b>Total</b>	<b>1420</b>	<b>1136</b>	<b>12780</b>

**Table 4.15 Budget for Greenbelt Development Plan**

<b>Activity</b>	<b>Plantation in the construction phase(3Months)</b>	<b>Cost</b>	<b>Capital Cost (Rs.)</b>	<b>Recurring Cost-per annum</b>
Plantation inside the mine lease area (in safety margins)	568	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))"	1,13,600	17,040
Plantation outside the area	852	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	2,55,600	25,560
<b>Total</b>			<b>3,69,200</b>	<b>42,600</b>

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 mitigative 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. Summary of Impact Assessment on Biological Environment

A summary of impact and assessments is provided in Table 4.15.

**Table 4.16 Ecological Impact Assessments**

S. No	Attributes	Assessment
1	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting sites were identified in the lease area.
2	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species were sighted in core area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	Thathampalayam reserve forest is located in 9.36 km southeast. There are no national parks or eco-sensitive zones around 10 km radius.
4	Proposed project restricts access to waterholes for wildlife	No. The proposed project does not restrict access to water holes for wildlife.



5	Proposed mining project impact surface water quality that also provide water to wildlife	No scheduled or threatened wildlife animal were sighted in core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management system will be developed properly. So, there will be no siltation in nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	Barbed wire fencing will be installed around the lease area. Therefore, wild animals will not fall into the quarry pit.
8	The project release effluents into a water body that also supplies water to a wildlife	No water bodies were found close to core zone so chances of water becoming polluted will be low.
9	Mining project effect the forest-based livelihood/ any specific forest product on which local livelihood depended	No. The proposed project does not involve any forestland. Therefore, it will not affect the livelihood of people depending the forest product.
10	Project likely to affect migration routes	No migration routes were found crossing the lease area.
11	Project likely to affect flora of an area, which have medicinal value	No flora with medicinal values were found in the study area.
12	Forestland is to be diverted, has carbon high sequestration	As the proposed project does not involve any forestland, there will be no need for diversion.
13	The project likely to affect wetlands, fish breeding grounds, marine ecology	Wetland was not present in and around mining lease area. No fish breeding grounds were present in core area.

**Table 4.17 Anticipated Impact of Ecology and Biodiversity**

<b>S. No</b>	<b>Aspect Description</b>	<b>Likely Impacts on Ecology and Biodiversity (EB)</b>	<b>Impact Consequence - Probability Description / Justification</b>	<b>Significance</b>	<b>Mitigation Measures</b>
<b>Pre-Mining Phase</b>					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity	Site possesses common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However, Greenbelt /plantation

		(Direct impact)			will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So, there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form Unique / critical habitat structure for unique flora or fauna.		
<b>Mining Phase</b>					
2	Excavation of mineral using machine and labours, Transportation activities will generate noise.	Site-specific disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM. Excavation of dump and transportation work should stop before 7PM.
3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO <sub>2</sub> , NO <sub>2</sub> , CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantation has been suggested Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.

## **4.7 SOCIO ECONOMIC ENVIRONMENT**

### **4.7.1 Anticipated Impact from Proposed and Existing Projects**

- ❖ Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- ❖ Approach roads can be damaged by the movement of tippers
- ❖ 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 2 m 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 discharge likely to cause adverse impacts is predicted in

advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

#### **4.10.1.3 Biological Stability**

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

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

- ❖ Where the nutrient level of spread topsoil is lower than material in-situ e.g., for development of social forestry
- ❖ Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally.
- ❖ Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor. For example, development of green barriers
- ❖ The Mine closure plan should be as per the approved mining plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

## **CHAPTER V**

### **ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)**

#### **5.0 INTRODUCTION**

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

#### **5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE**

The proposed project is site specific and has the following advantages:

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

#### **5.2 ANALYSIS OF ALTERNATIVE SITE**

No alternatives are suggested as the mine site is mineral specific.

#### **5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY**

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

- ❖ As the mineral deposition is homogeneous and batholith formation, opencast method of working is preferred over underground method.
- ❖ The material will be loaded with the help of excavators into tractors/tippers and transported to the need by customers.
- ❖ Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

#### **5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY**

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

## CHAPTER VI

### ENVIRONMENTAL MONITORING PROGRAMME

#### 6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections. The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA-TN as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTE/CTO.

#### 6.1 METHODOLOGY OF MONITORING MECHANISM

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

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in the proposed quarry. The responsibilities of this cell will be:

- ❖ Implementation of pollution control measures
- ❖ Monitoring programme implementation
- ❖ Post-plantation care
- ❖ To check the efficiency of pollution control measures taken
- ❖ Any other activity as may be related to environment

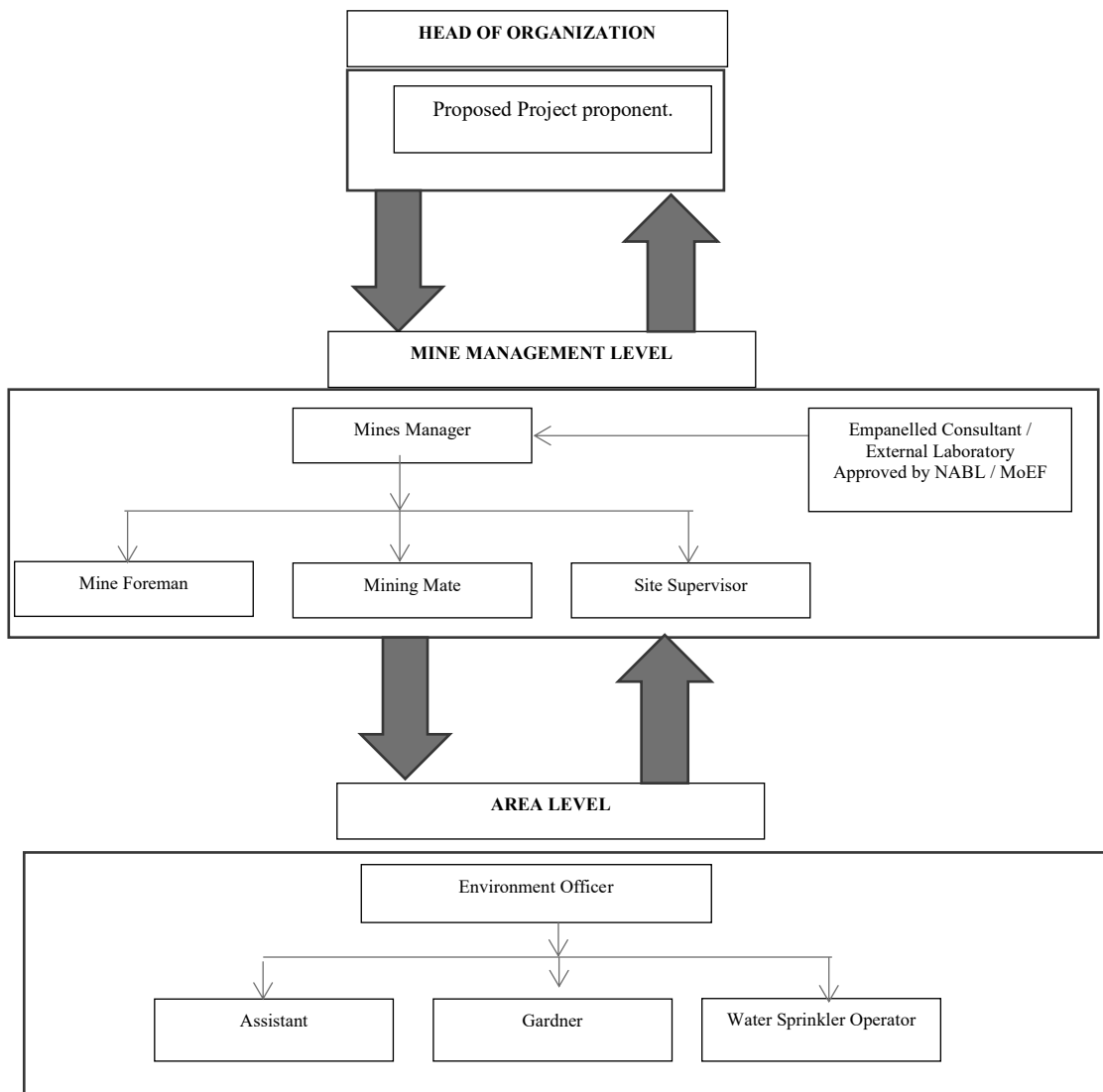


- ❖ Seeking expert's advice when needed.

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

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

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC). The Environmental Monitoring Cell will be formed for the proposed project. The structure of the cell will be as shown in Figure 6.1.



**Figure 6.1 Proposed environmental monitoring chart**

## 6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

**Table 6.1 Implementation Schedule for Proposed Project**

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

## 6.3 MONITORING SCHEDULE AND FREQUENCY

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes, for measurement against statutory standards. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

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

- ❖ Air quality
- ❖ Water and wastewater quality
- ❖ Noise levels

- ❖ Soil quality and
- ❖ Greenbelt development

The details of proposed monitoring schedule have been provided in Table 6.2.

**Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry**

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> .
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/-
<b>Total</b>		-	<b>Rs 2,95,000 /-</b>

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:

- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management
- ❖ Post-COVID Health Management Plan

#### **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 31<sup>st</sup> 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	<p>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;</p> <p>Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited;</p> <p>Fire-fighting and first-aid provisions in the mine office complex and mining area;</p> <p>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</p> <p>Working of quarry, as per approved plans and regularly updating the mine plans;</p> <p>Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut;</p> <p>Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager;</p> <p>Maintenance and testing of all mining equipment as per manufacturer 's guidelines.</p>
2	Drilling	<p>Improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p>	<p>Safe operating procedure established for drilling (SOP) will be strictly followed.</p> <p>Only trained operators will be deployed.</p> <p>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,</p> <p>Drilling shall not be carried on simultaneously on the benches at places directly one above the other.</p>

		Drill Rod may break	<p>Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual.</p> <p>All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition.</p> <p>Operator shall regularly use all the personal protective equipment.</p>
3	Blasting	<p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming &amp; Blasting/ fining of blast holes</p> <p>Vibration due to movement of vehicles</p>	<p>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.</p> <p>SOP for Charging, Stemming &amp; Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation</p> <p>Shots are fired during daytime only.</p> <p>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)</p>
4	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal &amp; overtaking of vehicle</p>	<p>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.</p> <p>Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</p> <p>Concave mirrors should be kept at all corners</p> <p>All vehicles should be fitted with reverse horn with one spotter at every tipping point</p> <p>Loading according to the vehicle capacity</p>

		Operator of truck leaving his cabin when it is loaded.	Periodical maintenance of vehicles as per operator manual
5	Natural Calamities	Unexpected happenings	Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets
6	Failure of mine benches and pit slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

*Source: Analysed and Proposed by FAE & EC*

### **7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT**

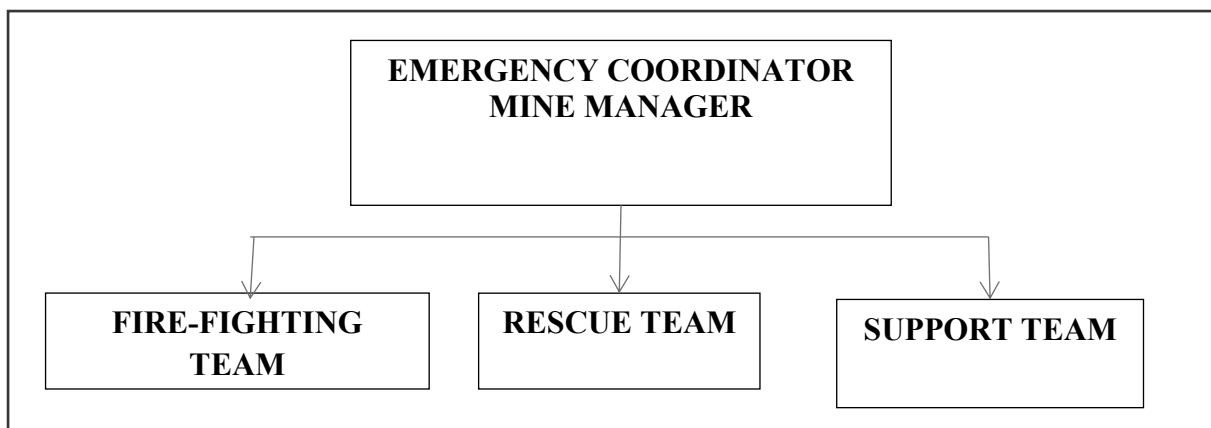
Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety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

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. The proposed composition of the teams is given in Table 7.2.





**Figure 7.1 Disaster management team layout for proposed project**

**Table 7.2 Proposed Teams for Emergency**

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

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

### **7.3.1 Roles and Responsibilities of Emergency Team**

#### *(a) Emergency coordinator (EC)*

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

*(b) Incident controller (IC)*

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

*(c) Communication and advisory team*

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

*(d) Roll call coordinator*

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

*(e) Search and rescue team*

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

*(f) Emergency security controller*

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

### **7.3.2 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

### 7.3.3 Proposed Fire Extinguishers

The following type of fire extinguishers has been proposed at strategic locations within the mine, as shown in Table 7.3.

**Table 7.3 Proposed Fire Extinguishers at Different Locations in P1**

Location	Type of Fire Extinguishers
Electrical Equipment	CO <sub>2</sub> type, foam type, dry chemical powder type
Fuel Storage Area	CO <sub>2</sub> type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

### 7.3.4 Alarm System

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

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

- ❖ Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.
- ❖ Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- ❖ Training and refresher courses for all the employees working in hazardous premises.
- ❖ Working of mine, as per approved plans and regularly updating the mine plans.
- ❖ Cleaning of mine faces is regularly done.

- ❖ Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- ❖ Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- ❖ Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- ❖ A blasting SIREN is used at the time of blasting for audio signal.
- ❖ Before blasting and after blasting, red and green flags are displayed as visual signals.
- ❖ Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- ❖ Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

#### 7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling and excavation and transportation activities in all the quarries within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations. For this cumulative study, only one proposed Project, known as P1 was taken into consideration. Details of P1 have been given in Table 1.2 and the details of P2 given in Table 7.4.

**Table 7.4 Salient Features of Proposed Project Site "P2"**

Name of the Quarry	Tvl. NTC Infra Projects Private Limited	
Type of Land	Patta land	
S.F.No	494/2 (P)	
Extent	2.24.5 ha	
Toposheet No.	58-B/16 & F/13	
Highest Elevation	175 m AMSL	
Latitude	10°59'58.17"N to 11°00'03.79"N	
Longitude	77°56'37.12"E to 77°56'42.22"E	
Ultimate Depth of Mining	51 m BGL	
Geological Resources	Rough stone (m <sup>3</sup> )	Top Soil (m <sup>3</sup> )
	1122500	22450
Mineable Reserves	237750	-
Proposed production for 5 years	237750	-
Method of Mining	Open cast mechanized mining method	

Topography	Flat Terrain	
Machinery proposed	Jack hammer	8
	Compressor	2
	Excavator	2
Blasting Method	Controlled blasting method involving shot hole drilling and small dia. of 25 mm slurry explosives is proposed for removal of rough stone.	
Proposed Manpower Deployment	30	
Project Cost	Rs.46,89,313/-	
Proposed Water Requirement	3.675 KLD	

#### 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 two proposed project have been given in Tables 7.5.

**Table 7.5 Cumulative Production Load of Rough Stone**

Proposed Production Details				
Quarry	5 Years in m <sup>3</sup>	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	272149	54430	202	34
P2	237750	47550	176	29
<b>Grand Total</b>	<b>509899</b>	<b>101980</b>	<b>378</b>	<b>63</b>

The cumulative study shows that the overall production of rough stone from the two quarries is 378m<sup>3</sup> per day with a capacity of 63 trips of rough stone per day.

##### 7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the two proposed projects on air environment of the cluster have been provided in Table 7.6. The cumulative values resulting from the two projects for each pollutant do not exceed the permissible limits set by CPCB.

**Table 7.6 Cumulative Impact Results from the two proposed projects**

Pollutants	Baseline Data( $\mu\text{g}/\text{m}^3$ )	Incremental Values( $\mu\text{g}/\text{m}^3$ )		Cumulative Value ( $\mu\text{g}/\text{m}^3$ )
		P1	P2	
PM <sub>2.5</sub>	20.4	6.61	5.73	32.74
PM <sub>10</sub>	39.8	13.2	11.43	64.43
SO <sub>2</sub>	9.5	5.3	4.59	19.39
NO <sub>2</sub>	16.6	5.56	4.82	26.98

#### 7.4.2 Noise Environment

Noise pollution is mainly due to operation like drilling, blasting plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering compressor operation (drilling and blasting) 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.7.7 Cumulative Impact of Noise from 2 Proposed Quarries on Puthurpatti Habitation**

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	880 m	NEN	32.6	38.2	39.3	55
Habitation Near P2	1025 m	NE	32.6	36.9	38.3	
<b>Cumulative Noise (dB(A))</b>					<b>41.8</b>	

Source: Lab Monitoring Data

The cumulative analysis of noise due to two proposed projects shows that habitation near P1 and P2 will receive about 41.8 dB (A), as shown in Table 7.7. 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 two mines have been shown in Table 7.8.

**Table 7.8 Cumulative Effect of Ground Vibrations Resulting from 2 Mines on Habitation of Puthurpatti**

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	51	880	0.22
P2	44	1025	0.15
Total			0.37

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 proposed Projects were calculated and the results are shown in Tables 7.9 and 7.10. The two project will contribute Rs. 10,00,000 towards CER fund.

**Table 7.9 Socio Economic Benefits from 2 Mines**

Location ID	Project Cost (Rs.)	CER as per SEAC Suggestion (Rs.)
P1	5550000	500000
P2	4689313	500000
<b>Grand Total</b>	<b>10239313</b>	<b>1000000</b>

**Table 7.10 Employment Benefits from 2 Mines**

Location ID	Employment
P1	32
P2	30
<b>Grand Total</b>	<b>62</b>

A total of 62 people will get employment due to 2 proposed mines in cluster

#### 7.4.5 Ecological Environment

**Table 7.11 Greenbelt Development Benefits From 2 Mines**

ID	No of Trees proposed to be planted	Area to be Covered(m <sup>2</sup> )	Name of the Species	No. of Trees expected to be grown @ 80% survival rate
P1	1420	12,780	Neem, Pongamia, Teak, etc.,	1,136
P2	1122	10,098		897
<b>Total</b>	<b>2,542</b>	<b>22,878</b>		<b>2,033</b>

Cumulative studies show that the three proposed projects will plant about **2,542** native tree species like Neem, Teak, etc both inside and outside the lease area. It is expected that 80 % of trees, i.e., **2,033** trees will survive in this green belt development program.

#### 7.4.6 Traffic Density

Table 7.5 shows that the two proposed projects will add 63 truckloads per day, accounting for addition of 189 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 7.12.

**Table 7.12 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

## 7.6 POST COVID HEALTH MANAGEMENT PLAN FOR PROPOSED PROJECT

COVID – 19 diseases caused by SARS-CoV-2 Coronavirus is relatively a new disease, with fresh information being known on a dynamic basis about the natural history of the disease, especially in terms of post-recovery events.

After acute COVID-19 illness, recovered patients may continue to report wide variety of signs and symptoms including fatigue, body ache, cough, sore throat, difficulty in breathing, etc. As of now there is limited evidence of post-COVID sequelae and further research is required and is being actively pursued. A holistic approach is required for follow up care and well-being of all post COVID recovering patients.

### 7.6.1 Post-COVID Follow Up Protocol

- ❖ Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- ❖ Drink adequate amount of warm water (if not contra-indicated).
- ❖ Make sure your workplaces are clean and hygienic
- ❖ Surfaces (e.g., desks and tables) and objects (e.g., telephones, helmet) need to be wiped with disinfectant regularly
- ❖ Put sanitizing hand rub dispensers in prominent places around the workplace. Make sure these dispensers are regularly refilled
- ❖ Display posters promoting hand-washing
- ❖ Make sure that staff, contractors and customers have access to places where they can wash their hands with soap and water
- ❖ Display posters promoting respiratory hygiene.
- ❖ Brief your employees, contractors and customers that if COVID-19 starts spreading in your community anyone with even a mild cough or low-grade fever (37.3°C or more) need to stay at home. They should also stay home (or work from home) if they have had to take simple medications, such as paracetamol/acetaminophen, ibuprofen or aspirin, which may mask symptoms of infection

- ❖ Keep communicating and promoting the message that people need to stay at home even if they have just mild symptoms of COVID-19.
- ❖ Consider whether a face-to-face meeting or event is needed. Could it be replaced by a teleconference or online event?
- ❖ Could the meeting or event be scaled down so that fewer people attend?
- ❖ Pre-order sufficient supplies and materials, including tissues and hand sanitizer for all employees. Have surgical masks available to offer anyone who develops respiratory symptoms.
- ❖ It is also suggested by the Ministry of AYUSH that the use of Chyawanprash in the morning (1 teaspoonful) with Luke warm water/milk is highly recommended (under the direction of Registered Ayurveda physician) as in the clinical practice Chyawanprash is believed to be effective in post-recovery period.
- ❖ If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.
- ❖ Look for early warning signs like high grade fever, breathlessness, Sp O<sub>2</sub> < 95%, unexplained chest pain, new onset of confusion, focal weakness.
- ❖ Avoid smoking and consumption of alcohol.
- ❖ Communicate to your employees and contractors about the plan and make sure they are aware of what they need to do – or not do – under the plan. Emphasize key points such as the importance of staying away from work even if they have only mild symptoms or have had to take simple medications (e.g., paracetamol, ibuprofen) which may mask the symptoms

The plan should address how to keep your business running even if a significant number of employees, contractors and suppliers cannot come to your place of business - either due to local restrictions on travel or due to illness.

## **CHAPTER VIII**

### **PROJECT BENEFITS**

#### **8.0 GENERAL**

The proposed project at Kuppam Village aims to produce **272149 m<sup>3</sup>** of rough stone 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 32 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 in the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

#### **8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED**

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

#### **8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE**

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

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

#### **8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE**

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

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

### **8.5 OTHER TANGIBLE BENEFITS**

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

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

### **8.6 CORPORATE SOCIAL RESPONSIBILITY**

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

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 5 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- ❖ Health Services
- ❖ Social Development
- ❖ Infrastructure Development
- ❖ Education & Sports
- ❖ Self-Employment
- ❖ CSR Cost Estimation
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Kuppam Village. CSR budget is allocated as 2.5% of the profit.

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

**Table 8.1 CER Action Plan**

<b>S. No.</b>	<b>Activity</b>	<b>Budget (Rs.in Lakh)</b>
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
	<b>Total</b>	<b>Rs.5, 00,000</b>

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

## **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 to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

#### 10.1 ENVIRONMENTAL POLICY

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

The Proponent, **Mrs. P. Amaravathi 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 drive 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/ wastewater 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, wastewater 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 LAND ENVIRONMENT MANAGEMENT

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (unutilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the environment will not be affected. There is no major vegetation in the project area. During the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development program. A detailed land environment management plan has been provided in Table 10.1.

**Table 10.1 Proposed Controls for Land Environment**

<b>Control</b>	<b>Responsibility</b>
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Refueling to be undertaken in a safe location away from vehicle movement pathways & 100m away of any watercourse. Refueling activity to be under visual observation at all times. Drainage of refueling areas to sumps with oil/water separation.	Mine Foreman & Mining Mate
Soil and groundwater testing as required following up a particular incident of contamination.	Mines Manager
At conceptual stage, the mining pits will be converted into Rain Water	Mines Manager



Harvesting. Remaining area will be converted into greenbelt area.	
No external dumping i.e., outside the project area.	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

Source: Proposed by FAEs & EIA Coordinator

### 10.3 SOIL MANAGEMENT

A detailed soil environment management plan has been provided in Table 10.2.

**Table 10.2 Proposed Controls for Soil Management**

<b>Control</b>	<b>Responsibility</b>
Surface run-off from the project boundary will be diverted to the mine pits via garland drains.	Mine Foreman & Mining Mate
Haul roads and other access roads will be designed along with drainage systems to minimize concentration of flow and erosion risk	Mines Manager
Sediments from sediment traps will be removed; garland drain system will be maintained periodically.	Mines Manager
Test soils for pH, EC, chloride, size & water holding capacity	Manager Mines

Source: Proposed by FAEs & EIA Coordinator

### 10.4 WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash and domestic sewage from mines office is anticipated. The quarrying operation is proposed up to a depth of 45 m. The water table in the area is at 60-70 m below ground level. Hence, the proposed project will not intersect the ground water table during entire quarry period. A detailed water environment management plan has been provided in Table 10.3.

**Table 10.3 Proposed Controls for Water Environment**

<b>Control</b>	<b>Responsibility</b>
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be	Mines Manager

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

Source: Proposed by FAEs & EIA Coordinator

### 10.5 AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations in the ambient air. Daily water sprinkling on the haul roads, approach roads in the vicinity will be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements. A detailed ambient air environment management plan has been provided in Table 10.4.

**Table 10.4 Proposed Controls for Air Environment**

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

Source: Proposed by FAEs & EIA Coordinator

## 10.6 NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time. A detailed noise environment management plan has been provided in Table 10.5.

**Table 10.5 Proposed Controls for Noise Environment**

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

*Source: Proposed by FAEs & EIA Coordinator*

## 10.7 GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting. A detailed ground vibration management plan has been provided in Table 10.6.

**Table 10.6 Proposed Controls for Ground Vibrations & Fly Rock**

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

*Source: Proposed by FAEs & EIA Coordinator*

## 10.8 BIOLOGICAL ENVIRONMENT MANAGEMENT

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

- ❖ Greenbelt development all along the safety barrier of the project area.
- ❖ It is also proposed to implement the greenbelt development program and post plantation status will be regularly checked for every season.
- ❖ The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- ❖ Year wise greenbelt development will be recorded and monitored based on:

- ❖ the area of plantation
  - ❖ Period of plantation
  - ❖ Type of plantation
  - ❖ Spacing between the plants
  - ❖ Type of manuring and fertilizers and its periods
  - ❖ Lopping period, interval of watering
  - ❖ Survival rate
  - ❖ Density of plantation
- ❖ The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

### 10.8.1 Green Belt Development Plan

About 1420 saplings are proposed to be planted in and around the lease area. Of the total saplings, about 80% of the saplings is expected to survive in the environment. The main objectives of the greenbelt development plan are to:

- ❖ Combat the dispersal of dust in the adjoining areas.
  - ❖ Protect the erosion of the soil and conserve moisture of the soil.
  - ❖ Increase the rate of recharge of ground water.
- ❖ Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community. The proposed green belt development plan has been given in Table 10.7.

**Table 10.7 Proposed Greenbelt Development Plan**

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m <sup>2</sup> )
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	568	454	5112
	Number of plants outside the mine lease area		
	852	682	7668
<b>Total</b>	<b>1420</b>	<b>1136</b>	<b>12780</b>

*Source: Proposed by FAEs & EIA Coordinator*

A well-planned green belt of trees with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

## 10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

### 10.9.1 Medical Surveillance and Examinations

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

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

- ❖ General Physical Examination and Blood Pressure.
- ❖ X-ray Chest and ECG.
- ❖ Sputum Test, Sperm Count Test.
- ❖ Detailed Routine Blood and Urine Examination.

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests (Table 10.8) keep upgrading the database of medical history of the employees.

**Table 10.8 Medical Examination Schedule**

S. No.	Activities	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					

A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups: Work force will be divided into three targeted groups age wise as follows:						
<b>Age Group</b>		<b>PME as per Mines Rules 1955</b>		<b>Special Examination</b>		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

### 10.9.2 Proposed Occupational Health and Safety Measures

- ❖ The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- ❖ Lightweight and loose-fitting clothes having light color will be preferred to wear.
- ❖ Noise exposure measurements will be taken to determine the need for noise control strategies.
- ❖ The personal protective equipment will be provided for mine workers.
- ❖ Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- ❖ At noisy working activity, exposure time will be minimized.
- ❖ Dust generating sources will be identified and proper control measure will be adopted.
- ❖ Periodic medical examinations will be provided for all workers.
- ❖ Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- ❖ The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- ❖ In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory

person/officials only after they will impart training at vocational training centers. All personal protective equipment's will be provided to them.

- ❖ A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- ❖ Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.



**Figure 10.1 Personal Protective Equipment to the Mine Workers**

### **10.9.3 Health and Safety Training Program**

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the group vocational training centers in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner, as shown in Table 10.9.



**Table 10.9 List of Periodical Trainings Proposed for Employees**

<b>Course</b>	<b>Personnel</b>	<b>Frequency</b>	<b>Duration</b>	<b>Instruction</b>
New-Employee Training	All new employees exposed to mine hazards	Once	One week	<ul style="list-style-type: none"> <li>✓ Employee rights,</li> <li>✓ Supervisor responsibilities</li> <li>✓ Self-rescue</li> <li>✓ Respiratory devices</li> <li>✓ Transportation controls</li> <li>✓ Communication systems</li> <li>✓ Escape and emergency evacuation</li> <li>✓ Ground control hazards</li> <li>✓ Occupational health hazards</li> <li>✓ Electrical hazards and First aid</li> <li>Explosives</li> </ul>
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul Road maintenance.	Employees assigned to new work tasks	Before new Assignments	Variable	<ul style="list-style-type: none"> <li>✓ Task-specific health &amp; safety procedures and SOP for various mining activity</li> <li>✓ Supervised practice in assigned work tasks.</li> </ul>
Refresher Training	All employees who received new-hire training	Yearly	One week	<ul style="list-style-type: none"> <li>✓ Required health and safety standards</li> <li>✓ Transportation controls</li> <li>✓ Communication</li> </ul>

				systems ✓ Escape ways, emergency evacuations ✓ Fire warning ✓ Ground control hazards ✓ First aid on electrical hazards ✓ Accident prevention ✓ Explosives ✓ Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	✓ Hazard recognition and avoidance ✓ Emergency evacuation procedures ✓ Health standards ✓ Safety rules ✓ Respiratory devices

Source: Proposed by FAEs & EIA Coordinator as per DGMS Norms

#### 10.9.4 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the company for execution of environmental management plan. The Table 10.10 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measure.

**Table 10.10 EMP Budget for Proposed Project**

Attribute	Mitigation measures	Provision for Implementation	Capital Cost (Rs.)	Recurring Cost/annum (Rs.)
<b>Air Environment</b>	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and	28400	28400

		yearly maintenance @ Rs. 10,000/- per hectare		
	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	100000	10000
	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	Installation of	30000	0

	of 20 km/hr within ML area	Speed Governors @ Rs. 5000/- per tipper/dumper deployed		
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	7500
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual)	0	20000
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
<b>Noise Environment</b>	Source of noise will be transportation vehicles, and HEMM. For this, proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done.	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implementations that are required will be kept adequately near blasting site at the	Provision made in OHS part	0	0

	time of charging.			
	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	734802
<b>Water Environment</b>	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	28400	14200
<b>Waste Management</b>	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
<b>Implementation of EC, Mining Plan &amp; DGMS Condition Occupational Health and Safety</b>	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
	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)	128000	32000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	32000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	11360
	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	568000	28400
	No parking will be provided on the transport routes. Separate provision on the south side of the	Parking area with shelter and flags @ Rs.50,000/- per hectare project and	142000	28400

	hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Rs.10,000/- as maintenance cost		
	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 <sup>st</sup> Class / 2 <sup>nd</sup> 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
<b>Development of Green Belt</b>	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))"	113600	17040
		Avenue Plantation @ 300 per plant (capital)	255600	25560

		for plantation outside the lease area and @ 30 per plant maintenance (recurring)		
<b>Mine Closure Activity</b>	Closure includes Greenbelt development, wire fencing, drains	Provision made in Closure Cost	0	0
<b>Total EMP Budget</b>			<b>2374000/-</b>	<b>1941662/-</b>

**Table 10.11 Estimation of Overall EMP Budget after Adjusting 5% Annual Inflation**

<b>I<sup>st</sup> Year</b>	<b>II<sup>nd</sup> Year</b>	<b>III<sup>rd</sup> Year</b>	<b>IV<sup>th</sup> Year</b>	<b>V<sup>th</sup> Year</b>	<b>Total</b>
4315662	2038745	2140683	2247717	2360103	<b>13102910</b>

In order to implement the environmental protection measures, an amount of **Rs. 23,74,000** as capital cost and recurring cost as **Rs. 19,41,662** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 1,31,02,910** as shown in Table 10.11.

#### **10.10 CONCLUSION**

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



## **CHAPTER XI**

### **SUMMARY AND CONCLUSION**

#### **11.0 INTRODUCTION**

This EIA report was prepared in compliance with ToR obtained vide Lr.No:SEIAA-TN/F.No. 9306/ToR-1295/2022 Dated:27.10.2022 by considering 2 proposed and 3 existing projects in a cluster with the total extent of 09.67.50 hectares in Kuppam Village, Pugalur Taluk, Karur District and Tamil Nadu State. Cluster area was calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016. Baseline Monitoring studies were carried out during the period of October– December 2022.

#### **11.1 PROJECT DESCRIPTION**

The proposed project deals with excavation of rough stone, which is primarily used, in construction projects. The method adopted for rough stone excavation is an open cast semi-mechanized mining method involving drilling, blasting and formation of benches with 5 m height and 5 m width and secondary blasting. The proposed project area is located between latitudes from 11°0'10.90"N to 11°0'21.89"N and from longitudes from 77°56'34.71"E to 77°56'38.75"E in Kuppam Village, Pugalur Taluk, and Karur District. The project site is a Patta land with the extent of 2.84.0 ha owned by the project proponent. The proponent had applied for quarry lease on 16.06.2020 to extract rough stone and obtained the precise area communication letter issued by Department of Geology and Mining, Karur vide Rc.No.266/Mines/2020, Dated: 21.10.2021. 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, Karur (Rc.No.266/Mines/2020, Dated:25.01.2022).

According to the approved mining plan, about 272149 m<sup>3</sup> of rough stone will be mined up to the depth of 45 m BGL in the first five years. To achieve the estimated production, 4 jack hammers, 1 compressor, 1 excavator with bucket/rock breaker, and 6 tippers will be deployed. To operate the machineries and to break the rough stone to preferred dimension, about 32 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 173 m\*70 m\*45 m and about 2.26.0 ha of land will have been quarried; about 0.26.5 ha of land will be used for green belt development; about 0.27.5 ha of land will be left unutilized; and the rest will be used for roads and infrastructures. The final mine closure plan shows that about Rs. 9,65,600 with the annual recurring cost of Rs. 85,200 will be spent towards mine closure.

#### **11.2 DESCRIPTION OF THE ENVIRONMENT**

The baseline monitoring studies were carried out during October through December, 2022 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, air, noise, ecology, socio-economy, and traffic.

### **11.2.1 Land Environment**

Land Use and Land Cover (LULC) map was prepared using Sentinel II image for the study area of 5 km radius. Totally, 7 LULCs were mapped. Of the total area, mining area covers only 180.31 ha accounting for 2.32 %, of which lease area of 2.84.0 ha contributes only about 0.036%. This small percentage of mining activities shall not have any significant impact on the land environment.

### **11.2.2 Soil Characteristics**

Eight soil samples were obtained from the study area and sent to laboratory for analysing physical and chemical characteristics of soil.

#### ***Physical Characteristics***

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.5 to 7.7 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 143 to 247  $\mu\text{s}/\text{cm}$ . Bulk density ranges between 1.2 and 3.8  $\text{g}/\text{cm}^3$ .

#### ***Chemical Characteristics***

Nitrogen ranges between 0.04 and 1.1 %. Phosphate ranges between 0.14 and 3.8 %. Potassium ranges between 0.12 and 0.26 %. Calcium ranges between 161 and 513  $\text{mg}/\text{kg}$ . Organic matter content ranges between 0.35 and 2.0 %.

### **11.2.3 Water Environment**

#### ***Surface Water Resources***

Noyal River is the prominent surface water resources present in the study area. One surface water sample, known as SW1 were collected from the Noyal River to assess the baseline water quality. Result for surface water sample in the Table 3.6 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

#### ***Ground Water Resources***

Dug wells and bore wells are the most common ground water abstraction structures in the area. Nine groundwater samples were collected from open wells and bore wells and analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order

to assess baseline quality of ground water. Results for ground water samples indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

### **11.3 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 October, 2022 varied from 15.91 to 31.30<sup>0</sup>C with the average of 24.71<sup>0</sup>C; in November, 2022 from 14.62 to 31.17<sup>0</sup>C with the average of 24.40<sup>0</sup>C; and in December, 2022 from 14.0 to 30.86<sup>0</sup>C with the average of 23.77<sup>0</sup>C. In October, 2022, relative humidity ranged from 49.25 to 100 % with the average of 85.83%; in November, 2022, from 51.31 to 100 % with the average of 85.08 %; and in December, 2022, from 51.44 to 100 % with the average of 85.67 %. The wind speed in October, 2022 varied from 0.07 to 6.50 m/s with the average of 2.55 m/s; in November, 2022 from 0.02 to 6.55 m/s with the average of 2.69 m/s; and in December, 2022 from 0.04 to 6.66 m/s with the average of 2.55 m/s. In October, 2022, wind direction varied from 0.07 to 359.70<sup>0</sup> with the average of 161.47<sup>0</sup>; in November, 2022, from 0.00 to 359.63<sup>0</sup> with the average of 145.59<sup>0</sup>; and in December, 2022, from 1.50 to 359.62<sup>0</sup> with the average of 110.36<sup>0</sup>. In October, 2022, surface pressure varied from 97.92 to 99.20 kPa with the average of 98.57 kPa; in November, 2022, from 97.98 to 99.26 kPa with the average of 98.64 kPa; and in December, 2022, from 98.06 to 99.26 kPa with the average of 98.74 kPa

#### ***Ambient Air Quality Results***

As per the monitoring data, PM<sub>10</sub> ranges from 32.9 µg/m<sup>3</sup> to 37.9 µg/m<sup>3</sup>; PM<sub>2.5</sub> from 16.1 µg/m<sup>3</sup> to 20.2 µg/m<sup>3</sup>; SO<sub>2</sub> from 6.7 µg/m<sup>3</sup> to 11 µg/m<sup>3</sup>; NO<sub>2</sub> from 13.9 µg/m<sup>3</sup> to 20.3 g/m<sup>3</sup>. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

### **11.4 NOISE ENVIRONMENT**

Noise level in core zone was 40.0 dB (A) Leq during day time and 33.9 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 32.6 to 42.2dB (A) Leq and during night time from 29.8 to 37.4dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

## 11.5 BIOLOGICAL ENVIRONMENT

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

## 11.6 SOCIO-ECONOMIC ENVIRONMENT

An attempt has been made to assess the impact of the proposed mining project on Socio-economic aspect of the study area. The various attributes that have been taken into account are population composition, employment generation, occupational shift, household income and consumption pattern. Implementation of the Proposed Mine Project will generate both direct and indirect employment. Besides, mining operation will be legally valid and it will bring income to the state exchequer. At present seasonal agriculture is the main occupation of the people as more than half of the population depends on it. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in mining-based activities rather in seasonal agriculture.

## 11.7 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT

The summary of anticipated adverse environmental impacts due to the proposed project and mitigation measures are given below:

**Table 11.1 Anticipated Impacts & Mitigation Measures**

Impact	Mitigation Measure
<b>Land Environment</b>	
<ul style="list-style-type: none"> <li>❖ Destruction of natural landscapes</li> <li>❖ Changes in soil characteristics</li> <li>❖ Soil erosion and slope instability</li> </ul>	<ul style="list-style-type: none"> <li>❖ Mining will be carried out as per approved mine plan in scientific and systematic way</li> <li>❖ Safety Zone or Buffer area will be maintained and will not be mined and instead plantation will be carried out in the safety zone</li> <li>❖ Barbed wire fencing will be provided all along the proposed mine boundary</li> <li>❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir</li> <li>❖ Construction of garland</li> <li>❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent</li> </ul>

	soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
<b>Water Environment</b>	
<ul style="list-style-type: none"> <li>❖ Decrease in aquifer recharge and increase in surface runoff;</li> <li>❖ Disturbance to land drainage, overload and erosion of watercourses;</li> <li>❖ Changes to the surface over which water flows;</li> <li>❖ Changes to surface and groundwater resources quantity and quality due to stream blockage and contamination by particulate matter or waste;</li> <li>❖ Contamination of aquifers due to removal of the natural filter medium.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area</li> <li>❖ De-silting will be carried out before and immediately after the monsoon season and the settling tank and drains will be cleaned weekly, especially during monsoons</li> <li>❖ Domestic sewage from site office &amp; urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system.</li> <li>❖ Tippers &amp; HEMM will be washed in a designated area and the washed water will be routed through drains to a settling tank, which has an oil &amp; grease trap, only clear water will be reused for greenbelt development.</li> </ul>
<b>Air Environment</b>	
<ul style="list-style-type: none"> <li>❖ Generation of Fugitive Dust</li> <li>❖ Dust will be generated mainly during excavation, loading &amp; unloading activities.</li> <li>❖ Gaseous pollutants will be generated mostly by the traffic.</li> <li>❖ Reduction in visibility due to dust plumes.</li> <li>❖ Coating of surfaces leading to annoyance and loss of amenity.</li> <li>❖ Physical and/or chemical contamination and corrosion.</li> <li>❖ Increase in the concentration of suspended particles in runoff water.</li> <li>❖ Coating of vegetation leading to reduced photosynthesis,</li> <li>❖ Inhibited growth, destroying of foliage, degradation of crops;</li> </ul>	<ul style="list-style-type: none"> <li>❖ Haul roads will be well maintained by sprinkling water twice a day</li> <li>❖ The access road will be cleaned and brushed to ensure that mud and dust deposits do not accumulate.</li> <li>❖ To ensure that dust and debris is minimised on the access road, all the tipper drivers will be instructed to use water spray system on all the tyres and spray water on the loaded material that is provided at the compound area before leaving the site</li> <li>❖ Speed restrictions will be imposed to avoid spillage of loaded materials upon the road and to reduce wear and tear of the road.</li> <li>❖ Weekly inspections of the condition of the access road by competent person employed, and immediate action will be taken to address any potholes or damage to the road surface.</li> </ul>

<ul style="list-style-type: none"> <li>❖ Increase in health hazards due to inhalation of dust.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Dust wetting agents can be mixed with the water applied to haul roads during hot, dry weather conditions to increase the duration that the road surface remains damp.</li> <li>❖ Personal Protective Equipment's will be provided to all workers</li> <li>❖ All drilling rods used will have dust suppression systems fitted which injects water into the hole.</li> <li>❖ Wet gunny bags will be used as a cover while drilling.</li> <li>❖ The blast zone will be kept damp by the application of water from the rain gun fitted to the water tanker prior to each blast to control any fugitive dust emissions that could arise from the surface during detonation.</li> <li>❖ A daily visual inspection shall be conducted by the site manager who will keep a daily log of all process operations and site activities and note any malfunctions which could lead to abnormal emissions from the quarry operations.</li> <li>❖ A site speed limit of 20 km/h will be set to minimise the potential for dust generation</li> <li>❖ Weekly maintenance programme to identify machinery due for maintenance, based on the number of hours it has been in operation.</li> <li>❖ Air filters are renewed after every 10<sup>0</sup> hours of use, unless otherwise indicated by an on-board computer system.</li> <li>❖ All site machineries &amp; tippers will be serviced and maintained 6 months once and drivers will report any defects immediately to the site manager to enable repairs to be carried out promptly.</li> </ul>
<b>Noise &amp; Vibration</b>	
<ul style="list-style-type: none"> <li>❖ Annoyance and deterioration of the quality of life;</li> <li>❖ Propelling of rocks fragments by blasting.</li> <li>❖ Shaking of buildings and people due to blasting;</li> </ul>	<ul style="list-style-type: none"> <li>❖ Usage of sharp drill bits while drilling which will help in reducing noise;</li> <li>❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;</li> </ul>

	<ul style="list-style-type: none"> <li>❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;</li> <li>❖ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;</li> <li>❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;</li> <li>❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;</li> <li>❖ Silencers / mufflers will be installed in all machineries;</li> <li>❖ Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;</li> <li>❖ 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.</li> </ul>
<b>Biological Environment</b>	
<ul style="list-style-type: none"> <li>❖ Direct impacts include land clearance and excavation causing destruction of flora and fauna and loss of habitats;</li> <li>❖ Indirect impacts include habitat degradation due to noise, dust, and human activity.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Only some common herbs, shrubs and grass will be cleared. So, there will be no impact on the biodiversity.</li> <li>❖ Green belt development with suitable species will enhance the biodiversity of the project area.</li> <li>❖ The core zone or buffer zone does not encompass any threatened flora or fauna species.</li> </ul>
<b>Socio-Economic Environment</b>	
<ul style="list-style-type: none"> <li>❖ Health and safety of workers and the general public;</li> <li>❖ Increase in traffic volumes and sizes of road vehicles;</li> <li>❖ Economic issues, including the increase in employment opportunities;</li> </ul>	<ul style="list-style-type: none"> <li>❖ The mining activity puts negligible change in the socio-economic profile.</li> <li>❖ Around 88 local workers will get employment opportunities along with periodical training to generate local skills.</li> <li>❖ New patterns of indirect employment/ income will generate.</li> <li>❖ Regular health check-up camp.</li> </ul>

	<ul style="list-style-type: none"> <li>❖ Assistance to schools and scholarship to children will be provided.</li> </ul>
<b>Occupational Health &amp; Safety</b>	
<ul style="list-style-type: none"> <li>❖ Exposure to Dust</li> <li>❖ Noise and Vibration Exposure</li> <li>❖ Physical Hazards</li> <li>❖ Respiratory hazards due to Dust exposure</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provision of rest shelters for mine workers with amenities like drinking water etc.</li> <li>❖ All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc.</li> <li>❖ Training of employees for use of safety appliances and first aid in vocational training centre.</li> <li>❖ Weekly maintenance and testing of all equipment as per manufacturers' guidelines.</li> <li>❖ Pre placement and Yearly Medical Examination of all workers by a medical Officer</li> <li>❖ First Aid facility will be provided at the mine site.</li> <li>❖ Close surveillance of the factors in working environment and work practices which may affect environment and worker's health by the mine's manager employed.</li> <li>❖ Working of mine as per approved mining plan and environmental plans</li> </ul>

## 11.8 ANALYSIS OF ALTERNATIVES

There are no alternatives suggested as the proposed mining area has the following advantages:

- ❖ The mineral deposit occurs in a non-forest area.
- ❖ There is no habitation within the applied lease area; hence no R & R issues exist.
- ❖ There is no river, stream, nallas and water bodies in the or passing through the applied mine lease areas.
- ❖ Availability of skilled, semi-skilled and unskilled workers in this region.
- ❖ All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are accessible.
- ❖ Mine connectivity through road and rail is good.
- ❖ The proposed mining operations do not intersect the ground water level. Hence, no impact on ground water environment.



## **11.9 ENVIRONMENTAL MONITORING PROGRAM**

Environmental Monitoring program will be conducted for various environmental components such as air quality, meteorology, water quality, water level monitoring, soil quality, noise level, vibration, and greenbelt as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB. For this environmental monitoring program, Rs 2,95,000 /- per annum will spent by the project proponent. 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 and 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.

## **11.10 ADDITIONAL STUDIES**

### ***Public Consultation***

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

### ***Risk Analysis & Disaster Management Plan***

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad vide Circular No.13 of 2002, dated 31<sup>st</sup> December, and 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 time table are recorded along with pinpointed responsibilities.

In the unlikely event that a consequence has occurred, disaster management kicks in. This includes instituting procedures pertaining to a number of issues such as communication, rescue, and rehabilitation. These are addressed in the disaster management plan. Both, the RA and DMP, are living documents and need to be updated whenever there are changes in operations, equipment, or procedures Assessment is all about preventing accidents and taking necessary steps to prevent it from happening.

The Disaster Management Plan (DMP) is a guide, giving general considerations, directions, and procedures for handling emergencies likely to arise from planned operations. The DMP has been prepared on the basis of the Risk Assessment and related findings covered in the report.

### ***Cumulative Impact Studies***

- The results on the cumulative impact of the four 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 four proposed and one existing projects is well below the permissible limit of Peak Particle Velocity of 8 mm/s.
- The 2 proposed projects will allocate Rs.10,00,000/- towards CER as recommended by SEAC.
- The 2 proposed projects will directly provide jobs to about 62 local people.
- The 2 proposed projects will plant about 2542 saplings in and around the lease area.
- The 2 proposed projects will add 189 PCU per day to the nearby roads.

### **11.11 PROJECT BENEFITS FOR PROPOSED PROJECT**

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

- ❖ Direct employment to 32 local people
- ❖ Rain water harvesting structures to augment the water availability for irrigation and plantation and ground water recharge
- ❖ 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 Programme
- ❖ Skill development & capacity building like vocational training
- ❖ Awareness program and community activities, like health camps, medical aids, sports & cultural activities, plantation etc.,
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Kuppam Village. CSR budget is allocated as 2.5% of the profit.
- ❖ Rs. 5,00,000 will be allocated for CER.

## **11.12 ENVIRONMENT MANAGEMENT PLAN**

In order to implement the environmental protection measures, an amount of **Rs. 2374000** as capital cost and recurring cost as **Rs. 1941662** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 5 years will be **Rs. 13102910**.

## **11.13 CONCLUSION**

EIA study was performed as per the approved ToR. Various environmental attributes were studied relating with aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and accordingly fund was allocated. The EMP has been dynamic, flexible and subject to periodic review. CER activities were identified and for its time bound implementation, fund has been allocated.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local community. The green belt development programme will help in increasing the green cover in the area. Thus, the proposed project is not likely to affect the environment or adjacent ecosystem in an adverse way.

The Mines Management will be responsible for the project 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 XII

### DISCLOSURES OF CONSULTANT

The Project Proponent, Mrs. P. Amaravathi 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](mailto:info.gtmsdpi@gmail.com)  
Web: [www.gtmsind.com](http://www.gtmsind.com)  
Phone: 04342 232777.

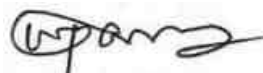
The accredited experts and associated members who were engaged in this EIA study are given below:

S.No	Name of the expert	In house/ Empanelled	Sector	Functional Area	Category
<b>Approved Functional Area Experts &amp; EC</b>					
1.	Dr. S. Karuppanan	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
<b>Approved Functional Area Associates</b>					
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

<b>Team Members</b>					
18.	G. Umamaheswaran	In-house, FAE	1(a)(i)	TM for EC	B
19.	M. Saravanan	In-house	1(a)(i)	TM for HG & LU	B
20	R. Revathy	In-house	1(a)(i)	TM for WP, SHW, & RHW	B
21	Dr. D.Kalaimurugan	In-house	1(a)(i)	TM for EB	B
22	R. Elavarasan	In-house	1(a)(i)	TM for EB, SC	B
23	K. Udayakumar	In-house	1(a)(i)	TM for SE	B
<b>Abbreviations</b>					
EC	EIA Coordinator	NV	Noise and Vibration		
FAE	Functional Area Expert	SE	Socio Economics		
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation		
TM	Team Member	SC	Soil conservation		
GEO	Geology	RH	Risk assessment and hazard management		
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes		
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes		
LU	Land Use	ISW	Industrial Solid Wastes		
AQ	Meteorology, air quality modelling, and prediction	HW	Hazardous Wastes		
EB	Ecology and bio-diversity	GIS	Geographical Information System		

**DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP**

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

Signature : 

Date : 16.02.2023

Name : **Dr. S. Karuppanan**




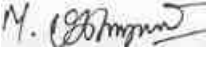

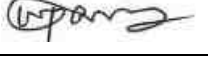



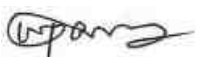

Designation : EIA Coordinator



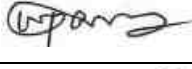




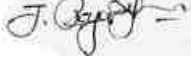

Name of the EIA Consultant Organization : Geo Technical Mining Solutions


Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for Mrs. P. Amaravathi rough stone quarry project with the extent of 2.84 ha situated in the cluster with the extent of **09.67.5** ha in Kuppam Village of Pugalur Taluk, Karur District of Tamil Nadu is true and correct to the best of our knowledge.







**List of Functional Area Experts Engaged in this Project**

S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	○ Identification of different sources of air pollution due to the proposed mine activity	J.N. Manikandan	
		○ Prediction of air pollution and propose mitigation measures / control measures	P.Venkatesh	
2	WP	○ Suggesting water treatment systems, drainage facilities ○ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.	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	<ul style="list-style-type: none"> <li>○ Collection of Baseline data of Flora and Fauna.</li> <li>○ Identification of species labelled as Rare, Endangered and threatened as per IUCN list.</li> <li>○ Impact of the project on flora and fauna.</li> <li>○ Suggesting species for greenbelt development.</li> </ul>	Dr.J. Rajarajeshwari	
7	RH	<ul style="list-style-type: none"> <li>○ Identification of hazards and hazardous substances</li> <li>○ Risks and consequences analysis</li> <li>○ Vulnerability assessment</li> <li>○ Preparation of Emergency Preparedness Plan</li> <li>○ Management plan for safety.</li> </ul>	J.N. Manikandan	
8	LU	<ul style="list-style-type: none"> <li>○ Construction of Land use Map</li> <li>○ Impact of project on surrounding land use</li> <li>○ Suggesting post closure sustainable land use and mitigative measures.</li> </ul>	Dr.S. Karuppannan	
			G.Uma Maheswaran	
			Dr.M. Vijay Prabhu	
9	NV	<ul style="list-style-type: none"> <li>○ Identify impacts due to noise and vibrations</li> <li>○ Suggesting appropriate mitigation measures for EMP.</li> </ul>	Dr.R. Arun Balaji	
10	AQ	<ul style="list-style-type: none"> <li>○ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD.</li> <li>○ Recommending mitigations measures for EMP</li> </ul>	Dr.R. Arun Balaji	
11	SC	<ul style="list-style-type: none"> <li>○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation</li> </ul>	Dr.J. Rajarajeshwari	
			Dr. D.Kalaimurugan	

12	SHW	<ul style="list-style-type: none"> <li>○ Identify source of generation of non-hazardous solid waste and hazardous waste.</li> <li>○ Suggesting measures for minimization of generation of waste and how it can be reused or recycled.</li> </ul>	J.N. Manikandan	
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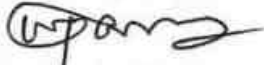
**List of Functional Area Associate Engaged in this Project**

S.No.	Name	Functional Area	Involvement	Signature
1	G. Prithviraj	LU, HG	<ul style="list-style-type: none"> <li>○ Site visit with FAE</li> <li>○ Provide inputs &amp; Assisting FAE for LU and HG</li> </ul>	
2	C. Kumaresan	NV	<ul style="list-style-type: none"> <li>○ Assistance to FAE in both primary and secondary data collection</li> <li>○ Assistance in noise prediction modelling</li> </ul>	
3	P. Vellaiyan	HG & GEO	<ul style="list-style-type: none"> <li>○ Field visits along with FAE</li> <li>○ Assistance to FAE in both primary and secondary data collection</li> </ul>	
4	S.Vasugi	AQ	<ul style="list-style-type: none"> <li>○ Field visits along with FAE</li> <li>○ Assistance to FAE in both primary and secondary data collection</li> </ul>	
5	P. Dhatchayini	AQ	<ul style="list-style-type: none"> <li>○ Site visit with FAE</li> <li>○ Assistance to FAE in collection of both primary and secondary data</li> </ul>	
6	V. Malavika	NV, SHW	<ul style="list-style-type: none"> <li>○ Site visit along with FAE</li> <li>○ Assistance in report preparation</li> </ul>	



**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 Mrs. P. Amaravathi rough stone quarry project with the extent of 2.84 ha located within the cluster of **9.67.5** ha in Kuppam Village of Pugalur Taluk, Karur District of Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date : 16.02.2023

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No & Issue Date : NABET/EIA/2124/SA 0184

Validity : Till 31.12.2023



THIRU. DEEPAK S. BILGI, I.F.S.  
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT  
ASSESSMENT AUTHORITY-TAMILNADU

3<sup>rd</sup> Floor, Panagal Maaligai,  
No.1, Jeenis Road, Saidapet,  
Chennai - 600 015.  
Phone No. 044-24359973  
Fax No. 044-24359975

**TERMS OF REFERENCE (ToR)**

**Lr No.SEIAA-TN/F.No.9306/ToR-1295/2022 Dated:27.10.2022.**

To

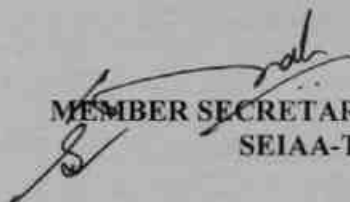
Tmt.P. Amaravathi  
W/o. Mr. Palanisamy  
D.No. 5/18, Ponniyagoundanpudur  
Punnamchatram Post  
Pugalur  
Karur- 639136

Sir / Madam,

**Sub:** SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone quarry lease over an extent of 2.84.0 Ha at S. F. Nos. 513/2C & 595/2(Part), Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu by TmtAmaravathi - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

**Ref:** 1. Online proposal No. SIA/TN/MIN/77887/2022, dated 08.06.2022.  
2. Your application submitted for Terms of Reference dated: 09.06.2022.  
3. Minutes of the 318<sup>th</sup> meeting of SEAC held on 07.10.2022.  
4. Minutes of the 563<sup>th</sup> meeting of Authority held on 27.10.2022.

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

  
MEMBER SECRETARY  
SEIAA-TN

The proponent, Tmt.P. Amaravathi has submitted application seeking Terms of Reference (ToR), in Form-I, Pre- Feasibility report for the Proposed Rough Stone quarry lease over an extent of 2.84.0 Ha at S. F. Nos. 513/2C & 595/2(Part), Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu.

**Discussion by SEAC and the Remarks:-**

Proposed Rough Stone quarry lease over an extent of 2.84.0 Ha at S. F. Nos. 513/2C & 595/2 (Part), Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu by Tmt. Amaravathi – For Terms of Reference.

(SIA/TN/MIN/77887/2022 Dated 08.06.2022)

The project proposal was earlier placed in the 301<sup>st</sup> meeting of SEAC held on 06.08.2022. During the meeting it was noted that the EIA Coordinator vide letter dated 04.08.2022 has explained his inability to attend this meeting in view of the ongoing NABET surveillance assessment and has requested for re-scheduling appraisal of this project. The Committee, accepting the request, has therefore decided to defer the proposal to a later date.

Now the proposal was placed for appraisal in this 318<sup>th</sup> meeting of SEAC held on 07.10.2022.

The SEAC noted the following:

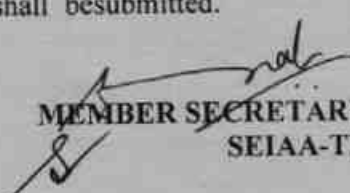
1. The project proponent, Tmt P. Amaravathi has applied seeking Terms of Reference for EIA study for the proposed Rough Stone quarry lease over an extent of 2.84.0 Ha at S. F. Nos. 513/2C & 595/2(Part), Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006, as amended.
3. As per the mining plan, the mining period is for 5 years. The production for 5 years not to exceed 2,72,149m<sup>3</sup> of Rough stone with an ultimate depth of 45m BGL.

Based on the presentation made by the proponent, SEAC recommended to grant of Terms of Reference (TOR) with Public Hearing subject to the following TORs in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The Proponent shall furnish the letter received from DFO concerned stating the proximity details of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from

MEMBER SECRETARY  
SEIAA-TN

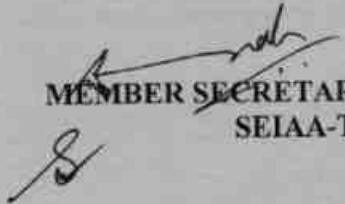
- the proposed site.
2. The Proponent shall carry out Bio diversity study through reputed institution and the same shall be included in EIA Report.
  3. Detailed survey of permanent structures located within 2 Km from the project site shall be included in the EIA report.
  4. As the proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed during the earlier operation period (2001-2006), the Project Proponent (PP) shall prepare and submit an 'Slope Stability Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.
  5. Concurrently, the PP shall furnish 'Slope stability action plan' during the time of EIA appraisal for ensuring the systematic working through proper design of benches incorporating the haul road with permitted gradient as the depth of the proposed quarry is exceeding 30 m.
  6. The Proponent 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, III Class mines manager appointed by the proponent.
  7. The Proponent 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.
  8. 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.
  9. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
    - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
    - b) Quantity of minerals mined out.
    - c) Highest production achieved in any one year
    - d) Detail of approved depth of mining.
    - e) Actual depth of the mining achieved earlier.
    - f) Name of the person already mined in that leases area.
    - g) If EC and CTO already obtained, the copy of the same shall be submitted.

  
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SEIAA-TN

- h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
10. 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).
11. The Proponent shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,
12. 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.
13. 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.
14. 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.
15. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
16. 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.
17. 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.

  
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18. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
19. 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.
20. 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.
21. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
22. 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.
23. Impact on local transport infrastructure due to the Project should be indicated.
24. 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.
25. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
26. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
27. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
28. The Proponent shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
29. 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.

  
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30. 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.
31. Taller/one year old Saplings raised in appropriate size of bags, preferably eco- friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
32. 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.
33. 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.
34. 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.
35. 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.
36. 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.
37. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
38. 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.
39. 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

  
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concerned DEE/TNPCB.

40. The Proponent 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.
41. 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.

**Appendix - I**  
**List of Native Trees Suggested for Planting**

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	வில்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon sweetenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Marjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவூளி
18	<i>Creteta adansoni</i>	Mavalingum	மாலைங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உவா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உவா
21	<i>Diospyro sebenum</i>	Karungali	கருங்காலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amplissima</i>	Kalitchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்புலகை
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Lannea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	வில்லா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	பிளிப்பா, பிளிப்பட்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	ஈச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

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40	<i>Premna mollissima</i>	Murnai	முன்னை
41	<i>Premna serratifolia</i>	Narumunnai	நறு முன்னை
42	<i>Premna tomentosa</i>	Malaipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வள்ளி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வெண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிப்புங்கள் சோபுக்காய்
50	<i>Saraca asoca</i>	Asoca	சுசோகா
51	<i>Strobilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தான கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாண்ட்ரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தான வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsuratrifoliata</i>	valsura	வால்சுரா
60	<i>Wrightia tinctoria</i>	Veppalai	வெப்பாளை
61	<i>Pithecellobium dulce</i>	Kodukkapuli	கொடுக்காபுளி

#### Discussion by SEIAA and the Remarks:-

The proposal was placed in the 563<sup>th</sup> meeting of the Authority held on 27.10.2022. The Authority noted that the subject was appraised in 318<sup>th</sup> SEAC meeting held on 07.10.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions.

1. Proponent shall comply with all the conditions imposed in the Precise area communication letter before applying for EC.
2. Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.

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3. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
4. 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.
5. 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.
6. 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.
7. 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.
8. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
9. The committee shall furnish the Emergency Management plan within the cluster.
10. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
11. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
  - a) Soil health & bio-diversity.
  - b) Climate change leading to Droughts, Floods etc.
  - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
  - d) Possibilities of water contamination and impact on aquatic ecosystem health.
  - e) Agriculture, Forestry & Traditional practices.
  - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
  - g) Bio-geochemical processes and its foot prints including environmental stress.
  - h) Sediment geochemistry in the surface streams.

  
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12. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
13. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.
14. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.
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. Impact on surrounding agricultural fields around the proposed mining Area.
17. Erosion Control measures.
18. Impact on soil flora & vegetation around the project site.
19. 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
25. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
26. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.

  
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27. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
28. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
29. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
30. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
31. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
32. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.
33. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
34. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
35. 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.
36. 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.
37. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
38. 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.

  
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39. 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.
40. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
41. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
42. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

#### **A. STANDARD TERMS OF REFERENCE**

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.

  
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- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should

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

  
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Authority).

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

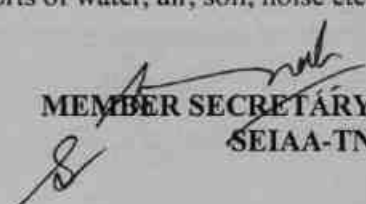
  
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- given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should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

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


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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.

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

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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2<sup>nd</sup> December, 2009, 18<sup>th</sup> March 2010,

  
MEMBER SECRETARY  
SEIAA-TN

28<sup>th</sup> May 2010, 28<sup>th</sup> June 2010, 31<sup>st</sup> December 2010 & 30<sup>th</sup> September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

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

  
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SEIAA-TN

**Copy to:**

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup>& 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Karur District.
7. Stock File.

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

To  
Tmt.P.Amaravathi,  
W/o.Mr.Palanisamy,  
Door No.5/18, Ponniyagoundanpudur,  
Punnamchatram Post,  
Pugalur Taluk, Karur District.

**Rc.No.266/Mines/2020, Dated:27.05.2022**

Sir,

Sub: Mines and Minerals - Minor Mineral - Karur District - Pugalur Taluk - Kuppam Village - Patta lands in S.F.Nos.513/2C(2.25.0 hect), 595/2(Part) 0.59.0 hect over an Extent 2.84.0 hectares - Quarry lease application for Rough Stone - Preferred by Tmt.P.Amaravathi - Mining Plan approved - requested for the details of Existing/ proposed/ abandoned quarries situated within 500 mts radial distance - furnished - Regarding.

- Ref: 1. Quarry lease application for Rough stone and Gravel preferred by Tmt.P.Amaravathi, W/o.Mr.Palanisamy, Door No.5/18, Ponniyagoundanpudur, Punnamchatram Post, Pugalur Taluk, Karur District, dated: 16.06.2020
2. Pricise Area Communication Notice Rc.No.266/Mines/2020, Dated: 21.10.2021
- 3 Mining Plan submitted by Tmt.P.Amaravathi, Letter dated: 02.11.2021.
4. The Deputy Director, Geology and Mining, Karur Mining Plan approved letter Rc.No. 266/Mines/2020, Dated:25.01.2022
5. Tmt.P.Amaravathi letter dated:20.05.2022.

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In the reference 1<sup>st</sup> cited, Tmt.P.Amaravathi have applied quarry lease for quarrying Rough stone in S.F.Nos.513/2C(2.25.0 hect), 595/2(Part) 0.59.0 hect over an Extent 2.84.0 hectares of patta lands in Kuppam Village, Pugalur Taluk, Karur District. The Deputy Director of Geology and Mining, Karur have issued precise area letter to the proposed lease area vide reference 2<sup>nd</sup> cited.

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

In the reference 5<sup>th</sup> cited, the applicant has requested the Deputy Director of Geology and Mining, Karur for the Details of Existing, Proposed and abandoned quarries situated within 500 meter radial distance from subject area and same has been furnished as follows:-

**I. Existing Quarries: -**

Sl No.	Name of the Owner	S.F.Nos.	Extent (hect)	Lease Period
	Tmt.P.Mallika, W/o.Periyasamy, O.No.10/2 N.No.10/2, Valluvar Nagar, 2 <sup>nd</sup> Street, Punjai Pugalur North village, Manmangalam Taluk, Karur District.	509/1 Part	<b>1.88.0</b>	07.2.2018 to 06.2.2023
	Tmt.P.Amaravathi W/o.Palanisamy Ponniyang goundanpudhur Punnam Village, Aravakurichi Taluk Karur District.	509/2A Part	<b>0.89.5</b>	18.08.2017 to 17.08.2022
	Thiru.S.Jeevanantham S/o. Samiappan 5/22 Ponniyagoundanpudhur Punnamchathiram Post Aravakurichi Taluk Karur District.	524/3A2 524/3B	<b>1.81.5</b>	05.07.2017 to 04.07.2022

**II. Proposed Area: -**

Sl No.	Name of the Owner	S.F.Nos.	Extent (hect)	Lease Period	Remarks
1	Tvl.NTC-Infra Projects Private Limited, Thiru.S.Muthusamy, Director, No.97(Old No.47), Lingichetti Street, Chennai.	494/2 (Part)	<b>2.24.5</b>	Applied Area	
2	Tmt.P.Amaravathi, W/o.Mr.Palanisamy, Door-No.5/18, Ponniyagoundanpudhur, Punnamchatram Post, Pugalur Taluk, Karur District.	513/2C 595/2B	<b>2.84.0</b>	Proposed Area	

**III. Lease Expired and abandoned Quarries : -**

Sl No.	Name of the Owner	S.F.Nos.	Extent (hect)	Lease Period	Remarks
1	R.Palanisamy S/o.Ramasamy Ponnayagoundanpudhur Punnamchadram Post, Aravakurichi	513/2C	<b>2.25.0</b>	12.8.2000 11.8.2005	---
2	P.Senthilkumar, S/o.Periyasamy, 9 Manicka Nagar, Velayuthampalayam Post, Karur.	513/2A 513/2B	<b>1.27.0</b>	24.08.2010 to 23.08.2015	---

*[Handwritten Signature]*  
Deputy Director,  
Geology and Mining,  
Karur.

*[Handwritten Date]*  
27/05/2022



# MINING PLAN

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

Patta- Ryotwari land/Open Cast-Semi Mechanized mining/ Non- Forest/Non-Captive Use-  
"B2" Category

Lease period 5 Years from the date of lease execution

(Prepared under rule 41 (3) (i) of Tamil Nadu Minor Mineral Concession Rules, 1959)

## LOCATION OF THE LEASE AREA

STATE : TAMILNADU  
DISTRICT : KARUR  
TALUK : PUGALUR  
VILLAGE : KUPPAM  
S.F.NO : 513/2C & 595/2(Part)  
EXTENT : 2.84.0HECTARES

## ADDRESS OF THE APPLICANT

**Mrs.P.Amaravathi**

W/o. Mr.Palanisamy,  
Door No.5/18, Ponniyagoundanpudur,  
Punnamchatram – Post, Pugalur Taluk, Karur District.  
Pin code – 639136

Mobile Number: +919842769319

## 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, Dharmapuri-636705

Ph: +91 9443937841, +917010076633

E-mail: [info.gtmsdpi@gmail.com](mailto:info.gtmsdpi@gmail.com),

Website: [www.gtmsind.com](http://www.gtmsind.com)

This Mining Plan is approved subject  
to the conditions/stipulations  
indicated in the Mining Plan approval  
Letter No: 266/Mines/2020  
Dated: 25/01/2022

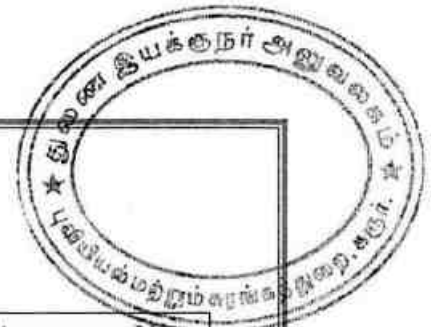
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P. அமராவதி



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1.	Copy of Precise area communication letter	I
2.	Copy of previous lease particulars	II
3.	Copy of <b>FMB</b> (Field Measurement book)	III
4.	Combined Sketch & Village map	IV
5.	Copy of "A" register	V
6.	Copy of computer chitta	VI
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8.	Photo copy of the proposed lease area	VIII
9.	Copy of Explosive License & Agreement from Explosive License holder	IX
10.	Copy of ID Proof of the lessee	X
11.	Copy of RQP Certificate	XI

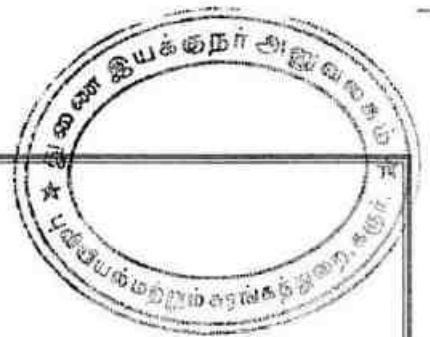
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S. No	Description	Plate No.	Scale
1	Key Map	I	Not to scale
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11.	Mine Layout Plan and Land Use Pattern	V	Plan: 1:1000
12.	Conceptual Plan	VI	Plan: 1:1000
13.	Conceptual Sections	VIA	<b>Sections:</b> HOR 1:1000 VER 1:500

P. அமரநாத்



**Mrs.P.Amaravathi,**  
W/o. Mr.Palanisamy,  
Door No.5/18, Ponniyagoundanpudur,  
Punnamchatram – Post, Pugalur Taluk, Karur District.  
Pincode – 639136

**CONSENT LETTER FROM THE APPLICANT**

The Mining Plan for rough stone quarry lease over an extent of 2.84.0Hectares in S.F.No's: 513/2C & 595/2 (Part) of Patta Land Kuppam Village, Pugalur Taluk, Karur 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 Deputy Director", Department of Geology and Mining, Karur District to make further correspondence regarding modifications of the Mining Plan with the said Recognized Qualified Person on this following address,

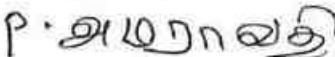
Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,  
RQP/MAS/263/2014/A  
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Ph: +91 9443937841  
E-mail: info.gtmsdpi@gmail.com,  
Website: [www.gtmsind.com](http://www.gtmsind.com)

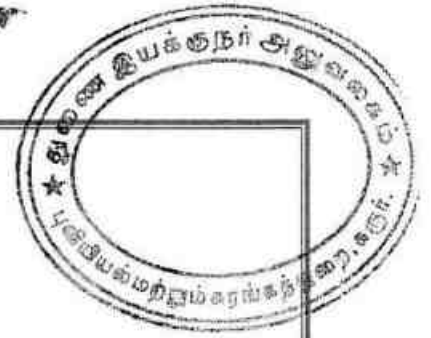
I hereby assure that all modifications so made in the Mining Plan by the Recognized Qualified Person may be deemed to made with my knowledge and consent and shall be acceptable and binding on me in all respects.

Place: Karur, TN

Date: 2.11.2021

  
Signature of the Applicant  
(P. AMARAVATHI)





**Mrs.P.Amaravathi,**  
W/o. Mr.Palanisamy,  
Door No.5/18, Ponniyagoundanpudur,  
Punnamchatram – Post, Pugalur Taluk, Karur District.  
Pincode – 639136

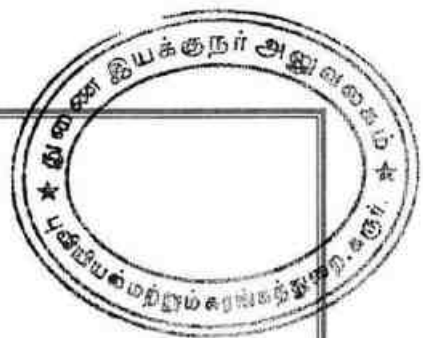
**DECLARATION**

The Mining Plan of rough stone quarry lease over an extent of 2.84.0Hectares of Patta Land in S.F.No's: 513/2C & 595/2 (Part) of Kuppam Village, Pugalur Taluk, Karur District and Tamil Nadu State have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Karur, TN  
Date: 2.11, 2021

*P. Amaravathi*  
Signature of the Applicant  
**(P. AMARAVATHI)**

*P. Amaravathi*



**Dr. S.KARUPPANNAN.M.Sc., Ph.D.,**  
 RQP/MAS/263/2014/A  
**GEO TECHNICAL MINING SOLUTIONS**  
 (NABET Accredited & ISO certified Company)  
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 Oddapatti, Collectorate Post office, Dharmapuri-636705  
 Ph: +91 9443937841.  
 E-mail: info.gtmsdpi@gmail.com,  
 Website: www.gtmsind.com

**CERTIFICATE**

This is to certify that the provisions of 19(1), 20 and 33 of Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Mining Plan for the grant of rough stone quarry lease over an extent of 2.84.0Hectares of Patta Land in S.F.No's: 513/2C & 595/2 (Part) of Kuppam Village, Pugalur Taluk, Karur District, TamilNadu State applied to **Mrs. P.Amaravathi**, Pugalur Taluk, Karur District.

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

Place: Dharmapuri, TN  
 Date: 30/10/2021

Signature of the Recognized Qualified Person



P. அமராவதி



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

RQP/MAS/263/2014/A

**GEO TECHNICAL MINING SOLUTIONS**

(NABET Accredited & ISO certified company)

No: 1/213-B, Ground Floor, Natesan Complex,  
Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841.

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

Website: www.gtmsind.com

**CERTIFICATE**

I certified that the preparation of Mining Plan for rough stone quarry lease over an extent of 2.84.0Hectares of Patta Land in S.F.No's: 513/2C & 595/2 (Part) of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State prepared to **Mrs. P.Amaravathi**, Pugalur Taluk, Karur District covers all the provisions of Mines Act, Rules and Regulations etc. made there in and if any specific permission is required the applicant will approach **"The Director General of Mines Safety"**, Chennai. The standards prescribed by DGMS regarding Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date: 30/10/2021

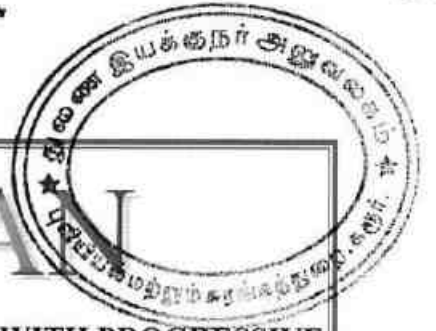
Signature of the Recognized Qualified Person

**Dr. S. KARUPPANNAN, M.Sc., Ph.D.**  
RQP/MAS/263/2014/A  
**GEO TECHNICAL MINING SOLUTIONS**  
1/213-B, Ground Floor, Natesan Complex,  
Oddapatti, Collectorate Post Office,  
Dharmapuri - 636 705, Tamil Nadu, India.  
E-mail : info.gtmsdpi@gmail.com  
website : www.gtmsind.com

P.அமராவதி



# MINING PLAN



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

Patta- Ryotwari land/Open Cast-Semi Mechanized mining/ Non- Forest/Non-Captive Use-  
"B2' Category

Lease period 5 Years from the date of lease execution

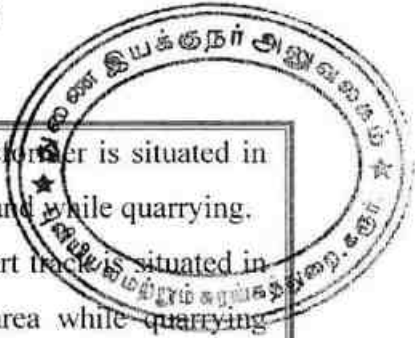
(Prepared under rule 41 (3) (i) of Tamil Nadu Minor Mineral Concession Rules, 1959)

### INTRODUCTORY NOTES:

- (1) **Introduction:** The Mining Plan with progressive quarry closure plan is prepared for **Mrs.P.Amaravathi** W/o. Mr. Palanisamy have residing at Door No.5/18, Ponniyagoundanpudur, Punnamchatram-Post, Pugalur Taluk, Karur District, Tamil Nadu State and filed with application for new proposal has submitted to the Deputy Director of Geology and Mining, Karur dated 13.03.2020 had requested to grant the quarry lease for rough stone, over an extent of 2.84.0 Hectares in S.F.No's.513/2C & 595/2 (Part) of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State.
- (2) **Lease area particulars:** The Deputy Director, Department of Geology and Mining, District Collectorate, Karur has directed to the applicant **Mrs.P.Amaravathi** through his precise area communication letter **Rc.No.266/Mines/2021, Dated 21.10.2021**, before execution of lease deed should submit the mining plan for approval and obtain Environmental Clearance from the competent authority of State Level Environment Impact Assessment Authority-TamilNadu (SEIAA) as per EIA Notification 2006 and S.O.141 (E) dated 15<sup>th</sup> January, 2016, 1<sup>st</sup> July 2016 & S.O.3977 (E), dated 14<sup>th</sup> August 2018 and MoEF & CC office memorandum vide letter no.L-11011/175/2018- IA-II (M) dated: 12<sup>th</sup> December, 2018. Accordingly, the mining plan prepared for a grant of quarrying of rough stone, over an extent of 2.84.0hectares in S.F.No's: 513/2C & 595/2 (Part) of Kuppam Village, Pugalur Taluk, Karur District, Tamil Nadu State for a period of 5 years under Rule 19(1), 20 and 33 of Tamil Nadu Minor Mineral Concession Rules, 1959 subject to the following conditions,

**This Mining Plan is approved subject to the conditions/stipulations indicated in the Mining Plan approval Letter No: 266/mine/2020 Dated: 25/01/2022**

P. Srinivasan



1. A 50meters safety distance should be left out for transformer is situated in S.F.No.513/2D towards eastern side of the applied area and while quarrying.
2. A 10meters safety distance should be left out for the cart track is situated in S.F.No.513/2D towards eastern side of the applied area while quarrying activities.
3. A safety distance should be left out nearby the applied area 7.5m and 10m of patta and poramboke lands as respectively while quarrying activities.
4. Quarrying operation to be carried out with controlled blasting techniques viz, hand-hack-Hammer, Driller for drilling shot holes and use mild explosives substance for blasting the rocks.
5. To ensure the safety of quarry workers as per Metalliferous Mines acts should formed wide, safe benches. Inside the quarry in safe manner vehicles come and go, do the quarry work ensuring the safety of the quarry workers.
6. In before execution of lease deed should submit the mining plan for approval, obtain Environmental Clearance from the competent authority of State Level Environment Impact Assessment Authority-Tamil Nadu (SEIAA) and no objection certificate (NOC) for Tamilnadu Pollution Control Board (TNPCB).

(3) **The previous lease particulars:** The proposed lease area in S.F.No's. 509/2A, 513/2C and 570/2 was previously granted for quarrying of rough stone, over an extent of 4.83.0hectares in favour of Mr.R.Palanisamy S/o. Mr.Ramasamy by District Collector, Karur Proceedings vide **Roc.No.293/Mines/2011, dated 05.07.2012**, the lease was executed on 05.07.2012 to 04.07.2017 for a period of 5years and this lease was cancelled letter vide **Roc.No.340/Mines/2017, dated 25.03.2017**. There are three existing pit levels noticed within the proposed lease area an average pit dimension is as under,

Pit levels	Length(m)	Width(m)	Depth(m)
1	140m	21m	5m
2	38m	86m	10m
3	112m	69m	15m

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- (4) **Preparation and Submission of Mining Plan:** The Mining Plan with progressive quarry mine closure has been prepared under rule 41 (1) (i) and submission under rule 41, 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for a mining lease as per conditions mentioned in the precise area communication letter **Re.No.266/ Mines/2021, dated 21.10.2021.**
- (5) **Geological resources and Mineable Reserves:** Geological resource of rough stone is estimated as **986352Cbm** and topsoil is **13668Cbm**. Mineable reserves of rough stone are estimated about **272149Cbm** and topsoil is **8506Cbm** as respectively up to depth of 45m below ground level (0-2m topsoil + 3-45m rough stone) (R.L.175-130m) (Refer Plate No's.VI & VIA) after leaving necessary safety distance from the lease boundary.
- (6) **Proposed Production Schedule:** Total proposed production of rough stone is about **272149Cbm** and topsoil is **8506Cbm**. Topsoil is available in 0 to 2m thickness. The next layer in the lease area is covered by roughstone present upto indefinite depth. This mining plan is allowed upto a depth of 45m below ground level (R.L.175-130m) (Refer Plate No's. IV & IVA) for the 5 years plan period. Average production shall be **54430Cbm** of rough stone per year.
- (7) **Environmental Sensitivity of the proposed lease area: -**
  - i). **Interstate boundary:** There is no interstate boundary around 10Km radius periphery of proposed lease area.
  - ii). **Wildlife Protection Act, 1972:** There is no wild life sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.
  - iii). **Indian Reserve Forest Act, 1980:** No Reserved Forest within the 5Km radius.
  - iv). **CRZ Notification, 1991:** There is no Sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 1991.
- (8) **Environmental measures to be adopted shall be during the ongoing activity period,**
  - i) Wet drilling method is to be adopted to control dust emissions.
  - ii) Roads shall be graded to mitigate the dust emission
  - iii) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.

P. அழகராஜ்



- iv) Dust Control at source while drilling and blasting,  
 v) Dust suppression at loading point and transport haul roads,  
 vi) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF  
 vii) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

#### 1.0 GENERAL:

a.	Name of the Applicant	:	<b>Mrs.P.Amaravathi</b>
	Applicant address	:	<b>Mrs.P.Amaravathi</b> W/o. Mr.Palanisamy, Door No.5/18, Ponniyagoundanpudur, Punnamchstram – Post, Pugalur Taluk,
	District	:	Karur
	State	:	Tamil Nadu
	Pin code	:	639136
	Phone	:	+919842769319
	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
d.	Period for which the mining lease granted /renewed/ proposed to be applied	:	The precise area has been communicated to the applicant for quarrying period of five years.
e.	Name of the RQP preparing the Mining Plan	:	<b>Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,</b>
	Address	:	<b>GEO TECHNICAL MINING SOLUTIONS</b> (A NABET Accredited & ISO Certified Company) No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti,

P.அமரவதி



	Collectorate Post office, Dhanapuri-636705 Website: www.gtmsind.com
Phone	: +91 9443937841, 701007663
Fax	: Nil
e-mail	: info.gtmsdpi@gmail.com
Telex	: Nil
Registration Number	: RQP/MAS/263/2014/A
Date of grant/renewal	: 16.12.2014
Valid upto	: 15.12.2024
f. Name of the prospecting agency	: The commissioner, Department of Geology and Mining
Address	: Department of Geology and Mining, Thiru Ve Ka Industrial Estate, Guindy, Chennai.
Phone	: 044-22501874
g. Reference No. and date of consent letter from the state government	: The Precise area communication letter was received from the Deputy Director, Department of Geology and Mining, District Collectorate, Karur Vide <b>Rc.No.266/Mines/2021 dated 21.10.2021.</b>

**2.0 LOCATION AND ACCESSIBILITY:**

a. Details of the Area:	: Refer plate no: IA & IB
District & State	: Karur, Tamil Nadu
Taluk	: Pugalur
Village	: Kuppam
Khasra No./ Plot No./ Block Range/ Felling Series etc.	: 513/2C & 595/2 (Part)
Lease area (hectares)	: 2.84.0Hect
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)	: No, forest is involved. This is recorded patta land.
Ownership / Occupancy	: This is a patta land S.F.No. 513/2C & 595/2 (Part) is registered on the name of Mr.Palanisamy S/o. Ramasamy Gounder vide Patta No.1380. (Ref. Annex.no: V). Hence, the applicant

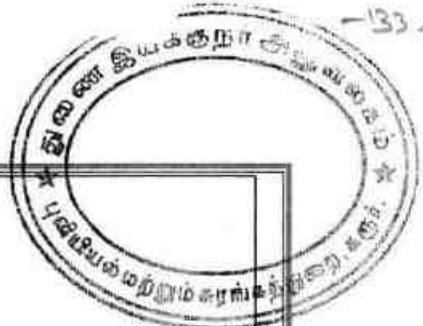
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	has got surface right for the area. (Ref. Annex. No:VI)																																							
Existence of Public Road / Railway line if any nearby and approximate distance	<ul style="list-style-type: none"> <li>✓ Exploited materials shall be transported through the village road on the eastern side of the lease area.</li> <li>✓ There is a SH-332 is situated on the western side about 2.4km which is connecting K.Paramathi – Noyyal and SH-84 road is situated about 3.33km away from the eastern side which is connecting to Karur – Noyyal.</li> <li>✓ No NH road or railway line situated around 5km radius.</li> </ul>																																							
Toposheet No. with latitude and longitude	Toposheet No. <b>58 E/16</b> Latitude : From 11°0'10.90"N to 11° 0'21.89"N Longitude: From 77°56'34.71"E to 77°56'38.75"E																																							
Geo-Coordinates of the lease boundary:																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>PILLAR I'D</th> <th>LATITUDE (mN)</th> <th>LONGITUDE (mE)</th> </tr> </thead> <tbody> <tr><td>1</td><td>11° 0'21.29"N</td><td>77°56'38.69"E</td></tr> <tr><td>2</td><td>11° 0'19.38"N</td><td>77°56'38.75"E</td></tr> <tr><td>3</td><td>11° 0'14.57"N</td><td>77°56'38.37"E</td></tr> <tr><td>4</td><td>11° 0'14.50"N</td><td>77°56'38.06"E</td></tr> <tr><td>5</td><td>11° 0'14.59"N</td><td>77°56'37.58"E</td></tr> <tr><td>6</td><td>11° 0'10.90"N</td><td>77°56'37.03"E</td></tr> <tr><td>7</td><td>11° 0'11.12"N</td><td>77°56'35.31"E</td></tr> <tr><td>8</td><td>11° 0'14.88"N</td><td>77°56'36.03"E</td></tr> <tr><td>9</td><td>11° 0'15.06"N</td><td>77°56'35.06"E</td></tr> <tr><td>10</td><td>11° 0'17.48"N</td><td>77°56'34.71"E</td></tr> <tr><td>11</td><td>11° 0'18.85"N</td><td>77°56'35.10"E</td></tr> <tr><td>12</td><td>11° 0'21.89"N</td><td>77°56'35.73"E</td></tr> </tbody> </table>		PILLAR I'D	LATITUDE (mN)	LONGITUDE (mE)	1	11° 0'21.29"N	77°56'38.69"E	2	11° 0'19.38"N	77°56'38.75"E	3	11° 0'14.57"N	77°56'38.37"E	4	11° 0'14.50"N	77°56'38.06"E	5	11° 0'14.59"N	77°56'37.58"E	6	11° 0'10.90"N	77°56'37.03"E	7	11° 0'11.12"N	77°56'35.31"E	8	11° 0'14.88"N	77°56'36.03"E	9	11° 0'15.06"N	77°56'35.06"E	10	11° 0'17.48"N	77°56'34.71"E	11	11° 0'18.85"N	77°56'35.10"E	12	11° 0'21.89"N	77°56'35.73"E
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Land use pattern (Forest, Agricultural, Grazing, Barren etc.)	It is a existing quarry and partly virgin land																																							
b) Attach a general location and vicinity map showing area boundaries and existing and proposed access routes. It is preferred that the area to be	Refer plate no-IA & IB																																							

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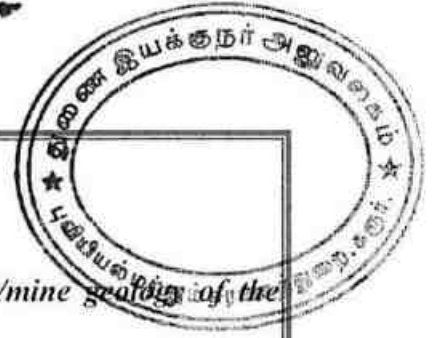


marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.

**i) INFRASTRUCTURE AND COMMUNICATION:**

a.	Nearest post office	:	Postal office - Kuppam - 2.14Km - NW
b.	Nearest police station	:	Pugalur- 9.5km - NE side of the lease area.
c.	Nearest fire station	:	Pugalur- 10.0km - NE side of the lease area.
d.	Nearest Medical facility	:	Punnamchittram- 4.0km East side
e.	Nearest school	:	Kuppam - 2.14Km - NW side of the lease area
f.	Nearest Rail Head	:	Pugalur - 9.5km-NE Side
g.	Nearest port facility	:	Thuthookodi port - 208km- South Side
h.	Nearest Airport	:	Coimbatore Airport - 70km-NW Side
i.	Nearest DSP office	:	Karur - 15km - SE Side
j.	Nearest Villages	:	i. North - Kuntanipalayam - 2.5km ii. South - Andi Sangilipalayam - 1.15km iii. East - Pudurpatti - 1.2km iv. West - Kuppam - 2.14km

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**PART - A**

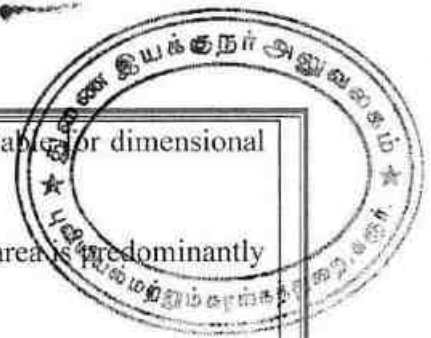
**3.0 GEOLOGY AND MINERAL RESERVES:**

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

(i)	Topography	: The lease area is exhibits plain topography which is 0-2meters above ground level and altitude of 175m maximum and minimum 173m from the MSL. The area is sloping towards northeastern side. The proposed area partly fresh and partly exploited with reached about 0-15m below the ground level.
(ii)	<p>General Geology of the District:</p> <p><b>a) Geology:</b></p> <p>The Karur District forms part of the Archean complex of peninsular gneiss. The general rock types of this area are Biotite gneiss. Karur District is blessed with good reserves of Crystalline Limestone known as "Palayam belt" in Varavanai, Thennilai, Gudalur etc., villages in Kulithalai Taluk and the occurrences of good quality of pegmatite veins constituting with glassy Quartz and potash Feldspar in lensoid patches in Nagampalli and Pungambadi areas in Aravakurichi Taluk. The major mineral such as Limestone, Quartz and Feldspar and Magnesite and Dunite are exploited in Karur District and utilized in the mineral based industries.</p> <p>The Granite Gneiss rocks are found to occur in K.Paramathi, Athur, Thennilai, Punnam, Kuppam, Munnur, Karudayampalayam, Anjur villages in Karur and Aravakurichi Taluk are exploited to produce building materials and road metal (Jelly) and over burden soil appear as gray to reddish in colour called as gravel. The commercially known "Coloumbo Zubrana" the unique type in the Multicoloured Granite / Granite Gneiss category is occurring in Thogamalai, Naganur and Kazhugur Villages in Kulithalai Taluk. These rock type belong to minor mineral category. The arrangement of alternate layers of felsic and mafic minerals in linear pattern and exhibits wavy pattern in the rock and giving very good structure for the rock type. The well-developed gneissic pattern with linear arrangement, the rock type have attracted the granite market and found to be suitable for the exploitation of granite blocks. But in this area the banded gneissic</p>	

P. அருவதி





rock has many fractures and foliation in it. So, this is not viable for dimensional stone.

**b) Soils:** The analysis of the soil type reveals that the study area is predominantly covered by thin red soil is a mixture of sand and silt.

**c) Lineaments:** A lineament may be a fault, fracture, master joint, a long and linear geological formation, vegetation served may be the result of faulting and fracturing and hence it is inferred that they are the areas and zones of increased porosity and permeability in hard rock areas. The data have been checked by field studies and Survey of India (GSI) topographical maps at the 1:1,00,000 scales.

Age	Group	Rock Formation
Recent to Sub recent	---	Topsoil (1-2m thick),
Proterozoic	Acid intrusives	Pink augen gneiss and migmatite, Pink medium grained granite/ pegmatoidal granite
Archaean	Charnockite Group	Pyroxene Granulite, Charnockite (acid to intermediate) Calc granulite/ Crystalline limestone Garnetiferous sillimanite gneiss/ Quartzite

(iii) Local / Mine Geology of The Mineral Deposit:

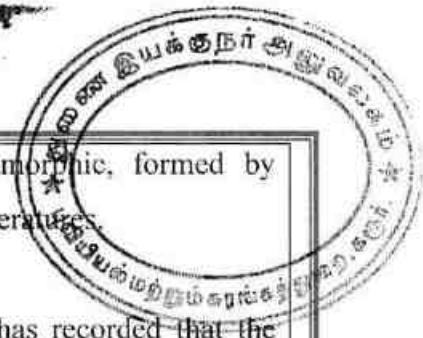
**a) Topography of the proposed lease area:**

The lease area is exhibits plain topography which is 0-2meters above ground level and altitude of 175m maximum and minimum 173m from the MSL. The area is sloping towards northeastern side and the proposed area partly fresh and partly exploited with reached about 0-15m bgl. The Charnockite Group comprises pyroxene granulite and Charnockite. The pyroxene granulite is dark grey, medium grained granulitic rock with typical salt and pepper texture, seen on the weathered surface. It consists of diopside, hypersthene, plagioclase, hornblende, biotite and quartz. Charnockite is the predominant rock in the area. It is grey, medium to coarse grained, greasy looking with foliation seen prominently on the weathered surface.

**b) Mode of origin:**

The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown,

P. Anand



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:**

General characteristics of the rocks of this series has recorded that the rocks are in general bluish gray or darkish in colour and extremely fresh in appearance with an even grained granular structure.

**d) Chemical composition of rocks:**

The compositional characteristics of coexisting orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulites and gneisses. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks. **Order of superposition of the proposed lease area,**

Age	Group	Rock Formation
Recent to Sub recent	----	Red Soil (0-2m thick)
Archaean	Charnockite Group	Charnockite.

(iv)	Drainage Pattern	:	There is no major river located within a radius of 500m radius. The drainage is dendritic in nature.
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(b) *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:*

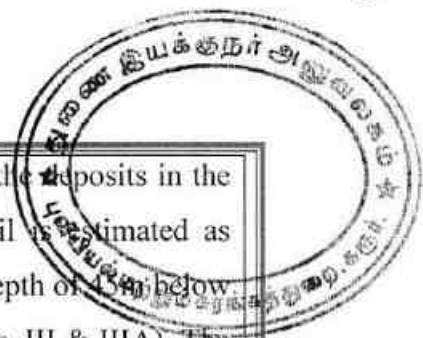
a.	Present status:	:	The RQP examined the surface features during survey. The proposed lease area in S.F.No's. 509/2A, 513/2C and 570/2 was previously granted for quarrying of rough stone, over an extent of 4.83.0hectares in favour of Mr.R.Palanisamy S/o. Mr.Ramasamy by District Collector, Karur Proceedings vide <b>Roc.No.293/Mines/2011, dated 05.07.2012</b> , the lease was executed on 05.07.2012 to 04.07.2017 for a period of 5years and this lease was cancelled letter vide <b>Roc.No.340/Mines/ 2017, dated 25.03.2017</b> . There are three existing pit levels noticed within the proposed lease area an average
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P. அலகுவதி



		pit dimensions are Pit level-1 is L40m X W21m X D5m, Pit level-2 is L38m X W8m X D10m and Pit level-3 is L112m X W69m X D15m. No exploration carried out as previously.																															
	b. Surface Plan	: Surface plan is prepared as 1: 1000 Scales with ground level at various places in grid pattern with various lithological considerations of the surface.																															
(c)	Geological sections should be prepared at suitable intervals on a scale of 1: 1000 / 1: 2000:	: Geological plan is prepared in 1: 1000 scale shown in grid pattern with various lithological factors like length, width and depth and sections are prepared along the boundary perpendicular to the strike of the rock with proper scale of 1:1000 in horizontal axis, 1:500 in vertical axis. It is given in plate no-III A																															
(d)	<b><i>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: -</i></b>																																
	<table border="1"> <thead> <tr> <th>Year</th> <th>No.of boreholes</th> <th>Total meterage</th> <th>No.of Pits and Dimensions</th> <th>No.of Trenches and Dimensions</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>Second</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>Third</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>Fourth</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>Fifth</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> </tbody> </table>			Year	No.of boreholes	Total meterage	No.of Pits and Dimensions	No.of Trenches and Dimensions	First	N.A	---	---	N.A	Second	N.A	---	---	N.A	Third	N.A	---	---	N.A	Fourth	N.A	---	---	N.A	Fifth	N.A	---	---	N.A
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Fifth	N.A	---	---	N.A																													
	No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.																																
(e)	<b><i>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.</i></b>																																
	The geological resources were computed by cross section method with respect to the boundaries of the lease area. We divide the lease area into two cross sections by make a regular shape and obtain the maximum volume of material clutched from the lease area. The two cross sections are XY-AB and XY-CD. XY represent the																																

P. அனந்தசுந்தரன்



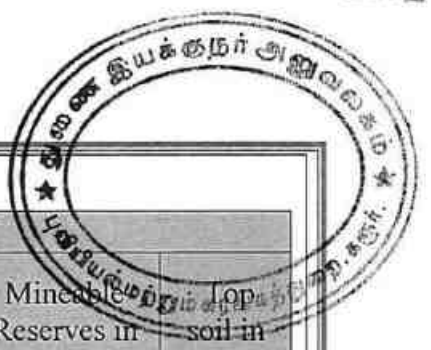
horizontal lines and AB, CD are the vertical lines which finalize the deposits in the irregular shape of the lease area. Geological resource of topsoil is estimated as **13668Cbm** and rough stone is estimated as **986352Cbm** up to a depth of 15m below ground level and its R.L lies between 175-130m. (Refer Plate No's. III & IIIA). The topsoil obtained up to depth of 0-2m average (R.L.175-173m) and rough stone signs from 3.0m to 45m (R.L.173-130m) depth below the ground level.

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Geological Resources in CBM	Top soil in CBM
XY-AB	I	54	17	2	1836	.....	1836
	I	56	18	3	3024	3024	
	II	89	39	5	17355	17355	.....
	III	147	51	5	37485	37485	.....
	IV	210	107	5	112350	112350	.....
	V	210	107	5	112350	112350	.....
	VI	210	107	5	112350	112350	.....
	VII	210	107	5	112350	112350	.....
	VIII	210	107	5	112350	112350	.....
IX	210	107	5	112350	112350	.....	
<b>TOTAL</b>					<b>733800</b>	<b>731964</b>	<b>1836</b>
XY-CD	I	116	51	2	11832	.....	11832
	I	116	51	3	17748	17748	
	II	116	51	5	29580	29580	.....
	III	116	51	5	29580	29580	.....
	IV	116	51	5	29580	29580	.....
	V	116	51	5	29580	29580	.....
	VI	116	51	5	29580	29580	.....
	VII	116	51	5	29580	29580	.....
	VIII	116	51	5	29580	29580	.....
IX	116	51	5	29580	29580	.....	
<b>TOTAL</b>					<b>266220</b>	<b>254388</b>	<b>11832</b>
<b>GRAND TOTAL</b>					<b>1000020</b>	<b>986352</b>	<b>13668</b>

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

The Mineable reserves of topsoil is estimated as **8506Cbm** and rough stone is estimated as **272149Cbm**. Deducting the reserves blocked under benches from the total geological resources and the commercially viable rough stone has been prepared on 1: 1000 scale and sections are prepared in scale of 1:1000 in horizontal

P. சமீராவதி



axis, 1:500 in vertical axis (Plate No's. VI & VIA).

MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Mineable Reserves in CBM	Top soil in CBM
XY-AB	I	47	7	2	658	.....	658
	I	48	8	3	1152	1152	
	II	77	24	5	9240	9240	.....
	III	129	31	5	19995	19995	.....
	IV	173	70	5	60550	60550	.....
	V	163	60	5	48900	48900	.....
	VI	153	50	5	38250	38250	.....
	VII	143	40	5	28600	28600	.....
	VIII	133	30	5	19950	19950	.....
	IX	123	20	5	12300	12300	.....
<b>TOTAL</b>					<b>239595</b>	<b>238937</b>	<b>658</b>
XY-CD	I	109	36	2	7848	.....	7848
	I	109	36	3	11772	11772	
	II	104	26	5	13520	13520	.....
	III	99	16	5	7920	7920	.....
<b>TOTAL</b>					<b>41060</b>	<b>33212</b>	<b>7848</b>
<b>GRAND TOTAL</b>					<b>280655</b>	<b>272149</b>	<b>8506</b>

**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 proposed area partly fresh and partly exploited with reached about 15m bgl. The mining operation is open-cost, semi-machined mining methods are adopted and on single shift basis only. Under the regulation 106 (2) (b) 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.
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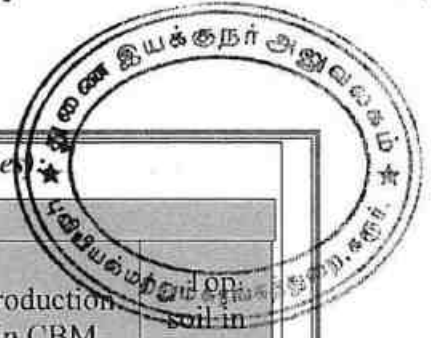
b. Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.

Total proposed production of rough stone is about 272149Cbm and topsoil is 8506Cbm. Topsoil is available in 0 to 2m thickness. The next layer in the lease area is covered by rough stone present up to indefinite depth. This mining plan is allowed up to a depth of 3-45m below ground level (R.L.173-130m) (Refer Plate No's. IV & IVA) for the 5 years plan period.

Year	Pit No.(s)	Topsoil/Overburden (Cbm)	ROM (Cbm)	Saleable rough stone (Cbm) @ 100%	Rough stone rejects(Cbm)	Sub grade/ Weathered rock in (Cbm)	Saleable Gravel (Cbm)	Rough stone to topsoil ratio
First	I	8506	65905	57399	...	...	...	1 : 0.14
Second	I	---	56950	56950	...	...	...	....
Third	I	---	58700	58700	...	...	...	....
Fourth	I	---	50850	50850	...	...	...	....
Fifth	I	---	48250	48250	...	...	...	....
<b>Total</b>	---	<b>8506</b>	<b>280655</b>	<b>272149</b>	...	...	...	....

c. Composite plans and Year wise sections (In case of 'A' class mines): : Not applicable

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*Composite plans and Year wise sections (In case of 'B' class mines)*

YEARWISE PRODUCTIONS									
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Production in CBM	Top soil in CBM	
XY-AB	I	I	47	7	2	658	.....	658	
		I	48	8	3	1152	1152	....	
		II	77	24	5	9240	9240	.....	
		III	89	31	5	13795	13795	.....	
XY-CD		I	I	109	36	2	7848	.....	7848
		I	I	109	36	3	11772	11772	
		II	104	26	5	13520	13520	.....	
		III	99	16	5	7920	7920	.....	
<b>TOTAL</b>						<b>65905</b>	<b>57399</b>	<b>8506</b>	
XY-AB	II	III	40	31	5	6200	6200	.....	
		IV	145	70	5	50750	50750	.....	
	<b>TOTAL</b>						<b>56950</b>	<b>56950</b>	.....
	III	IV	28	70	5	9800	9800	.....	
		V	163	60	5	48900	48900	.....	
	<b>TOTAL</b>						<b>58700</b>	<b>58700</b>	.....
	IV	VI	153	50	5	38250	38250	.....	
		VII	63	40	5	12600	12600	.....	
	<b>TOTAL</b>						<b>50850</b>	<b>50850</b>	.....
	V	VII	80	40	5	16000	16000	.....	
		VIII	133	30	5	19950	19950	.....	
		IX	123	20	5	12300	12300	.....	
<b>TOTAL</b>						<b>48250</b>	<b>48250</b>	.....	
<b>GRAND TOTAL</b>						<b>280655</b>	<b>272149</b>	<b>8506</b>	

d. Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc. : The proposed area is partly fresh and partly exploited area. (Refer Plate No: III)

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:*

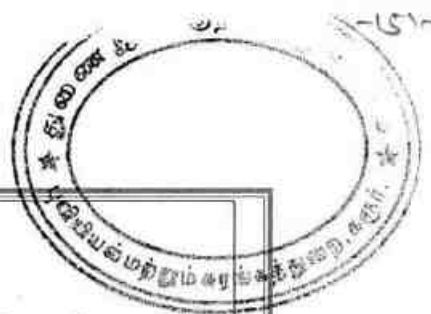
At this rate of production, the expected life of quarry is calculated for periods and production details are given as below: -

**Rough stone:**

Mineable reserves of rough stone = 272149Cbm

Five years production = 272149Cbm

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Monthly production of rough stone = 4536Cbm  
 Life of Mine (272149/4536) = 5 years

The regular working of the quarry and its production depends upon the demand from the market. The market is always fluctuating and flexible one. Accordingly, there is a possibility to increase or decrease the production.

f. *Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and up to 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: : Exploration program is not proposed in this area. It's an existing quarry lease and massive Charnockites homogeneous parent rock. Hence, exploration proposal is not required to this mining project.

ii) Whether ultimate pit limit has been determined and demarcated on surface and geological plan:-

The ultimate pit limit has been determined and demarcated in the conceptual mining plan

ULTIMATE PIT LIMIT XY-AB					
Section	Bench R.L	Overburden/ Mineral	length in (m)	Width in (m)	Depth in (m)
XY-AB	R.L.175-173m	Topsoil	47	7	2
	R.L.173-170m	Rough stone	48	8	3
	R.L.170-165m	Rough stone	77	24	5
	R.L.165-160m	Rough stone	129	31	5
	R.L.160-155m	Rough stone	173	70	5
	R.L.155-150m	Rough stone	163	60	5
	R.L.150-145m	Rough stone	153	50	5
	R.L.145-140m	Rough stone	143	40	5
	R.L.140-135m	Rough stone	133	30	5
	R.L.135-130m	Rough stone	123	20	5
<b>Total depth</b>					<b>45m</b>

ULTIMATE PIT LIMIT XY-CD					
Section	Bench R.L	Overburden/ Mineral	length in (m)	Width in (m)	Depth in (m)
XY-AB	R.L.175-173m	Topsoil	109	36	2
	R.L.173-170m	Rough stone	109	36	3
	R.L.170-165m	Rough stone	104	26	5
	R.L.165-160m	Rough stone	99	16	5
<b>Total depth</b>					<b>15m</b>

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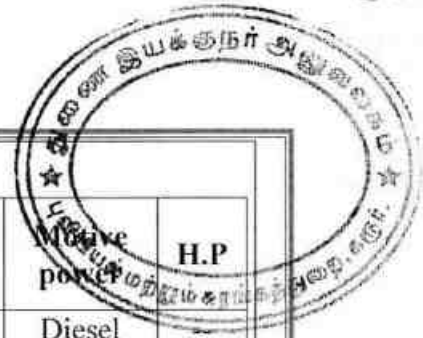




iii)	Whether the site for disposal of waste rock or an un-saleable material have/ has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity:-	: There is no mineral waste will be proposed in this lease area. The topsoil shall be removed up to depth of 2.0m (8506Cbm) and stacked for earth bund of safety area-for afforestation and to prevent inherent entry of cattle's and human as per rules 119 (1), Metalliferous Mines Regulations, 1961. If rough stone may be unsold will be keep within the lease boundary.
iv)	Whether back filling of pits after recovery of mineral up to techno-economically feasible depth envisaged. If so, describe the broad features of the proposal:-	: There is no immediate proposal for back filling as the charnockite's deposit is still persists at deeper level.
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. <b>Open cast Mines:</b>		
	i).Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: The proposed area partly fresh lease covered with topsoil deposit. The mining operation is open-cost, semi-machined methods of mining are adopted and on single shift basis only. Under the regulation 106 (2) (b) 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

P. S. Narayana





equipment's are given below.

Type	No s	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P
Jack Hammer	4	32 mm	Hand held	---	Diesel	
Compressor	1	---	Air	---	Diesel	--

**(2) Loading Equipment:**

Hydraulic excavator (0.90m<sup>3</sup> capacities) and attached with rock breaker shall utilized for internal transport sizeable rough stone lumps and deliver to the consumer area.

**(3) Haulage and Transport Equipment**

(a) Haulage within the mining leasehold:

Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	4	15 M.T	---	Diesel	--

**Whether the dumpers are fitted with exhaust conditioner should be indicated:**

The dumpers are not used in this quarry; hence it's a small B2 category quarry.

(b) Transport from mine head to the destination : 15 M.T capacity of tipper will be used for transport rough stone from the mine head to needy customer.

c. Describe briefly the transport system (please specify) : The hired tipper and excavator will be used for carrying out day to day mining activities on the day basis or hourly basis as per market scenario.

d. Ore transported by : own trucks / hired trucks : Hired trucks

e. Main destination to which ore is transported (giving to and from distance) : The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc

f. Details of hauling / transport equipment:

Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	2	15 M.T	---	Diesel	--

**(4). Miscellaneous:**

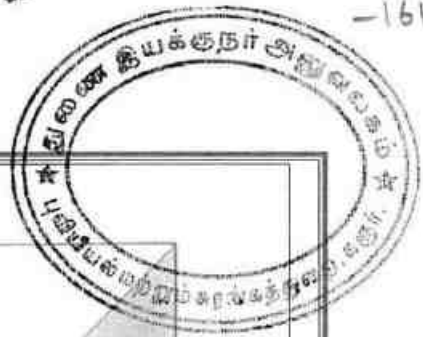
Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.

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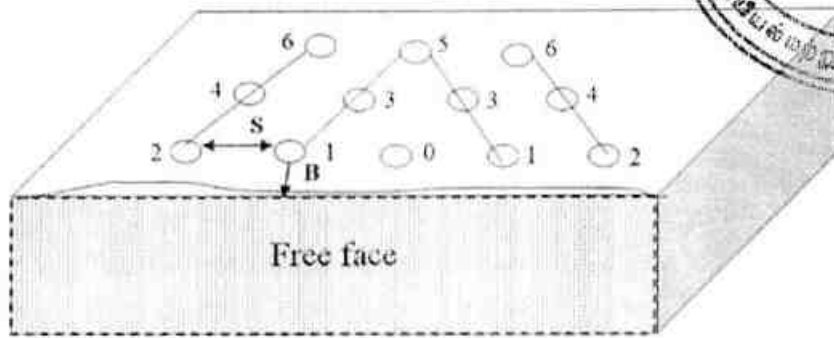


(A) Operations	: The mining operation is open-cost, semi-machined methods are adopted and on single shift basis only.																												
(B) Machineries deployed	: Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination is adapted. (Refer Part-A- 4 (i))																												
<p>5. <b>BLASTING :</b></p> <p><i>a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.</i></p> <p><b><u>Blasting pattern:</u></b></p> <p>The quarrying operation is proposed to carried out by open cost, semi-mechanized mining in conjunction with conventional method of mining using jack hammer drilling and blasting for shattering effect and loosen the rough stone.</p> <p><u>Drilling and Blasting parameters are as follows.</u></p> <table border="1"> <tr><td>Depth of each hole</td><td>: 1.5m</td></tr> <tr><td>Diameter of hole</td><td>: 30-32mm</td></tr> <tr><td>Spacing between hole</td><td>: 1.2m</td></tr> <tr><td>Burden for hole</td><td>: 1.0m</td></tr> <tr><td>Pattern of hole</td><td>: Zigzag –Multi rows</td></tr> <tr><td>Inclination of hole</td><td>: 80<sup>0</sup> from horizontal</td></tr> <tr><td>Use of delay detonators .</td><td>: 25 millisecond relay</td></tr> <tr><td>Detonating fuse</td><td>: “ Detonating” cord</td></tr> <tr><td>Quantity of rock broken per day</td><td>: 181Cbm x 2.8 = 507MT</td></tr> <tr><td>Blasting efficiency @95%</td><td>: 1.17 x 95% = 1.05MT / hole</td></tr> <tr><td>Charge per hole</td><td>: 140 gms of 25mm dia cartridge</td></tr> <tr><td>Quantity of rock broken per day</td><td>: 507MT per day</td></tr> <tr><td>Requirement of explosive per day (6M.T per kg of explosives)</td><td>: 85 kg per day</td></tr> <tr><td>Number of holes per day</td><td>507/1.05= 483 holes per day</td></tr> </table>		Depth of each hole	: 1.5m	Diameter of hole	: 30-32mm	Spacing between hole	: 1.2m	Burden for hole	: 1.0m	Pattern of hole	: Zigzag –Multi rows	Inclination of hole	: 80 <sup>0</sup> from horizontal	Use of delay detonators .	: 25 millisecond relay	Detonating fuse	: “ Detonating” cord	Quantity of rock broken per day	: 181Cbm x 2.8 = 507MT	Blasting efficiency @95%	: 1.17 x 95% = 1.05MT / hole	Charge per hole	: 140 gms of 25mm dia cartridge	Quantity of rock broken per day	: 507MT per day	Requirement of explosive per day (6M.T per kg of explosives)	: 85 kg per day	Number of holes per day	507/1.05= 483 holes per day
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**BLASTING PATTERN DRAWING**



Staggered "V" pattern of blasting design

Spacing	=	1.2m
Burden	=	1.0m
Depth of hole	=	1.5m
No of holes proposed per day	=	483 holes

**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:**

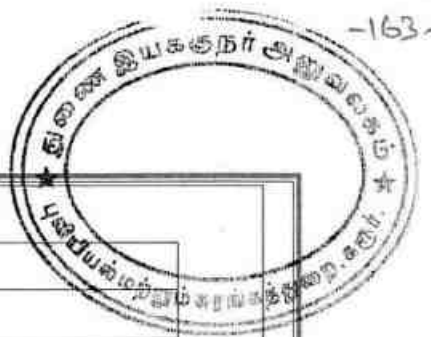
Delay blasting permits to divide the shot to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

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

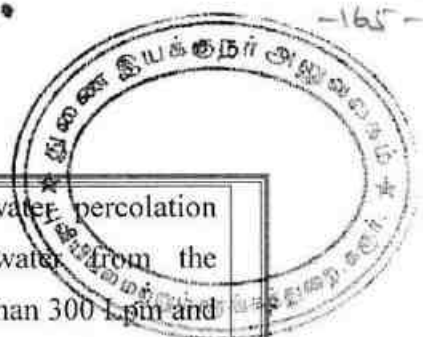
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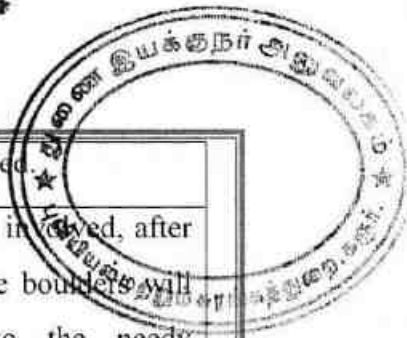
Blasting program for the production per day	
No of holes	: 583holes
Yield	: 507 tons
Powder factor	: 6 Tons/Kg of explosives
Total explosive required	: 85kg-Slurry explosives
Charge per hole	: 0.5kg
Blasting at day time only	: 12.0p.m-1.0p.m
d) Powder factor in ore and overburden / waste / development heading / stope	: Powder factor is proposed as 6 tonnes per kg of explosives
e) 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 suitable size for handling by the excavators and crushers.
f) Storage of explosives (like capacity and type of explosive magazine)	: 1. The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/mines manager. 2. The blasting time at a day is proposed to be 12.0PM to 1.0PM.
<b>6. MINE DRAINAGE</b>	
a) Likely depth of water table based on observations from nearby wells and water bodies	: The ground water table is reported as of 50m in rainy season and 55m in summer 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 depth of mining is 45m bgl. 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	: The ground water may not rise immediately in this type of mining.

P. SIVARAJU



<p>pumping arrangements and places where the mine water is finally proposed to be discharged</p>	<p>However, the rain water percolation and collection of water from the seepage shall be less than 300 Lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.</p>
<p><b>7. STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:</b>  a) Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the next five years:  The topsoil shall be removed <b>8506Cbm</b> and stacked for earth bund of safety area for afforestation and to prevent inherent entry of cattle's and human as per rules 119 (1), Metalliferous Mines Regulations, 1961.</p>	
<p>b) Land chosen for disposal of waste with proposed justification</p>	<p>: There is no waste are proposed.</p>
<p>c) Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.</p>	<p>: The topsoil dump is proposed for earth bund about 1.0m height of the safety area. There is no waste or any other mineral dumps are proposed. If rough stone may be unsold will be keep within the lease boundary.</p>
<p><b>8. USE OF MINERAL:</b></p>	
<p>a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)</p>	<p>: The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc.</p>
<p>b) Indicate physical and chemical specifications stipulated by buyers</p>	<p>: Basically, the materials produced at this quarry are rough stone (Charnockites) and the same are used for building materials and road metal, so there are no chemical specifications are specified. Only physical</p>

P.அனந்தாவுதி



		specifications are involved.																																				
	c) Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.	: Not blending process is involved, after blasting the rough stone boulders will be directly loaded to the needy customer.																																				
<b>9.</b>	<b>OTHERS</b>																																					
	<b>Describe briefly the following</b>	:																																				
	a) Site services	: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and booth rooms have been provided as per the Metalliferous Mines Rules, 1961 as a welfare amenity for our mine laborers.																																				
	b) Employment potential : As per Mines safety under the provisions of 116 (3) (a) Metalliferous Mines Rules, 1961, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate and Geologist to keep all the production workers directly under his control and supervision.  The following man power is proposed for quarrying rough stone 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 rowspan="4">1.</td> <td rowspan="4">Highly Skilled</td> <td>Quarry Manger</td> <td>1No.</td> </tr> <tr> <td>Mines Forman</td> <td>---</td> </tr> <tr> <td>Mechanical Engineer</td> <td>---</td> </tr> <tr> <td>Account cum &amp; admin</td> <td>1No.</td> </tr> <tr> <td rowspan="4">2.</td> <td rowspan="4">Skilled</td> <td>Earth moving Operator</td> <td>4 Nos.</td> </tr> <tr> <td>Driver</td> <td>6 Nos.</td> </tr> <tr> <td>Mechanic</td> <td>---</td> </tr> <tr> <td>Blaster/Mat</td> <td>1 No.</td> </tr> <tr> <td>3.</td> <td>Semi - skilled</td> <td>Helpers, Greaser's</td> <td>3 Nos</td> </tr> <tr> <td rowspan="3">4.</td> <td rowspan="3">Unskilled</td> <td>Musdoor / Labours</td> <td>12Nos</td> </tr> <tr> <td>Cleaners</td> <td>3Nos</td> </tr> <tr> <td>Attendant's</td> <td>1No</td> </tr> <tr> <td colspan="2"></td> <td><b>Total =</b></td> <td><b>32Nos</b></td> </tr> </table>		1.	Highly Skilled	Quarry Manger	1No.	Mines Forman	---	Mechanical Engineer	---	Account cum & admin	1No.	2.	Skilled	Earth moving Operator	4 Nos.	Driver	6 Nos.	Mechanic	---	Blaster/Mat	1 No.	3.	Semi - skilled	Helpers, Greaser's	3 Nos	4.	Unskilled	Musdoor / Labours	12Nos	Cleaners	3Nos	Attendant's	1No			<b>Total =</b>	<b>32Nos</b>
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<b>10</b>	<b>MINERAL PROCESSING/BENEFICIATIONS:</b>																																					
	a) If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent	: Excavated rough stone materials shall be directly sale to the needy customer.																																				

P. அனந்தசுந்தரன்

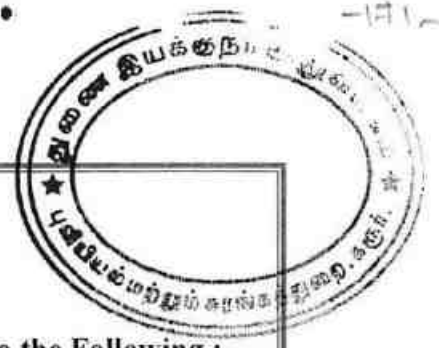




<p>to the extraction area, briefly describe the nature of the processing/beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.</p>	<p>Also can be used by the applicant in his own crusher for required size (i.e 1/4", 1/2", 1/3" and 1")</p> <p>The recovery of rough stone in this quarry is 100%.</p>
<p>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).</p>	<p>: 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.</p>
<p>c) A flow sheet or schematic diagram of the processing procedure should be attached.</p>	<p>: Not applicable.</p>
<p>d) Specify quantity and type of chemicals to be used in the processing plant.</p>	<p>: Not applicable</p>
<p>e) Specify quantity and type of chemicals to be stored on site / plant.</p>	<p>: Not applicable</p>
<p>f) Indicate quantity (cu.m. per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.</p>	<p>: Drinking is 0.320KLD, Utilized water is 1.100KLD, Dust suppression is 1.0KLD and Green Belt is 1.0KLD. Minimum quantity of water 3.420KLD per day has to be maintained. It is proposed to make an existing borehole for providing uninterrupted supply of RO drinking water, dust suppression and Green belt development.</p>

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## PART – B

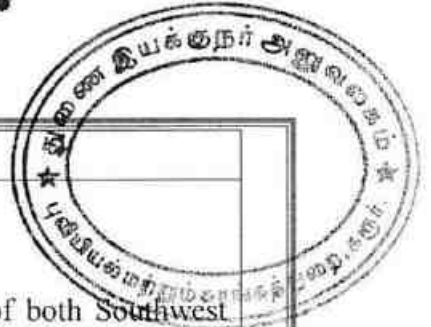


### 11.0 ENVIRONMENTAL MANAGEMENT PLAN :

a) Attach a note on the status 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 and proposed land use pattern is given as below.																													
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sl. No.</th> <th style="width: 40%;">Land Use</th> <th style="width: 15%;">Present Area (Hect)</th> <th style="width: 35%;">Area in use during the quarrying period (Hect)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Area under Mining</td> <td style="text-align: center;">0.77.5</td> <td style="text-align: center;">2.26.0</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Infrastructure</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">0.01.0</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Roads</td> <td style="text-align: center;">0.02.0</td> <td style="text-align: center;">0.03.0</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Green Belt</td> <td style="text-align: center;">0.05.5</td> <td style="text-align: center;">0.26.5</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Un-utilized area</td> <td style="text-align: center;">1.99.0</td> <td style="text-align: center;">0.27.5</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Grand Total</b></td> <td style="text-align: center;"><b>2.84.0</b></td> <td style="text-align: center;"><b>2.84.0</b></td> </tr> </tbody> </table>	Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Area under Mining	0.77.5	2.26.0	2	Infrastructure	Nil	0.01.0	3	Roads	0.02.0	0.03.0	4	Green Belt	0.05.5	0.26.5	5	Un-utilized area	1.99.0	0.27.5	<b>Grand Total</b>		<b>2.84.0</b>	<b>2.84.0</b>	
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11.2	Water Regime	: Water table in this area is noticed at a depth of 55m bgl in summer and 50m bgl in rainy season from the general ground level. For drinking water, dust suppression and green belt development the proponent will procure water from outside vendors.																												
11.3	Flora and Fauna	: There is no major flora observed 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																												

P. அமராவதி



		quarry site.																									
11.5	<p>Climatic conditions:</p> <p><b>Climate:</b></p> <p>The district receives the rain under the influence of both Southwest and Northeast monsoons. The Northeast monsoon chiefly contributes to the rainfall in the district. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The Southwest monsoon rainfall is highly erratic and summer rains are negligible. The average annual rainfall over the district varies from about 620 mm to 745 mm.</p> <p><b>Rainfall:</b></p> <p>The annual rainfall normal (1970-2000) of Karur district is 742 mm.4 Projections of rainfall over Karur for the periods 2010-2040 (2020s), 2040- 2070 (2050s) and 2070-2100 (2080s) with reference to the baseline (1970-2000) indicate a general decrease of 4.0%, 3.0% and 11.0% respectively</p>																										
11.6	<p>Human Settlement:</p> <p>The nearest villages are found in the buffer zone with population as per 2011 census. Kuppam Village 1120houses of 3503people male (1697) female (1806) as respectively.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>S. N</th> <th>Village</th> <th>Direction</th> <th>Distance in Kms</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Kuntanipalayam</td> <td>North</td> <td>2.5km</td> <td>2424</td> </tr> <tr> <td>2</td> <td>Andi Sangilipalayam</td> <td>South</td> <td>1.15km</td> <td>2522</td> </tr> <tr> <td>3</td> <td>Pudurpatti</td> <td>East</td> <td>1.2km</td> <td>1749</td> </tr> <tr> <td>4</td> <td>Kuppam</td> <td>West</td> <td>2.14km</td> <td>3503</td> </tr> </tbody> </table>	S. N	Village	Direction	Distance in Kms	Population	1	Kuntanipalayam	North	2.5km	2424	2	Andi Sangilipalayam	South	1.15km	2522	3	Pudurpatti	East	1.2km	1749	4	Kuppam	West	2.14km	3503	
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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																									

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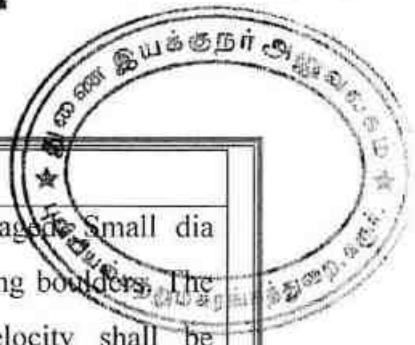


		guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974

**b) 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)	<p><b>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:</b></p> <p>Due to quarrying and exploitation of the rough stone, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form:</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Present Area (Hect)</th> <th>Area in use during the quarrying period (Hect)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Area under Mining</td> <td>0.77.5</td> <td>2.26.0</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>Nil</td> <td>0.01.0</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>0.02.0</td> <td>0.03.0</td> </tr> <tr> <td>4</td> <td>Green Belt</td> <td>0.05.5</td> <td>0.26.5</td> </tr> <tr> <td>5</td> <td>Un-utilized area</td> <td>1.99.0</td> <td>0.27.5</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Grand Total</b></td> <td><b>2.84.0</b></td> <td><b>2.84.0</b></td> </tr> </tbody> </table>			Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Area under Mining	0.77.5	2.26.0	2	Infrastructure	Nil	0.01.0	3	Roads	0.02.0	0.03.0	4	Green Belt	0.05.5	0.26.5	5	Un-utilized area	1.99.0	0.27.5	<b>Grand Total</b>		<b>2.84.0</b>	<b>2.84.0</b>
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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																													

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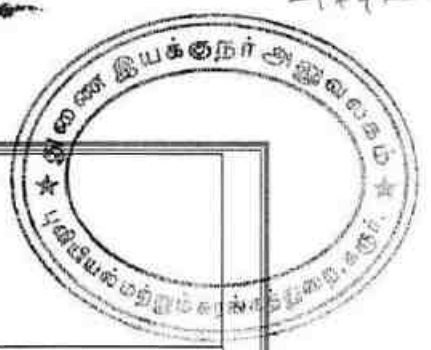
		around the quarry site.
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The maximum peak particles velocity shall be recorded using mini seismograph devises as per the guidance of MoEF and EIA Notification 2006 and also covering 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 10km 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	: The topsoil shall be removed 8506Cbm and stacked for earth bund of safety area for afforestation and to prevent inherent entry of cattle's and human as per rules 119 (1), Metalliferous Mines Regulations, 1961.
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	: The present mining is proposed to an average depth of 45m 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 working bench 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.

P. சுவாமிநாதன்





proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.

iii) *Programme of afforestation, Yearwise for the initial five years indicating the number of plants with name of species to be afforested under different areas in hectares.*

Year	Place	Type of trees	No. of plants	Rate of survival
I-Year	Lease boundary & Approach Road	Neem, Pungan, Casuarinas and other regional trees	100	80%
II-Year		Neem, Pungan, Casuarinas and other regional trees	100	80%
III-Year		Neem, Pungan, Casuarinas and other regional trees	100	80%
IV-Year		Neem, Pungan, Casuarinas and other regional trees	100	80%
V-Year		Neem, Pungan, Casuarinas and other regional trees	100	80%

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). : There is no major waste or rejects shall be removed. The topsoil shall be removed **8506Cbm** and stacked for earth bund of safety area for afforestation purposes.

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 opencast, semi mechanized mining and no heavy machinery shall be used. The only

P. சிவசுவாமி



		smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	: No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.
x).	Socioeconomic benefits arising out of mining.	: The nearest villages are will get employment benefits.

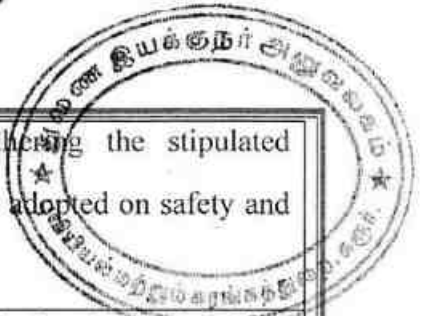
d). *Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)*

Not applicable. It is B2 category quarry

**12.0 PROGRESSIVE QUARRY CLOSURE PLAN:**

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	: The Ultimate mining is proposed to an average depth of 45m bgl. The mined-out area will be fenced on top of working bench with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	: Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 100 trees per year will be proposed. 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 lease area was already partly leased out for quarrying rough stone to the applicant. As the quarrying operation is likely to be continued in the existing area, mining should

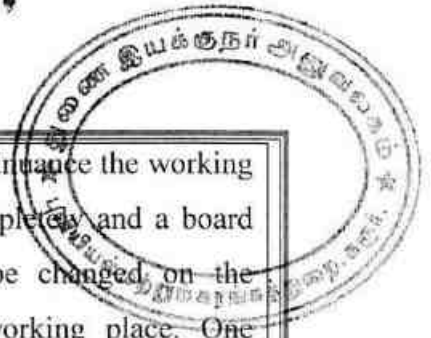
P. அலகாஜி



			be undertaken by adhering the stipulated bench parameters to be adopted on safety and scientific point of view
12.4	Mine closure activity	:	No immediate proposals for closure of pit as the Rough Stone persists 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 rules, 1960, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.
12.6	Disaster management and Risk Assessment	:	Open cast mining method is adopted in this quarry. If the benches are made with proposed height and with no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.

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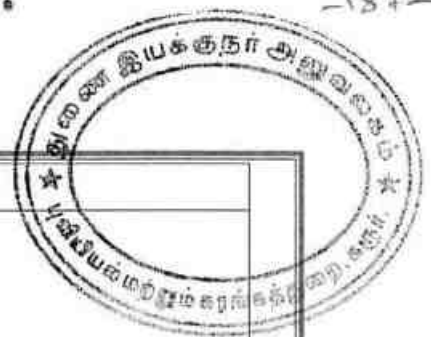


12.7	Care and maintenance during temporary discontinuance	:	During temporary discontinuance the working place will be fenced completely and a board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look 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. 32 labors will be improved.
12.9	Reclamation and Rehabilitation	:	Land degradation is one of the major adverse impacts of open-cast mining activities and any effort to control adverse impacts would be incomplete without appropriate land reclamation strategy. After the exhaustion of entire mineable rough stone, mined out pit will be converted in to rain water harvesting purposes for utilization in for irrigation purpose. The water reservoir will be properly fenced by barbed wire or a bund will be constructed outside the water reservoir during the closure of the mine.

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

A	<b>Fixed Asset Cost:</b>		
	1. Land Cost	:	Rs. 28,00,000/-
	2. Labour Shed		---
	3. Sanitary Facility	:	Rs. 1,00,000/-
	4. Fencing	:	Rs. 2,00,000/-
	<b>Total</b>	:	<b>Rs. 31,00,000/-</b>
B	<b>B. Machinery cost</b>	:	<b>Rs. 15,00,000/- (Hire Basis)</b>

P. அழகவதி



C	<b>EMP Cost: per year (Minimum 2 station * 2 season):</b>	
	1. Air quality test	: Rs. 30,000/-
	2. Water quality sampling (2 Nos)	: Rs. 25,000/-
	3. Noise test	: Rs. 25,000/-
	4. Soil analysis	: Rs. 25,000/-
	<b>Total cost</b>	<b>: Rs. 1,05,000/- per year</b>
	<b>Total cost for 5 Years</b>	<b>: Rs. 5,25,000</b>
D	<b>Total Expenditure cost (for five years)</b>	
	1. Drinking Water Facility	: Rs. 1,00,000/-
	2. Sanitary Maintenance	: Rs. 75,000/-
	3. Water Sprinkling	: ----
	4. Afforestation and maintained	: Rs. 1,50,000/-
	5. Safety Kits	: Rs. 1,00,000/-
	<b>Total</b>	<b>: Rs. 4,25,000/-</b>
E	<b>Total Project Cost (A+B+C+D) : Rs. 55,50,000/-</b>	

**13.0 FINANCIAL ASSURANCE:**

Not applicable, it is a small B2 rough stone quarry.

**14.0 CERTIFICATES:**

All required certificates are enclosed.

**15.0 PLAN AND SECTIONS, ETC:**

Plan and Sections are submitted along with mining plan.

**16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT**

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone economically without any wastage and to improve the environment and ecology.
- (iii) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Deputy Director of Geology and Mining, Karur vide letter no **Re.No.266/Mines/2021, dated 21.10.2021.**
- (iv) Total proposed production of rough stone is about **272149Cbm** and topsoil is **8506Cbm**. This mining plan is allowed up to a depth of 45m below ground level (R.L.175-130m) (Refer Plate No's. IV & IVA) for the 5 years plan period. Average production shall be **54430Cbm** of rough stone per year.

P. SILENGU



**17.0 CSR Expenditure:**

CSR (Corporate Social responsibility) shall provide by the lessee to 2.5% of average net profit of the company for the last three financial years to the neighboring villages on the provisions under section 135(1) of the companies Act, 2013 and Rule 3(2) companies CSR Rules, 2014 as circular no.05/01/2014.

Signature of the Recognized Qualified Person

Place: Dharmapuri, TN

Date: 30/10/2021

**Dr. S. KARUPPANNAN, M.Sc., Ph.D.**  
RQP/MAS/203/2014/A  
**GEO TECHNICAL MINING SOLUTIONS**  
1/113-B, Ground Floor, Natesan Complex,  
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Dharmapuri - 636 705, Tamil Nadu, India.  
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**This Mining Plan is approved based on incorporation of the particulars specified in clause 7 (iv) of the Commissioner of Geology and Mining Chennai Lr No 3888 / LC / 2012 dt 10-11-2012 and Draft Minor Mineral Conservation & Development Rules 2010**

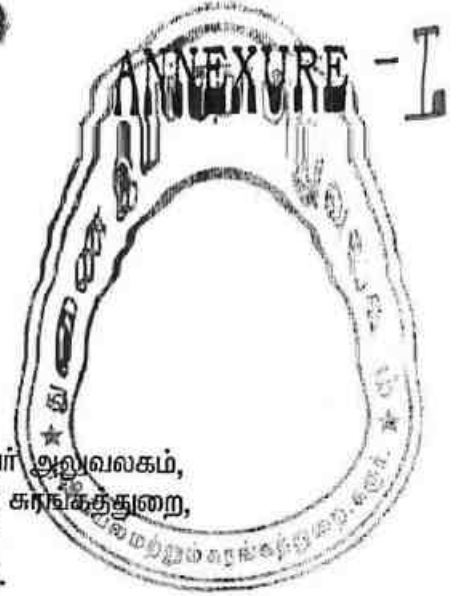
*[Handwritten signature]*  
25/01/22

**Deputy Director of Geology and Mining  
Karur District**

**This Mining Plan is approved subject to the conditions/stipulations indicated in the Mining Plan approved Letter No: 266 / Mines / 2020 Dated: 25/01/2022**

*[Handwritten signature]*  
25/01/2022

*P. Balraj*



ந.க.எண். 266/கனிமம்/2020

மாவட்ட ஆட்சியர் அலுவலகம்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
கரூர்  
நாள். 21.10.2021.

குறிப்பாணை

**பொருள்:** கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம், பட்டா புல எண்கள். 513/2C(2.25.0 ஹெக்டேர்) மற்றும் 595/2(பகுதி)(0.59.0 ஹெக்டேர்) ஆகியவற்றில் 2.84.0 ஹெக்டேர் பட்டா நிலம் - சாதாரணகல் மற்றும் கிராவல் குவாரி குத்தகை உரிமம் வேண்டி திருமதி.ப.அமராவதி என்பவர் விண்ணப்பம் செய்தது - உரிமம் வழங்க பரிந்துரை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக - தொடர்பாக.

**பார்வை:** 1. திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி, கதவு எண்.5/18, பொன்னியாகவுண்டன்புதூர், புன்னம்சத்திரம் அஞ்சல், புகளூர் வட்டம், கரூர் மாவட்டம் என்பவரின் விண்ணப்ப நாள். 13.03.2020.

2. கரூர் வருவாய் கோட்டாட்சியர் அவர்களின் கடித எண். ந.க.எண். அ1/2222/2020, நாள்: 29.09.2020

3. கரூர், புவியியல் மற்றும் சுரங்கத்துறை துணை இயக்குநர் அலுவலகம், உதவி புவியியலாளரின் புலத்தணிக்கை அறிக்கை நாள்: 20.02.2021.

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கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம், பட்டா புல எண்கள். 513/2C(2.25.0 ஹெக்டேர்) மற்றும் 595/2(பகுதி)(0.59.0 ஹெக்டேர்) ஆகியவற்றில் 2.84.0 ஹெக்டேர் பட்டா நிலத்தில் சாதாரண கற்கள் குவாரி செய்ய அனுமதி கோரி திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி, கதவு எண்.5/18, பொன்னியாகவுண்டன்புதூர், புன்னம்சத்திரம் அஞ்சல், புகளூர் வட்டம், கரூர் மாவட்டம் என்பவர் பார்வை 1-இன்படி உரிய ஆவணங்களுடன் விண்ணப்பம் அளித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, கரூர் வருவாய் கோட்டாட்சியர்



திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி என்பவருக்கு சாதாரணக்கல் குவாரி உரிமம் வழங்க கீழ்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்ப புலங்களின் கிழக்கே புல எண்.510-இல் அமைந்துள்ள மின்மாற்றி (Transformer) -க்கு 50 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.
2. விண்ணப்ப புலங்களின் கிழக்கே புல எண்.513/2D-பட்டா நிலத்தில் அமைந்துள்ள வண்டிப்பதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலங்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
4. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமுமின்றி விதிமுறைகளின்படி குவாரிப்பணி செய்ய வேண்டும்.
5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferrous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
6. குவாரி குத்தகை வழங்க ஏதுவாக ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம், மாநில அளவிலான சுற்றுச்சூழல் செயல் மதிப்பீட்டு அதிகார அமைப்பு (SEIAA) மற்றும் தமிழ்நாடு மாசுக்கட்டுப்பாட்டு வாரியம் (TNPCB) ஆகியவற்றின் தடையின்மை சான்று பெற்று, விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.

இந்நேர்வில், கரூர் வருவாய் கோட்டாட்சியர் மற்றும் உதவிப் புவியியலாளர் (கனிமம்), கரூர் ஆகியோரின் பரிந்துரைகள் மற்றும் நிபந்தனைகளின் அடிப்படையில் கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம், பட்டா புல எண்கள். 513/2C(2.25.0 ஹெக்டேர்) மற்றும் 595/2(பகுதி)(0.59.0 ஹெக்டேர்) ஆகியவற்றில் 2.84.0 ஹெக்டேர் பரப்பில் 1959-ஆம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19(1), 20 மற்றும் 33-இன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 5 (ஐந்து) வருட காலத்திற்கு திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி என்பவருக்கு சாதாரணக்கல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.



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

*[Handwritten Signature]*  
21/10/21

துணை இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
கரூர்.

பெறுநர்  
திருமதி.ப.அமராவதி,  
க/பெ.பழனிச்சாமி,  
கதவு எண்.5/18,  
பொன்னியாகவுண்டன்புதூர்,  
புன்னம்சத்திரம் அஞ்சல், புகளூர் வட்டம், கரூர் மாவட்டம்.

21/10/2021

**நகல்:-**

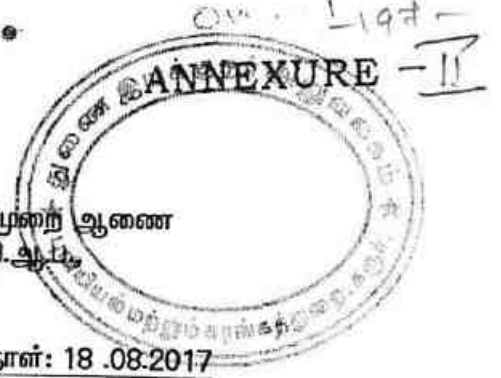
1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.

*[Handwritten Signature]*

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

P. அமராவதி





கரூர் மாவட்ட ஆட்சியர் அவர்களின் செயல்முறை ஆணை  
முன்னிலை:- திரு.கு.கோவிந்தராஜ், இ.ஆ.ப.

ந.க.எண்.135/ கனிமம் / 2017

நாள்: 18.08.2017

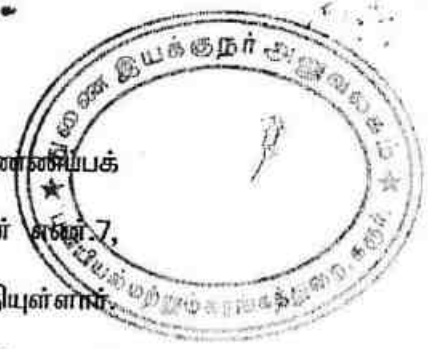
பொருள்: கனிமங்களும் குவாரிகளும் - கரூர் மாவட்டம் -  
அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2A  
(பகுதி)-இல் 0.89.5 ஹெக்டேர் பரப்பு பட்டா பூமி - சாதாரண  
கற்கள் வெட்டி எடுக்க 5 ஆண்டுகளுக்கு குவாரி குத்தகை  
உரிமம் - திருமதி.ப.அமராவதி என்பவருக்கு வழங்கி  
உத்தரவிடப்படுகிறது.

- பார்வை:
1. திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி,  
பொன்னியாகவுண்டன்புதூர், புன்னம் கிராமம்,  
அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம் என்பவரின்  
விண்ணப்ப நாள்:31.01.2017.
  - 2 இவ்வலுவலக இதே எண்ணிட்ட கடிதம் நாள்.31.01.2017.
  3. கரூர் வருவாய் கோட்டாட்சியர் அவர்களின் கடித  
நக.எண்.அ1/536/2017, நாள்.01.3.2017.
  4. கரூர் புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநரின்  
இடப்பார்வை அறிக்கை நாள்: 25.03.2017.
  - 5 இவ்வலுவலக இதே எண்ணிட்ட குறிப்பாணை  
நாள்.31.03.2017.
  - 6 உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர்  
அவர்களின் ஏற்பளிக்கப்பட்ட சுரங்கத் திட்டம் நாள்:  
11.05.2017.
  - 7 மாவட்ட சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையம், கரூர்  
ஒப்புதல் ஆணை எண். DEIAA-DIA/TN/MIN/6697/2017-  
KRR Ec.No.56/2017 Mines நாள்.02.8.2017.

உத்தரவு:-

கரூர் மாவட்டம், அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2A  
(பகுதி)-இல் 1.23.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் வெட்டியெடுக்க  
திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி, பொன்னியாகவுண்டன்புதூர், புன்னம்  
கிராமம், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம் என்பவர் ஐந்து ஆண்டுகளுக்கு  
குவாரி குத்தகை உரிமம் கோரி பார்வை 1ல் கண்டவாறு மனு செய்துள்ளார்.

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2. மனுதாரர் உரிய படிவத்தில் மனு செய்திருப்பதுடன், விண்ணப்பக் கட்டணம் மற்றும் அடிப்படை செலவினங்களுக்காக ரூ.1500/-ஐ சலான் எண்.7, நாள்:12.01.2017-ல் தாந்தோணி பாரத மாநில வங்கியில் செலுத்தியுள்ளார். மேலும், மனுதாரர் செலுத்த வேண்டிய வருமான வரி மற்றும் கனிம வரி எதுவும் நிலுவையில் இல்லை என்பதற்கான சான்றுறுதி ஆவணம் மற்றும் கிராம கணக்கு நகல்களையும் சமர்ப்பித்துள்ளார்.

3. மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க உரிமம் கோரிய புலத்தை தணிக்கை செய்து அறிக்கை அளிக்கும்படி கரூர், வருவாய் கோட்டாட்சியரிடம் பார்வை-2ல் காணும் கடிதத்தின்படி அறிக்கை கோரப்பட்டது.

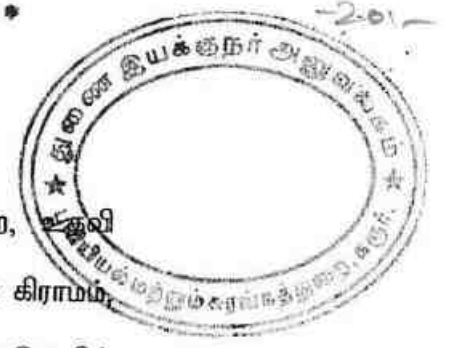
4. பார்வை-3ல் காணும் கரூர் வருவாய் கோட்டாட்சியர் அறிக்கையில் அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2Aல் மொத்தம் விஸ்தீரணம் ஹெக்டேர் 1.23.5 ஏர்ஸில் தாழ்வு அழுத்த மின்கம்பிப்பாதை 53.2 மீட்டர் தொலைவில் செல்வதால் அதற்குண்டான பாதுகாப்பு இடைவெளி நீங்கலாக 0.89.5 ஏர்ஸ் பட்டா பூமியிலிருந்து சாதாரண கற்கள் வெட்டி எடுக்க குத்தகை உரிமம் கோரி வரப்பெற்ற மனு தொடர்பாக புலத்தணிக்கை செய்யப்பட்டது எனவும், உரிமம் கோரும் புல எண்.509/2A ஆனது திருமதி.அமராவதி, க/பெபழனிச்சாமி என்பவர் பெயரில் பட்டா எண்.1371ல் தனிப்பட்டவாக தாக்கலாகியுள்ளது எனவும், மேற்கண்ட நிலங்களில் கல்குவாரி அமைக்க திருமதி.அமராவதி, க/பெபழனிச்சாமி என்பவருக்கு ஸ்தல பாத்யதை உள்ளது எனவும், விண்ணப்ப புல எண்களுக்கு கீழ்க்கண்டவாறு நூன்று எல்லைகள் அமைந்துள்ளன எனவும்,

புல எண்கள்	திசைகள்	எல்லைகள்
509/2A	வடக்கு	509/1
	மேற்கு	510/1
	தெற்கு	509/2B
	கிழக்கு	509/2

விண்ணப்ப இடத்தில் கல்குவாரி செய்ய பொது மக்களிடமிருந்து ஆட்சேபனை ஏதும் உள்ளதா என்பது குறித்த "ஏ1" விளம்பரம் செய்யப்பட்டு ஆட்சேபனை

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6. பார்வை-5ல் கண்ட கரூர், புவியியல் மற்றும் சுரங்கத்துறை, இயக்குநரின் இடப்பார்வை அறிக்கையில், அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2ஏ (பகுதி) ஆனது பட்டா எண்.1371ன்படி விண்ணப்பதாரர் பெயரில் கிராமக் கணக்கில் தாக்கலாகியுள்ளது எனவும், விண்ணப்ப புலம் சமதளமாக உள்ளது எனவும், இப்புலங்களில் உள்ள பாறை சார்னோகைட் வகையைச் சேர்ந்ததாகும் எனவும், இப்பாறையிலிருந்து அரணை, ஜல்லி, சோளிங் போன்றவை உற்பத்தி செய்யலாம் எனவும், கல்லுடைக்கப்படாத பகுதியில் சுமார் 1 முதல் 2 மீட்டர் ஆழம் வரை மேற்பரப்பு மண் காணப்படுகிறது எனவும், அதற்கு கீழ் உள்ள சார்னோகைட் பாறையிலிருந்து அரணை, ஜல்லி, சோளிங் போன்றவை உற்பத்தி செய்யலாம் எனவும், மேற்படி விண்ணப்ப புல எண்ணில் சாதாரண கற்கள் உடைக்க திரு-ஆர்.பழனிச்சாமி என்பவருக்கு கரூர், மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணை நக.எண்.293/கனிமம்/2011, நாள்.05.7.2012ன்படி அனுமதி வழங்கப்பட்டு 04.7.2017 வரை உள்ளது எனவும், மேற்படி புல எண்களில் வழங்கப்பட்ட உரிமத்தை தொடர்ந்து நடத்த வழியில்லாத காரணத்தால் இரத்து செய்து தருமாறு பழனிச்சாமி என்பவர் கேரியதன் அடிப்படையில் மேற்படி குத்தகை உரிமத்தை கரூர் மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணை எண்.340/கனிமம்/2017, நாள்.25.3.2017ன்படி இரத்து செய்து ஆணையிடப்பட்டுள்ளது எனவும், உரிம காலத்தில் 0.18.5 ஹெக்டேர் பரப்பளவில் சுமார் 3 மீட்டர் ஆழத்திற்கு கற்கள் உடைக்கப்பட்ட குழி காணப்படுகிறது எனவும், 300 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்பு / வீட்டுமனைகள் / நத்தம் புறம்போக்கு ஆகிய ஏதுமில்லை எனவும், 50 மீட்டர் சுற்றளவில் நிலையான அமைப்புகள் ஏதுமில்லை எனவும், விண்ணப்ப புல எண்ணுக்கு கீழ்கண்டவாறு நான்கெல்லைகள் அமைந்துள்ளன எனவும்,

புல எண்கள்.	வடக்கு	கிழக்கு	தெற்கு	மேற்கு
509/2A (பகுதி)	509/1	509/2A (பகுதி)	509/2B	510

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இல்லையென ஒப்புதல் பெறப்பட்டுள்ளது எனவும், உரிமம் கோரும் கல்குாரி செய்யப்படும் புல எண்களுக்கு எல்லைகள் வரையறுக்கப்பட்டு எல்லைக் கற்கள் நடப்பட்டுள்ளது எனவும், உரிமம் கோரும் புல எண்.509/2Aல் மொத்த விஸ்தீரணம்

ஹெக்டேர் 1.23.5 ஏர்ஸில் பகுதி விஸ்தீரணம் ஹெக்டேர் 0.89.5 எர்ஸ் நிலத்தில் ஊர் நத்தம் அங்கீகரிக்கப்பட்ட குடியிருப்புகள் ஏதுமில்லை எனவும், விண்ணப்ப புலத்தில் புராதான சின்னங்களோ, கோவில், மசூதி, பள்ளிக்கூடம், மருத்துவமனை மற்றும் மயானம் போன்றவை ஏதுமில்லை எனவும், அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2A மொத்தம் விஸ்தீரணம் ஹெக்டேர் 1.23.5 ஏர்ஸில் பகுதி விஸ்தீரணம் ஹெக்டேர் 0.89.5 எர்ஸ் பட்டா பூமியிலிருந்து அருகில் உள்ள விவசாய நிலங்களுக்கு கல்குவாரி செய்வதனால் பாதிப்பு ஏதும் இல்லாமல் குவாரி செய்யப்பட வேண்டும் என்ற நிபந்தனையுடன் சாதாரண கற்கள் வெட்டி எடுக்க திருமதி.அமராவதி, க/பெ.பழனிச்சாமி என்பவருக்கு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளார்.

5. இந்நேர்வில் ஏற்கனவே கரூர் மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணை நக.எண்.293/கனிமம்/2011, நாள்.05.7.2012ன்படி குப்பம் கிராம புல எண்கள்.509/2A (பகுதி) (0.90.0 ஹெக்டேர்), 513/2C (2.25.0 ஹெக்டேர்) மற்றும் 570/2 (1.68.0 ஹெக்டேர்) மொத்தம் 4.83.0 ஹெக்டேர் பரப்பில் கல்குவாரி வெட்டி எடுக்க திரு.பழனிசாமி என்பவருக்கு 5 வருட காலங்களுக்கு உரிமம் வழங்கப்பட்டு உரிம காலம் 04.7.2017 வரை உள்ள நிலையில் பழனிசாமி என்பவரால் குவாரியை தொடர்ந்து நடத்த முடியாத சூழ்நிலையில் அவரது சொந்த விருப்பத்தின் பேரில் தனி வருவாய் ஆய்வாளர் (கனிமம்) பரிந்துரையின் அடிப்படையில் மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணைகள் நக.எண்.340/கனிமம்/2017, நாள்.25.3.2017ன்படி ரத்து செய்து ஆணையிடப்பட்டு இருந்தது.

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அமைந்துள்ள அமைந்துள்ள  
குவாரிகளின் விபரங்கள் குறித்து உதவி இயக்குநர் (கனிமம்) வினவருமாறு  
தெரிவித்துள்ளார்.



வ. எண்	குத்தகைதாரர் பெயர்	வட்டம் & கிராமம்	புல எண்.	ஹெக்டேர்	மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணை எண்.	குத்தகை காலம்
1	திரு.ஆர்.பழனிச்சாமி, த/பெ.ராமசாமி, பொன்னியாகவுண்டன் புதூர், புன்னம்சத்திரம் அஞ்சல், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம்.	அரவக்குறிச்சி வட்டம், குப்பம் கிராமம்.	509/2A 513/2C 570/2	4.83.0	Rc.No.293/ Mines/2011 Dt:5.7.2012	5.7.2012 4.7.2017 Cancelled vide Rc.No.340/Mi nes/17, Dt:25.3.2017
2	தி/ள்.என்.டி.சி. புளூ மெட்டல்ஸ், திரு.எஸ்.முத்துசாமி, இயக்குநர், நெ.97, (பழைய எண்.47), விங்கிசெட்டி தெரு, சென்னை.		494/2	3.85.5	Rc.No.225/ Mines/2012, Dt:26.06.2013	26.06.2013 to 25.06.2018
3	திருமதி.மல்லிகா, க/பெ.பெரியசாமி, வேலாயுதம்பாளையம், கரூர் மாவட்டம்.		509/1	3.30.0	Rc.No.226/ Mines/2011 Dt:8.6.2012	8.6.2012 to 7.6.2017
4	திரு.பி.செந்தில்குமார், த/பெ.பெரியசாமி, 9 மாணிக்கநகர், வேலாயுதம்பாளையம் அஞ்சல், கரூர்.		513/2A 513/2B	1.27.0	76/2010 Dt:16.07.2010	24.08.2010 to 23.08.2015 குத்தகை காலம் முடிவற்றது.
5	திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி, பொன்னியா கவுண்டன்புதூர், புன்னம் கிராமம், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம்		509/2A (Part)	0.89.5 (include d in Sl.No.1)	Proposed Area.	
மொத்தம்				13.25.5		

என தெரிவித்து கரூர் மாவட்டம், அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2A (பகுதி)-இல் வருவாய் கோட்டாட்சியரால் பரிந்துரை செய்யப்பட்ட பரப்பு 0.89.5 ஹெக்டேர் பட்டா நிலத்தில் சாதாரண கற்கள் வெட்டியெடுக்க திருமதி.ப.அமராவதி, க/பெ.பழனிச்சாமி, பொன்னியா கவுண்டன்புதூர், புன்னம் கிராமம், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம் என்பவருக்கு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959ன் விதி எண். 19 (1), 20 மற்றும் 22-ன் கீழ் 5

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ஆண்டுகளுக்கு கல் குவாரி குத்தகை உரிமம் கீழ்காணும் நிபந்தனைகளுக்குட்பட்டு வழங்கலாம் என பரிந்துரை செய்துள்ளார்.

- 1) விண்ணப்ப புலங்களுக்கு அருகிலுள்ள பட்டா புலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிபணி செய்ய வேண்டும்.
- 2) விண்ணப்ப புலங்களில் சாதாரண கற்கள் வெட்டி எடுப்பது தொடர்பாக அங்கீகரிக்கப்பட்ட சுரங்கத்திட்டம் (Approved Mining Plan) மற்றும்
- 3) மாவட்ட அளவிலான சுற்றுச் சூழல் தாக்க மற்றும் மதிப்பீட்டு ஆணையத்தின் சுற்று சூழல் ஒப்புதல் (Environment Clearance) பெற்று சமர்ப்பிக்க வேண்டும்.

8. இந்நிலையில் மேற்கண்ட அலுவலர்களின் பரிந்துரையின் அடிப்படையில் மனுதாரர் விண்ணப்பித்துள்ள புலங்கள் குத்தகை வழங்கத்தக்க பரப்பாக தீர்மானிக்கப்பட்டு ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் ஆணைய முன் அனுமதி பெற்று சமர்ப்பிக்கும்படி பார்வை-6ல் காணும் கடிதத்தின்படி மனுதாரருக்கு அறிவுறுத்தப்பட்டது.

9. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை, கரூர் அவர்களால் 11.05.2017 அன்று ஏற்பளிக்கப்பட்ட சுரங்கத் திட்டத்தை மனுதாரர் பார்வை-6ல் கண்டவாறு சமர்ப்பித்துள்ளார். மேற்படி சுரங்கத் திட்டத்தில் வரும் ஐந்தாண்டு குத்தகை காலத்தில் 78,650 கன மீட்டர் சாதாரண கற்களை வெட்டி எடுத்துக் கொள்வதாக தெரிவிக்கப்பட்டுள்ளது.

10. பார்வை 7-ல் கண்ட மாவட்ட சுற்றுப்புற சூழ்நிலை செயல் விளைவு மதிப்பீட்டு குழு, உறுப்பினர் செயலர் அவர்கள் கடிதத்தில் பொது நிபந்தனை எண்.2-ல் கண்டவாறு குவாரிப்பணி ஆரம்பிப்பதற்கு முன்பாக தமிழ்நாடு மாசுக்கட்டுப்பாட்டு வாரியத்தின் ஒப்புதல் பெற வேண்டும் என்ற சிறப்பு நிபந்தனை உட்பட வேறுபல சிறப்பு நிபந்தனைகளுடன் மனுதாரருக்கு குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளார்.

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இவ்வலுவலகத்தில் பராமரிக்கப்படும் ஆவணங்களின் அடிப்படையில் மனுதாரர் செலுத்த வேண்டிய கனிம வரி ஏதும் நிலுவையில் இல்லை. மேற்கண்ட அலுவலர்களின் பரிந்துரை மற்றும் சிறுகனிம சலுகை விதிகளின் பேரில், மனுதாரருக்கு குவாரி குத்தகை உரிமம் வழங்க ஒப்புதல் தெரிவிக்கப்பட்டதன் பேரில், மனுதாரர் விதிகளின்டி காப்புத் தொகையாக ரூ.5000/-ஐ பாரத மாநில வங்கி, தாந்தோணி சலான் எண். , நாள்: .8.2017ன்படி செலுத்தி அசல் சலானையும், 1959-ம் வருட தமிழ்நாடு சிறுகனிம சலுகை விதிகளின் பின் இணைப்பு IV கண்டுள்ள படிவத்தில் உரிய முத்திரைத்தாளில் குத்தகை ஒப்பந்தப் பத்திரம் தயார் செய்து அளித்துள்ளார்.

எனவே, திருமதி.ப.அமராவதி, க/பெயழனிச்சாமி, பொன்னியா கவுண்டன்புதூர், புன்ளம் கிராமம், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம் என்பவருக்கு, கரூர் மாவட்டம், அரவக்குறிச்சி வட்டம், குப்பம் கிராமம், புல எண்.509/2A (பகுதி)-இல் 0.89.5 ஹெக்டேர் பரப்பில் சாதாரண கற்கள் வெட்டியெடுக்க குத்தகை ஒப்பந்தப் பத்திரம் நிறைவேற்றிய நாளில் இருந்து ஐந்து ஆண்டுகளுக்கு 1959-ம் ஆண்டு, தமிழ்நாடு சிறுகனிம சலுகை விதி 19 (1), 20 மற்றும் 22-ன்படி குத்தகை ஒப்பந்தப் பத்திரத்தில் கண்டுள்ள நிபந்தனைகள் மாவட்ட சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் நிபந்தனைகள் மற்றும் 1959ம் வருட தமிழ்நாடு சிறுகனிம சலுகை விதிகளின் பேரிலும் குவாரி குத்தகை உரிமம் வழங்கி ஆணையிடப்படுகிறது.

நிபந்தனைகள்:-

1. குத்தகை புலத்தினை அடுத்துள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் இடைவெளி அளித்து குவாரிப்பணி புரிய வேண்டும்.
2. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.

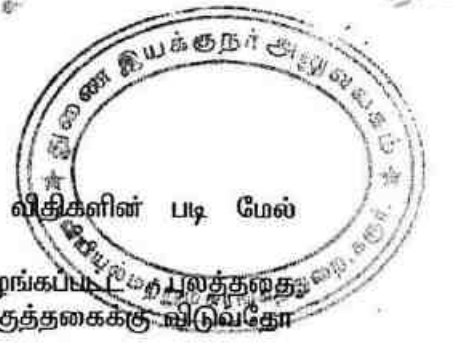
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3. பொதுமக்களின் நலன் கருதி பாதுகாப்பான முறையில் குறைந்த அழுத்தமுள்ள வெடிபொருட்கள் பயன்படுத்தியும், கைத்துளைப்பான் கருவி கொண்டு துளையிட்டும், தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய பாதுகாப்பானதும், அகலமான Benches அமைத்து குவாரிப்பணி செய்ய வேண்டும்.
4. மாவட்ட சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் பரிந்துரை கடிதம் DEIAA-DIA/TN/MIN/6697/2017-KRR Ec.No.56/2017 Mines நாள்.02.8.2017. கண்ட சிறப்பு நிபந்தனைகளை முறையாக கடைபிடித்து குவாரிப்பணி செய்வதுடன், பொது நிபந்தனை 2ல் கண்டவாறு குவாரிப் பணி ஆரம்பிப்பதற்கு முன்பாக தமிழ்நாடு மாகாணக் கட்டுப்பாட்டு வாரியத்தின் தடையின்மை சான்று பெற்று அதில் குறிப்பிடப்பட்டுள்ள சிறப்பு நிபந்தனைகளையும் முறையாக கடைபிடித்து அதன் பின்னரே குவாரிப்பணி துவங்க வேண்டும். மாகாணக் கட்டுப்பாட்டு வாரிய தடையின்மை சான்றினை குறித்த காலங்களில் புதுப்பிக்க 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, கிராமத்தின் பெயர், வட்டத்தின் பெயர், புல எண். பரப்பு, குத்தகை ஆணை எண். குத்தகை காலம், கனிமத்தின் பெயர், போன்ற விபரங்கள் குறிக்கப்பட்ட தகவல் பலகையை தமது சொந்த செலவில் வைத்து நன்கு பராமரிக்க வேண்டும்.
7. குவாரிக்கு சென்றுவரும் பாதை வசதிகள் குத்தகைதாரர்கள் அவர் தம் சொந்த பொறுப்பிலேயே அமைத்துக் கொள்ள வேண்டும்.
8. குத்தகை வழங்கப்பட்ட பாறையில் குண்டுக்கல், ஜல்லி, அரளை கல், வேலிக்கற்கள், போன்ற சிறுகனிமங்கள் உடைத்தெடுக்க மட்டுமே அனுமதியுண்டு. வெளிநாடுகளுக்கு ஏற்றுமதியாகும் மெருகூட்டும் கனவடிவ கற்கள் வெட்டி எடுக்கக் கூடாது.
9. குவாரியிலிருந்து கொண்டு செல்லப்படும் மேற்கண்ட வகை கற்களுக்கு 1959ம் ஆண்டு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் பின் இணைப்பு 2ல் கண்டுள்ளவாறு உரிமவரி செலுத்த வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபணை இன்றி செலுத்துதல் வேண்டும்.
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. உதவி இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை)-ன் அலுவலக முத்திரை, கையொப்ப முத்திரையுடன் கூடிய உரிய அனுப்புகைச் சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுப்புகைச் சீட்டில் வாகன எண். தேதி, புறப்படும் நேரம், செலுத்தும்படி ஆகியவற்றை முறையாகக் குறிப்பிட்டு கையொப்பம் 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,

P. அழகவதி



அதற்கு குத்தகைதாரரை பொறுப்பாக்கி கனிம விதிகளின் படி மேல் நடவடிக்கை எடுக்கப்படும்.

12. இந்த ஆணையில் குத்தகை அனுமதி வழங்கப்பட்ட முழுமையாகவோ, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிரையம் செய்வதோ கூடாது.
13. குத்தகைதாரர் ஒவ்வொரு நாளும் குவாரியில் இருந்து எவ்வளவு சிறுகனிமங்கள் எடுக்கப்பட்டது என்பதையும் எந்த அளவு கனிமங்கள் லாரி/வண்டி மூலம் வெளியே அனுப்பப்பட்டது என்ற விபரத்தையும் காட்டும் பதிவேட்டினைப் பராமரித்து வரவேண்டும்.
14. குத்தகைதாரர், தமக்கு குத்தகை வழங்கப்பட்ட பகுதிக்கு அருகில் உள்ள பட்டா நிலத்திற்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப் பணி செய்யப்பட வேண்டும்.
15. 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 பழங்கால சின்னங்கள் உள்ள பகுதிகள் ஆகியவற்றில் இருந்து 50 மீட்டர் பாதுகாப்பு தூரம் விட்டு குவாரி செய்ய வேண்டும்.
16. குத்தகைக்கு விடப்பட்டுள்ள விஸ்தீரணத்தில் மட்டுமே குத்தகைதாரர் குவாரி செய்ய வேண்டும். அதற்கான கூடுதலான விஸ்தீரணத்தில் குவாரி செய்வது தெரியவந்தால் அபராத நடவடிக்கை மேற்கொள்வதுடன் குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.
17. குத்தகை நிபந்தனை மீறப்பட்டால் குத்தகை இரத்து செய்யவோ, செய்யப்பட்ட தவறுதலுக்கு அபராத நடவடிக்கை எடுத்து தண்டம் விதிக்கவோ அல்லது கிரிமினல் வழக்குத் தொடுக்க மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை ரத்து செய்யப்பட்டால் காப்புத் தொகை உட்பட அனைத்து தொகைகளும் அரசுக்கு ஆதாயமாக்கப்படும்.
18. குத்தகைதாரர் தமிழ்நாடு சிறுவகைக்கனிம சலுகை விதிகள் 1959ல் கண்டுள்ள விதிகளுக்கும் மற்றும் அரசு அவ்வப்போது அறிவிக்கும் சட்டதிட்டங்களுக்கும் உட்பட்டு குவாரிப்பணிகள் செய்ய வேண்டும்.
19. குவாரி குத்தகை உரிமம் காலாவதியான பின்பு எக்காரணத்தை முன்னிட்டும் மீண்டும் புதுப்பிக்கவோ அல்லது கால நீட்டிப்போ செய்து தரப்பட மாட்டாது.
20. வெடிபொருள் சட்டம் 1884ல் தெரிவிக்கப்பட்ட சரத்துக்கள்படி குறைந்த அளவு வெடிபொருளை உபயோகித்து கற்கள் வெளியே சிதறாமலும், சத்தம் அதிகம் ஏற்படாமலும், பொதுமக்களுக்கும், கால்நடைகளுக்கும், எவ்வித பாதிப்பும் இன்றியும் கல்குவாரி பணி செய்யப்பட வேண்டும்.
21. வெடிபொருள்கள் அரசு உரிமம் பெற்ற விற்பனைதாரரிடம் மட்டுமே பெற்று வெடிப்பதற்கு உரிமம் / அங்கீகாரம் பெற்ற வெடிப்பாளர்களை (Blaster / Mines mate) கொண்டு கல் குவாரியில் வெடி வைக்க வேண்டும்.

P. அமரிவதி



22. குழந்தை தொழிலாளர்கள் எவரையும் வேலைக்கு அமர்த்துதல் கூடாது.

மேற்குறிப்பிட்ட நிபந்தனைகள், மற்றும் கனிம சட்ட விதிகளை மீறியுள்ளது உறுதிபடும் தருணத்தில் 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)/- கு.கோவிந்தராஜ்,  
மாவட்ட ஆட்சித்தலைவர்,  
கரூர்

/ உண்மை நகல் / உத்தரவுப்படி /

*[Handwritten Signature]*  
18.8.17  
மாவட்ட ஆட்சித்தலைவருக்காக,  
கரூர்.

பெறுநர்  
திருமதி.ப. அமராவதி,  
க/பெ.பழனிச்சாமி,  
பொன்னியா கவுண்டன்புதூர்,  
புன்னம் கிராமம், அரவக்குறிச்சி வட்டம், கரூர் மாவட்டம்.

*[Handwritten Signature]*

நகல்:-

1. வருவாய் கோட்டாட்சியர் - கரூர்
2. வருவாய் வட்டாட்சியர் - அரவக்குறிச்சி
3. மாவட்ட சுற்று சூழல் பொறியாளர்,
4. மாசு கட்டுப்பாட்டு வாரியம், கரூர்.
5. கிராம நிர்வாக அலுவலர் - குப்பம்  
(வட்டாட்சியர் மூலமாக)
6. தலைவர், குப்பம் கிராம ஊராட்சி.

*[Handwritten Signature]*

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

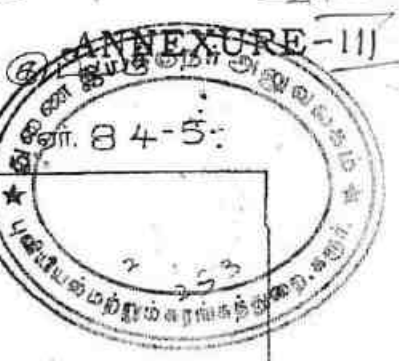
P. அமராவதி



36n. 4600

கிராமம்

பெயர்:-



புள்ளி: - 513

பரப்பு: ஹெக்டேர் 3



Subdivisions 1 + 2 have been plotted as per T.K. SA 50/99. Dated 23.3.90 by me.

*[Signature]*  
28.3.90  
Spt. S15  
R.R.S., KATK

New subdivisions 2A, 2B, 2C, and 2D plotted by me as per T.K. SA 22/1407. Dt: 14.2.2000.  
15.2.2000  
Vst.

LEASE APPLIED AREA

Vardiputhani Ecotourist Site (6 meters)

புள்ளி: 513/20-ல் கலி? ராஜ்ய எக்சைஸ் 485 } 1.95.5

புள்ளி: 513/20-ல் கலி? ராஜ்ய எக்சைஸ் 485 } 0.29.5

S.F. 510  
14 M Transfer eastern side

சுப்பிரீம்  
பி. ராஜசுந்தரி  
சுமார்/கார்ட்டர்  
24.4.85

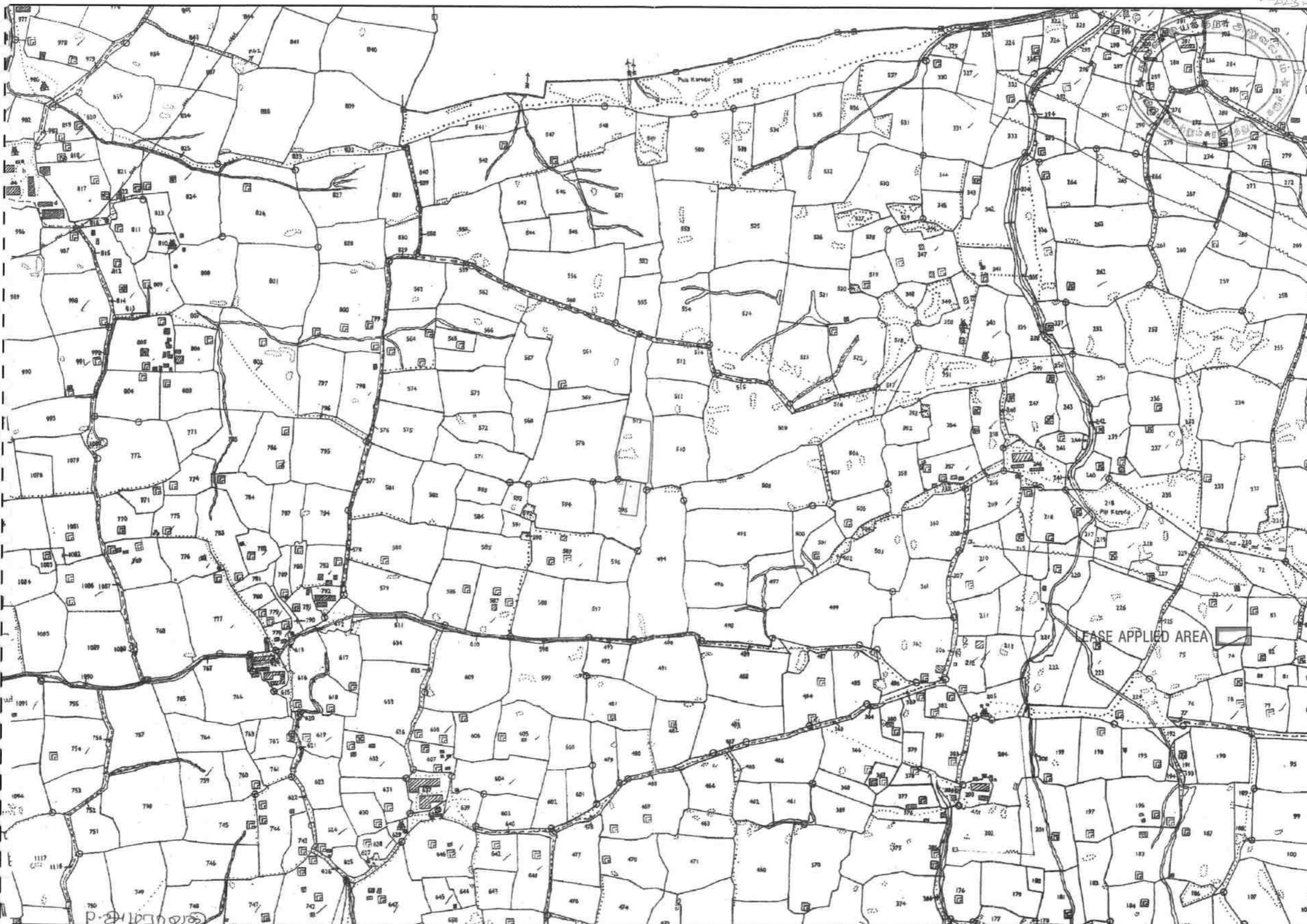
*[Signature]*  
18.02.2000  
புள்ளி: 513/20-ல் கலி? ராஜ்ய எக்சைஸ் 485 } 4.29.5

P. அமர்வதி









713  
 சி. எண். 9 குப்பம்.



1	2	3	4	5	6	7	8	9	10	11	12
...	512	ர	ய	...	8-4	6	1 38	2 59.0	3 54	869	ப. நல்லப்ப கவுண்டர் (1), கர. எட்டியப்ப கவுண்டர் (2), ரா. ரெங்க சாமி (3).
...	513	ர	ய	...	8-4	6	1 38	3 84.5	5 32	870	ப. ராமசாமி கவுண்டர் (1), ப. நல்லப்ப கவுண்டர் (2), க. ரங்கசாமி கவுண்டர் (3).
514	514	அ	ய	...	...	...	...	0 24.5	...	.....	நடைபாதை.
515	515	அ	ய	...	...	...	...	0 29.0	...	.....	நடைபாதை.
516	516	அ	ய	...	...	...	...	0 20.0	...	.....	நடைபாதை.
517	517	அ	தி.ஏ.த	...	...	...	...	0 91.0	...	.....	தீர்வை ஏற் படாத தரிக.
518	518	அ	தி.ஏ.த	...	...	...	...	2 30.5	...	.....	தீர்வை ஏற் படாத தரிக.
519	519	ர	ய	...	8-4	6	1 38	1 72.5	2 39	1063	மா. கருப்பண்ண கவுண்டர் மற்றும் தான்கு பேர்களும்.*
520	520	ர	ய	...	8-4	6	1 38	0 06.5	0 09	65	அ. கருப்பண்ண கவுண்டர்.
521	521	ர	ய	...	8-4	6	1 38	4 78.5	6 62	1064	அ. அம்மையப்ப கவுண்டர் மற்றும் தான்கு பேர்களும்.*
...	522	ர	ய	...	8-4	6	1 38	3 91.0	5 44	1065	மா. ராமசாமி மற்றும் தான்கு பேர்களும்.*
...	523	ர	ய	...	8-4	6	1 38	4 73.0	6 55	993	அ. நல்லப்ப கவுண்டர் மற்றும் தான்கு பேர்களும்.*
...	524	ர	ய	...	8-4	6	1 38	8 15.0	11 31	1066	சி. அம்மையப்ப கவுண்டர் மற்றும் தான்கு பேர்களும்.*
...	525	ர	ய	...	8-4	6	1 38	5 90.5	8 20	1281	சி. அம்மையப்ப கவுண்டர் மற்றும் ஒன்பது பேர்களும்.*

2  
 இணைப்புகள்  
 17.11.20

கிராம நிர்வாக அலுவலர் விவரப்பட்டியலைப் பார்க்கவும்.  
 18, குப்பம் கிராமம்  
 புகளூர் வட்டம்

P. சமராஜகுமார்

1	2	3	4	5	6	7	8	9	10	11	
591	3	591-பா	ர	4	...	8-3	5	2 00	0 15.5	0 31	322 தா. பழனியப்பன்.
								0 62.5	1 26		
592	...	592	அ	தி.ச.த	...	...	...	...	0 20.0	...	...
593	1	593-பா	ர	4	...	8-3	5	2 00	0 36.5	0 73	416 தா. மாரப்ப கவுண்டர்.
	2	-பா	ர	4	...	8-3	5	2 00	0 31.5	0 63	879 தா. பழனியப்பன் (1), க. ராமசாமி (2), க. நாட் ராயன் (3).
								0 68.0	1 36		
594	...	594	ர	4	...	8-4	6	1 38	3 36.5	4 65	716 தா. பழனியப்ப கவுண்டர் (1), மொ. ஆங்கம் மான் (2).
595	1	595-பா	ர	4	...	8-4	6	1 38	1 64.0	2 28	323 க. பழனியப்பன்.
	2	-பா	ர	4	...	8-4	6	1 38	0 89.5	1 23	275 கா. நாச்சப்ப கவுண்டர்.
	3	-பா	ர	4	...	8-4	6	1 38	0 78.5	1 09	530 ப. ராமசாமி.
								3 32.5	4 60		
596	...	596	ர	4	...	8-4	6	1 38	1 32.5	1 83	531 ஏ. ராமசாமி.
597	1	597-பா	ர	4	...	8-3	5	2 00	1 07.5	2 16	999 கா. கந்தப்பன் மற்றும் மூன்று பேர்களும்.*
	2	-பா	ர	4	...	8-3	5	2 00	0 49.0	0 98	532 ப. ராசப்ப கவுண்டர்.
	3	-பா	ர	4	...	8-3	5	2 00	0 52.5	1 05	533 சி. ராசப்ப கவுண்டர்.
	4	-பா	ர	4	...	8-3	5	2 00	0 98.0	1 96	717 தி. தங்கம் மான் (1), தா. பழனியப்பன் (2).
	5	-பா	ர	4	...	8-3	5	2 00	1 06.0	2 12	597 வேலப்ப கவுண்டர்.
								4 13.0	8 27		

கிராம நிர்வாக அலுவலர்  
18, குப்பம் கிராமம்  
புகளூர் வட்டம்  
கருர் மாவட்டம்

\* - விவரப்பட்டியலைப் பார்க்கவும்.

P-அமலாதி

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





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 1380

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகன்

பழனிசாமி

புல எண்	உட்பிரிவு	புன்செய்		நுன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
513	2C	2 - 25.00	3.11	--	--	--	--	----- 21-02-2001
557	1	3 - 86.50	5.35	--	--	--	--	----- 21-02-2001
570	2	1 - 68.00	2.35	--	--	--	--	273/1415-42/1415 -- 15-12-2005
		7 - 79.50	10.81					

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/01380/10872 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 26-10-2021 அன்று 12:41:29 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

P. அமரவதி



தமிழக அரசு

வருவாய்த் துறை

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

வட்டம் : புகளூர்

மாவட்டம் : கரூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 3817

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகன்

பழனிச்சாமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
595	2	0 - 89.50	1.23	--	--	--	--	2019/0103/14/114427- --- 21-12-2019
		0 - 89.50	1.23					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/03817/30849 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 20-02-2020 அன்று 08:05:43 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

P-அ1037லதி







தமிழ்நாடு தமிழ்நாடு TAMIL NADU

77AB 252401

10 JUN 2020

R.யுகிச்சாமி கண்ணன்

P. THYAGARAJAN  
STAMP VENDOR.

L.NO:16/94.PARAMATHI

**சம்மதக்கடிதம்**

கரூர் மாவட்டம், புகளூர் வட்டம், புன்னம்சத்திரம் அஞ்சல், பொன்னியாகவுண்டன்புதூர், கதவு எண்.5/18 என்ற முகவரியில் வசிக்கும் ராமசாமி அவர்கள் குமாரர் R.பழனிச்சாமி ஆகிய நான் எழுதிக்கொடுக்கும் உறுதிமொழி பத்திரம் என்னவென்றால், கரூர் மாவட்டம், புகளூர் வட்டம், குப்பம் கிராமம், பட்டா எண்கள் 513/2Cல் 2.25.0 Ha பட்டா எண்.3817, 595/2P 0.89.5 Haல் பட்டா எண். 1380ல் கரூர் மாவட்டம், புகளூர் வட்டம், புன்னம்சத்திரம் அஞ்சல், பொன்னியாகவுண்டன்புதூர், கதவு எண்.5/18 என்ற முகவரியில் வசிக்கும் பழனிச்சாமி அவர்கள் மனைவி P.அமராவதி என்ற முகவரியில் என்பவருக்கு சாதாரண கற்கள் வெட்டியெடுக்க அரசு அனுமதி பெற்று ஐந்து வருடங்களுக்கு கல்குவாரி பணி செய்வதற்கு எனக்கு எவ்வித ஆட்சேபனையும் இல்லை என உறுதி அளிக்கிறேன். கல்குவாரி குத்தகை உரிமம் வழங்க என்னுடைய முழு சம்மதத்தை தெரிவித்துக் கொள்கிறேன்.

பிரமாணதாரர்.

R.யுகிச்சாமி கண்ணன்

P. அமராவதி



10/6/2020  
 Cell: 99944 45789  
 K. KANMANI, B.A., B.L.,  
 Advocate & Notary Public  
 Govt. of India - Regd No: 877/08  
 Kudur, Andan Kovil Post,  
 KARUR - 639 008, T.N.

1372/2022

TP/119154857/2022



தமிழ்நாடு தமில்நாடு TAMILNADU

05.05.2022

₹. 500/-

AK 179101

P. அமராவதி

K. SIVASAMY,  
S.V. 19-A, PNS ST.,  
L.No: 1/97, KRR,  
KARUR.

பொன்னியாக்கவுண்டன் புதூர்

குத்தகை ஒப்பந்தப் பத்திரம்



Scanned

2022 (இரண்டாயிரத்து இருபத்தி இரண்டு)-ம் வருடம் மே மாதம் 05-ம் தேதி.

கரூர் மாவட்டம், புகளூர் வட்டம், புன்னம் கிராமம், பொன்னியாக்கவுண்டன் புதூரில் வசிக்கும் திரு.R.பழனிச்சாமி அவர்கள் மனைவி P.அமராவதி (ஆதார் அடையாள அட்டை எண்.9607 9376 7486) (கைபேசி எண்.98427 79319) 1-வது பார்ட்டியாகும்,

1. P. அமராவதி

2. R பழனிச்சாமி

.....புத்தகம்.....2022.....ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்...18.....தாள்களைக்  
கொண்டது.....1.....வது தாள்

பதிவு அலுவலர்

P. அமராவதி

கருர் மாவட்டம், புகளூர் வட்டம், புன்னம் கிராமம், பொன்னியாக்கவுண்டன் புதூரில் வசிக்கும் திரு.ராமசாமி கவுண்டர் அவர்கள் குமாரர் R.பழனிச்சாமி (ஆதார் அடையாள அட்டை எண்.2636 4530 1998) (கைபேசி எண்.98427 79319) - 2வது பார்ட்டியுமாக ஆகிய நாம் இரண்டு பார்ட்டிகளும் சேர்ந்து ஏகோபித்து மனப்பூர்வமாய் சம்மதித்து எழுதிக் கொண்ட குத்தகை ஒப்பந்தப்பத்திரம் என்னவென்றால்,

நம்மில் 2-வது பார்ட்டிக்கு சுயார்ஜித வகையில் சென்ற 04.12.1995-ம் தேதியில் பழனியப்பன் என்பவரிடமிருந்து ஏற்பட்ட கிரையப்பத்திரப்படி (பத்திர எண்.1-வது புத்தகம், 1066/1995, கருர் 2 நெ. இணைச் சார்பதிவகம்)-யும், மற்றும்,

நம்மில் 2-வது பார்ட்டிக்கு சுயார்ஜித வகையில் சென்ற 28.11.2019-ம் தேதியில் ராமாயி வகையராவிடமிருந்து ஏற்பட்ட கிரையப் பத்திரப்படி (பத்திர எண்.1-வது புத்தகம், 2453/2019, கருர் 2 நெ. இணைச் சார்பதிவகம்)-யும் பாத்தியப்பட்டு, சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வருகிற சொத்துக்களில்

1. P. அழகலக்ஷி

2. R. பழனிச்சாமி

!.....புத்தகம். 2022...ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்...18...தாள்களைக்  
கொண்டது .....2.....வது தாள்கள்

P. அழகலக்ஷி

பதிவு அலுவலர்



கீழ்க்கண்ட சொத்தை தமிழக அரசிடம் சாதாரண கல் உடைப்பதற்கு அரசு அனுமதி பெற்று, மேற்படி நம்மில் 2-வது பார்ட்டிக்கு சொந்தமான கரூர் பதிவு மாவட்டம், கரூர் 2 நெ. இணைச் சார்பதிவகம், புகளூர் வட்டம், குப்பம் கிராமம், சர்வே.513/2 மற்றும், சர்வே.595/2 கொண்ட நிலத்தில் சாதாரண கல் உடைத்து விற்பனை செய்து கொள்ள ஒப்பந்தம் அளித்ததின் பேரில், அரசால் அனுமதி வழங்கப்பட்டு குத்தகை ஒப்பந்தம் நிறைவேற்றும் நாளிலிருந்து பத்து (10) வருட காலத்திற்கு கல் மற்றும் மண் குவாரி தொழில் நடத்திக்கொள்ள 1-வது பார்ட்டி சம்மதிக்கின்றார். அதற்காக ஆண்டிற்கு ரூபாய்.5,000/- (எழுத்தால் ரூபாய் ஐந்து ஆயிரம் மட்டும்) வீதம் குத்தகை தொகையாக பேசி, பத்து ஆண்டுகளுக்கும் சேர்த்து மொத்தம் குத்தகை தொகை ரூபாய்.50,000/- (எழுத்தால் ரூபாய் ஐம்பதாயிரம் மட்டும்)-யை நம்மில் 2-வது பார்ட்டி, நம்மில் 1-வது பார்ட்டியிடமிருந்து பெற்றுக் கொண்டுள்ளார். இந்த ஆவணம் முன்னிலைக்கு எந்தவொரு அட்வான்ஸ் தொகையும் பெறவோ அல்லது கொடுக்கவோ இல்லை. இதில் கண்ட நிபந்தனைகள்படி நடக்க இரண்டு பார்ட்டிகளும் சம்மதிக்கின்றோம்.

1. P. அனுவர்தி

2. R. சூர்

1.....புத்தகம்...2022...ம்  
 வருடத்திய .....1372.....ம்  
 ஆவணம்...18...தாள்களைக்  
 கொண்டது .....3.....வது தாள்

P. அனுவர்தி

பதிவு அனுவர்தி

**நிபந்தனைகள்**

1) இதனடியிற்கண்ட புன்செய் நிலங்களில் நம்மில் 2-வது பார்ட்டி, நம்மில் 1-வது பார்ட்டிக்கு நாளிலிருந்து பத்து (10) ஆண்டுகளுக்கு குத்தகைக்கு ஒப்பந்தம் செய்து ஒப்பந்த தொகையாக ரூபாய்.50,000/- (எழுத்தால் ரூபாய் ஐம்பதாயிரம் மட்டும்) என முடிவு செய்து நம்மில் 2-வது பார்ட்டிகள் இன்று தேதியில் முழு ரொக்கமாக 1-வது பார்ட்டியிடமிருந்து நம்மில் 2-வது பார்ட்டி பெற்றுக்கொண்டார்.

2) இந்த ஒப்பந்தம் அரசால் அனுமதி வழங்கப்பட்டு குத்தகை ஒப்பந்தம் நிறைவேற்றும் நாளிலிருந்து பத்து (10) வருட காலத்திற்கு சாதாரண கல் உடைத்து தொழில் நடத்திக் கொள்ள நம்மில் 2-வது பார்ட்டி சம்மதிக்கின்றார்.

3) நம்மில் 1-வது பார்ட்டி இதனடியிற் கண்ட சொத்திற்கு தேவையான வசதிகள் அனைத்தையும் நம்மில் 2-வது பார்ட்டியின் ஒப்புதலுடன் நம்மில் 1-வது பார்ட்டியின் செலவிலேயே செய்து கொள்ள வேண்டியது.

1. P. அமராவதி

2. R. அனா

...1...புத்தகம்...2022...ம்  
வருடத்திய...1372...ம்  
ஆவணம்...18...நாள்களைக்  
கொண்டது...4...வது தாள்



P. அமராவதி

R. அனா

4) இதில் கண்ட இடத்தை நம்மில் 1-வது பார்ட்டி வேறு நபருக்கு கீழ்போக்கியத்திற்கோ, கீழ் வாடகைக்கோ விடக்கூடாது.

5) சொத்து வரி இவைகளை நம்மில் 2-வது பார்ட்டி செலுத்திக்கொள்ள வேண்டியது. உபயோகிக்கும் மின் இணைப்பு வரிகளையும் மற்றும் குடிநீர் இணைப்பில் தொகையை மேற்படி நிறுவனத்திற்காக நம்மில் 1-வது பார்ட்டி செலுத்திக்கொள்ள வேண்டியது.

6) இன்றைய தேதியில் நம்மில் 1-வது பார்ட்டியிடம், நம்மில் 2-வது பார்ட்டி குத்தகை சொத்தினை நல்ல முறையில் ஒப்படைத்துள்ளார். அதன்படி நம்மில் 1-வது பார்ட்டி கெடு முடியும் பொழுது நம்மில் 2-வது பார்ட்டியிடம் மேற்க்கண்ட நிலத்தை முறையாக ஒப்படைக்க வேண்டும்.

7) இதில் கண்ட கெடு முடிந்த பிறகு இரண்டு பார்ட்டிகளும் விருப்பட்டால் அந்த கால விருப்பப்படி வேறு ஒப்பந்தம் செய்து கொள்ளலாம்.

8) இந்தபடிக்கு சம்மதித்து ஏற்படுத்திக்கொண்ட சுத்த குத்தகை ஒப்பந்தப் பத்திரம்.

1. P. அமராவதி

2. R. அருண்

.....புத்தகம் 2022...ம்  
வருத்திய .....137.2.....ம்  
ஆவணம்...18...தாள்களைக்  
கொண்டது .....5.....வது தாள்கள்

பதிவு அலுவலர்

P. அமராவதி



**சொத்து விபரம்**

1-வது அயிட்டம்:- (பத்திர எண்.1-வது புத்தகம், 1066/1995, கருர் 2 நெ. இணைச் சார்பதிவகம்)

கருர் பதிவு மாவட்டம், கருர் 2 நெ. இணைச் சார்பதிவகம், குப்பம் கிராமம்,

அ.பு.ச.513/2 நெ. ஹெக்.3.67.5-க்கு ஏக்.9.09 இதில், ஏக்.5.60 செண்டுக்கு ஹெக்.2.26.63 இந்த விஸ்தீர்ணமுள்ள பூமிக்கு நான்கெல்லை விபரம்:-

கா.நாச்சப்பகவுண்டர் வகையரா பூமிக்கும்	கிழக்கு
தென்வடல் இட்டேரிக்கும்	மேற்கு
ரெங்கசாமி பூமிக்கும்	தெற்கு
கிழமேல் இட்டேரிக்கும்	வடக்கு

இதன் மத்தியில் மேற்படி ஏக்.5.60 செண்டுக்கு ஹெக்.2.26.63 இந்த விஸ்தீர்ணமுள்ள பூமியும்,

1. P. அமரலதி

2. P. அமரலதி

1.....புத்தகம் 2022.....ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....6.....வறு தாள்கள்

P. அமரலதி

பதிவு அலுவலர்





மேற்படி பூமிக்கு மேற்படி கிழமேல், தென்வடல் இட்டேரிகளில் மாமூல்படி தடப்பாத்தியமும், மேற்படி பூமிக்குண்டான சகல ஈஸ்ட்மெண்ட் பாத்தியங்கள் சகிதம். மற்றும் மாமூல் வழித்தடம் சகிதம். மேற்படி பூமி கே.பரமத்தி பஞ்சாயத்து யூனியனுக்கு கட்டுப்பட்டது. மேற்படி பூமி சப்டிஷனுக்கு முன் சர்வே.513 நெ. ஹெக்.3.84.5-ல் கட்டுப்பட்டது.

2-வது அயிட்டம்:- (பத்திர எண்.1-வது புத்தகம், 2453/2019, கருர் 2 நெ. இணைச் சார்பதிவகம்)

கருர் பதிவு மாவட்டம், கருர் 2 நெ. இணைச் சார்பதிவகம், புகளூர் வட்டம், குப்பம் கிராமம்,

அ.பு.ச.595 (ஊசிப்பில்லுக்காடு) நெ. ஏக்.8.21 செண்ட் இதில் தற்காலம் அளந்து கண்டுள்ளதின்படியும், பட்டாவின்படியும் (கூட்டுப்பட்டா எண்.3598) அ.பு.ச.595/2 நெ. ஹெக்.0.89.5-க்கு ஏக்.2.21 செண்ட் இந்தளவுள்ள பூமிக்கு நான்கெல்லை விபரம்:-

1. P. அமராவதி

2. R. [Signature]

.....புத்தகம்.....2022.....ம்  
 வருடத்திய .....1372.....ம்  
 ஆவணம்.....18.....நாள்களைக்  
 கொண்டது .....7.....வது நாள்

[Signature]  
 பதிவு அலுவலர்

P. அமராவதி




R.பழனிசாமி மற்றும் பழனியப்ப கவுண்டர் ஆகியோர்களுக்குப் பாத்தியப்பட்ட சர்வே.594 நெ. பூமிக்கும்	கிழக்கு
சர்வே.494 நெ. சுதா பூமிக்கும்	மேற்கு
சர்வே.570 நெ. பூமிக்கும், R.பழனிச்சாமி அவர்களுக்குப் பாத்தியப்பட்ட சர்வே.513 நெ. பூமிக்கும்	தெற்கு
ராமசாமி அவர்களுக்குப் பாத்தியப்பட்ட சர்வே.596 நெ. பூமிக்கும்	வடக்கு

இதன் மத்தியில் மேற்படி ஏக்.2.21 செண்டுக்கு ஹெக்.0.89.5 இந்த விஸ்தீர்ணமுள்ள பூமியும்,

1. P. அமராவதி

2. R. பூமி

...1...புத்தகம்...2022...ம்  
 வருடத்திய ...1372...ம்  
 ஆவணம்...18...தாள்களைக்  
 கொண்டது ...8...வது தாள்

  
 பதிவு அலுவலர்

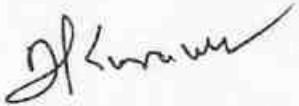

P. அமராவதி

மேற்படி பூமிக்குண்டான சகல ஈஸ்ட்மெண்ட் பாத்தியங்கள் சகிதம் மற்றும் மாமூல் வழித்தடம் சகிதம்.

1. P. அமராவதி

2. R. சந்திரா

சாட்சிகள்:-

வ.எண்	கையொப்பம்	முகவரி
1.	 (A.குமரவேலு)	த/பெ ஆறுமுகம், மீனாட்சி அப்பார்ட்மெண்ட் கோவை மெயின் ரோடு, ஆண்டாங்கோவில், கருர். (ஆதார் அடையாள அட்டை எண்.2924 0266 9440) (கைபேசி எண்.97860 33844)
2.	 (P.சுந்தர்ராஜ்)	த/பெ பழனிச்சாமி, கருர் டு ஈரோடு மெயின் ரோடு, குறுக்குசாலை, வேட்டமங்கலம், கருர். (ஆதார் அடையாள அட்டை எண்.5613 4072 5500) (கைபேசி எண்.98427 69319)


ஆவண அமைப்பு:



K. Vengadesh  
K.VENGADESH, MBA., B.L.,  
ADVOCATE  
ENROLL NO: MS 2927/2011  
KARUR.

P. அமராவதி

1.....புத்தகம் 2022.....ம்  
வருடத்திய .....13.7.2.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....9.....வது தாள்கள்

  
பதிவு அலுவலர்



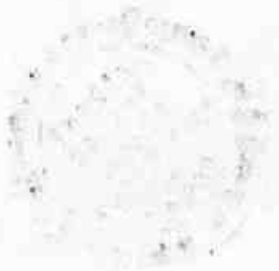
(சொத்தானது நீர்நிலை பகுதியில் அமையப் பெறவில்லை என்பதற்கான சான்று / உறுதிமொழி (Declaration) (நீதிபேராணை எண்.22163/2018-ல் வழங்கப்பட்ட தீர்ப்புரையை காண்க))

இந்த ஆவணத்தில் கண்ட சொத்தானது நீர்நிலைகள், நீர்வழிப்பாதைகள், நீர்பிடிப்பு பகுதிகளில் கட்டுப்படவில்லை என சான்றிளிக்கிறோம். மேலும் இதனில் தங்களுக்கு தவறான தகவல் அல்லது சான்று அளிக்கப்பட்டதாக பின்னாளில் கண்டுபிடிக்கப்பட்டால் அதனால் நான் / நாங்கள் சட்டப்பூர்வ நடவடிக்கைகளுக்கு உட்படுத்தப்படுவோம் என்பதையும் அறிவேன் / அறிவோம்.

P. அமராவதி

.....புத்தகம் 2022...  
வருடத்திய .....1372.....  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....10.....வது தாள்

பதிவு அலுவலர்



P. அமராவதி



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 1380

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகன்

பழனிசாமி

புல எண்	உட்பிரிவு	புள்ளி		நள்ளி		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
513	2C	2 - 25.00	3.11	--	--	--	--	---- -- 21-02-2001
557	1	3 - 86.50	5.35	--	--	--	--	---- -- 21-02-2001
570	2	1 - 68.00	2.35	--	--	--	--	273/1415--42/1415 -- 15-12-2005
		7 - 79.50	10.81					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை நாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/01380 /10872 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 05-05-2022 அன்று 03:40:44 PM நேரத்தில் ஆர்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

புத்தகம் 2022ம்  
வருடத்திய 1372ம்  
ஆவணம் 18 நாள் களைக்  
கொண்டது 11 வருட தாள்

பதிவு அலுவலர்

P. சிமதா உதி



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 3817

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகள்

பழனிச்சாமி

புல எண்	உட்பிரிவு	புன்செய்		தன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
595	2	0 - 89.50	1.23	--	--	--	--	2019/0103 /14/114427--- -- 21-12-2019
		0 - 89.50	1.23					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை நாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/03817 /30849 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 05-05-2022 அன்று 03:41:13 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பாளர் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

.....புத்தகம் 2022 .....ம்  
 வருடத்திய 1372 .....ம்  
 ஆவணம் 18 .....நாள்களை  
 கொண்டது 12 .....வது தாள்

பதிவு அலுவலர்

P. அமலா வதி



**இந்திய அரசாங்கம்**  
**Unique Identification Authority of India**  
**Government of India**

பதிவு அடையாளம் / Enrolment No.: 1189/55807/01512

To  
 13/12/2011  
 ஈ. பழனிச்சாமி  
 R. Palanisamy  
 S/O Ramasamy  
 5/18 ponniyakaundar pudhur punnamchatram  
 ARAVAKURICHI  
 Punnamchatram Karur  
 Tamil Nadu 639136



உங்கள் ஆதார் எண் / Your Aadhaar No. :

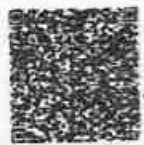
**2636 4530 1998**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



भारत सरकार  
 GOVERNMENT OF INDIA

ஈ. பழனிச்சாமி  
 R. Palanisamy  
 பிறந்ததேதி / Year of Birth : 1992  
 ஆண் / Male



**2636 4530 1998**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

R 23

P. அமராவதி  
 புத்தகம் 2022 ம்  
 வருடத்திய 1372 ம்  
 ஆவணம் 18 தாள்களைக்  
 கொண்டது 13 வது தாளில்  
 பதிவு அலுவலர்





**இந்திய அரசாங்கம்**  
**Unique Identification Authority of India**  
**Government of India**

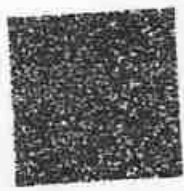
பதிவு அடையாளம் / Enrollment No. : 0658/00823/58165

To  
 P Amaravathi  
 ப. அமரவதி  
 W/O Palanisamy  
 5/18, Ponnaiyagoundanpudur  
 Aravakurichi  
 Punnamchattram, Karur,  
 Tamil Nadu - 639135  
 7373799319

06/04/2012



KA925156034FH



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**9607 9376 7486**

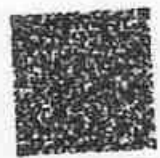
எனது ஆதார், எனது அடையாளம்

**இந்திய அரசாங்கம்**  
**Government of India**

ப. அமரவதி  
 P Amaravathi  
 பதிவு எண் / ID: 28271967  
 Quota: Female

9607 9376 7486

எனது ஆதார், எனது அடையாளம்



P. அமரவதி

.....!.....புத்தகம் 2022.....  
 வருடத்திய .....1372.....  
 ஆவணம்.....12.....தாள்களைக்  
 கொண்டது.....14.....வது தாள்

பதிவு அலுவலர்

P. அமரவதி





**இந்திய அரசாங்கம்**  
**Unique Identification Authority of India**  
**Government of India**

பதிவு அண்டாய்ம் / Enrollment No : 0000/00507/12024

To  
 ப கந்திராஜ்  
 P Sundaraj  
 S/O Palanisamy  
 335-c Karur To Erode Main Road  
 Kurukkusalai  
 Vettamangalam (west)  
 Vettamangalam  
 Karur  
 Tamil Nadu 639117  
 9842769319

07/10/2011  
 118767898



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**5613 4072 5500**

எனது ஆதார். எனது அடையாளம்



**இந்திய அரசாங்கம்**  
**Government of India**

ப கந்திராஜ்  
 P Sundaraj  
 பிறந்த நாள் / DOB : 10/12/1966  
 ஆண்பால் / Male



**5613 4072 5500**

எனது ஆதார். எனது அடையாளம்


*Handwritten signature*

...!...புத்தகம்...2022...ம்  
 வருடத்திய...1372...ம்  
 ஆவணம்...18...தாள்களைக்  
 கொண்டது...15...வது தாள்கள்

P. சிமராஜ்

*Handwritten signature*  
 பதிவு அலுவலர்


**இந்திய அரசாங்கம்**  
**Government of India**  
 குமரவேலு அரமுகம்  
**Kumaravelu Arumugam**  
  
 பிறந்த நாள்/DOB: 16/02/1975  
 ஆண்கள் / Male  
  
**2924 0266 9440**  
**ஆதார் - சாதாரண மனிதனின் அதிகாரம்**


**Unique Identification Authority of India**  
 மூலக் 147 ஆதாரம் 234  
 (கேள்வி அல்லது கோரிக்கைகளைக் கேள்வி கேளுங்கள்)  
 மூலக் 147 ஆதாரம் (ஆண்கள்)  
 ஆண்கள்/காண்கள் 147. 234 9440  
 23402  
 Address: S/O. Arumugam,  
 23-4, MEENAKSHI  
 APPARTMENT KOVAI MAIN  
 ROAD, Andankovil East,  
 Andankoil, Karur, Tamil  
 Nadu, 639002  
**2924 0266 9440**  
 1800 300 1947  
 help@uidai.gov.in  
 www.uidai.gov.in

*P. Kumaravelu*

1 புத்தகம் 2022 ம்  
 வருடத்திய 1372 ம்  
 ஆவணம் 18 தாள்களைக்  
 கொண்டது 16 வறு தாள்  
 பதிவு அலுவலர்

*P அமராவதி*



புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022



1. புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

புது எண் இணை சார்பதிவாளர் கட்டுர்புத்தகம்-11372/2022

P. அனாபதி


PHOTOCOPY OF THE PROPOSED LEASE AREA

Field photos in respect of Rough Stone quarry lease, Patta land over an extent of 2.84.0 Hectares in S.F.No's: 513/2C & 595/2(Part) of Kuppam village, Pugalur Taluk,

Karur District and Tamil Nadu State belongs to **Mrs. P.Amaravathi.**



P. அமரவதி

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

# M/s. A. LAKSHMI EXPLOSIVES

42, KALLIPALAYAM, Vengarai (Po.), - 637 208, P.Velur (Tk.), Namakkal (Dt.)



\*\*\*\*\* LICENSE No.: E/SC/TN/22/455 (E37197)

Date : 18/1/22

To

Amaravathy.P  
5/18, Ponniyagoundanpudur,  
Punnam Chatram Post, Pugalur Taluk,  
Karur District

Sub: Regarding blasting work using explosives in your proposed quarry

Sir,

We are having Explosives license form LE-3 (FORM 22) holding No. E/SC/TN/22/455 (E37197) Situated in S.F.No 532/1A, Irukkur Village, Paramathi Velur Taluk, Namakkal District. Our office functioning at address 42, Kallipalyam, Vengarai Post, Paramathi Velur Taluk, Namakkal District..

We are enacting two explosives van for transporting detonators and slurry(Class2) separately from our magazine to our work site and well experienced and licensed blasters and shot firer are used for safe blasting work.

We are willing to undertake blasting work on contract basis at your S.F No.513/2C (2.25.0 hectares), 595/2(0.59.0 hectares), Kuppam Village, Pugalur (Tk), Karur (Dt).

Thanking You,

Yours faithfully



*[Handwritten Signature]*  
A. LAKSHMI EXPLOSIVES

Enclosure:

Magazine License copy

*[Handwritten Signature]*



**अनुज्ञापित प्ररूप एल. ई.-3 | LICENCE FORM LE-3**  
(विस्फोटक नियम, 2008 को अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)  
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक र  
Licence to possess (c) for use explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazine

अनुज्ञापित सं. (Licence No.): E/SC/TN/22/455(E.37197)  
वार्षिक फीस रूपए (Annual Fee Rs). 6800/-



1. Licence is hereby granted to

M/s A. Lakshmi Explosives (अधिभोगी / Occupier : R.Selvam), No.42, Kallipalayam, Vengarai (Post), Paramathi, V Taluk, Namakkal District, Tamil Nadu - 637208, Town/Village - KALLIPALAYAM, District-NAMAKKAL, Tamil Nadu, Pincode - 637208

को अनुज्ञापित अनुदत्त की जाती है।

2. अनुज्ञापितधारी की प्रास्थिति | Status of licensee - Partnership Firm

3. अनुज्ञापित निम्नलिखित प्रयोजनों के लिए विधिमाम्य है।  
Licence is valid only for the following purpose.

possess for use of Nitrate Mixture, Safety Fuse, Detonating Fuse, Electric and/or Ordinary Detonators, - के उपयोग के लिए

4. अनुज्ञापित विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमाम्य है।  
Licence is valid for the following kinds and quantity of explosives: -- (क) (a)

क्र. सं. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1	Nitrate Mixture	2, 0	0	1300 Kg.
2	Safety Fuse	6, 1	0	20000 Mtrs
3	Detonating Fuse	6, 2	0	20000 Mtrs
4	Electric and/or Ordinary Detonators	6, 3	0	44000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञापित के लिए] 15 times  
(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)] as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापित परिसर की पृष्टि होती है।  
The licensed premises shall conform to the following drawing(s):

रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/455(E37197)  
दिनांक (Dated) 08/03/1994

6. अनुज्ञापित परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:  
Survey No(s). 532/1, ग्राम (Town/Village) - IRUKKUR

पुलिस थाना (Police Station) : PARAMATHI  
पिनकोड (Pincode)  
फैक्स (Fax)

जिला (District) NAMAKKAL, राज्य (State) Tamil Nadu  
दूरभाष (Phone) 9843918246 ई. मेल (E-Mail)

7. अनुज्ञापित परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं।  
The licensed premises consist of following facilities:

a Magazine, lobby and a detonator room

8. अनुज्ञापित समय - समय पर पचासशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों के अधीन रहते हुए अनुदत्त की जाती है।  
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures.

1. उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निरमाण संबंधी और अन्य विवरण दर्शित करते हुए)।  
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
2. अनुज्ञापित प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापित की शर्तों और अतिरिक्त शर्तों।  
Conditions and Additional Conditions of this licence signed by the licensing authority.
3. दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञापित तारीख 31 मार्च 1996 तक विधिमाम्य रहेगी। This licence shall remain valid till 31st day of March 1996.

यह अनुज्ञापित, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञापित की शर्तों का अधिक्रमण करने या यदि अनुज्ञापित परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहत की जा सकती है, जहां वह लागू हो।  
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 08/03/1994

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives  
South Circle, Chennai

**Amendments :**

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 01/08/2011
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 24/11/2016

**Transfers :**

- Change in Licensee Name/Address/Status dated : 24/08/2012

नवीनीकरण के पृष्ठांकन के लिए स्थान  
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापित प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of Licensing authority and stamp
21/07/2020	31/03/2024	Jt. Chief Controller of Explosives, South Circle, Chennai

**कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चताने या उनका दुरुपयोग विधि के अधीन गंभीर दंडिक अपराध होगा।**  
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

P. Selvam

ANNEXURE -X



இந்திய தனிப்பட்ட அடையாள ஆணையமைப்பு

இந்திய அரசாங்கம்  
Unique Identification Authority of India  
Government of India

பதிவு அடையாளம் / Enrollment No.: 1189/55816/01161

To  
ப. அமராவதி  
P. Amaravathi  
W/O Palanisamy  
5/18, Ponniyagoundanpudur Aravakurichi  
Punnamchaturam Karur  
Tamil Nadu 639136



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**9607 9376 7486**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



भारत सरकार  
GOVERNMENT OF INDIA



ப. அமராவதி  
P. Amaravathi  
பிறந்தலக்டம் / Year of Birth : 1957  
பெண்பயம் / Female



**9607 9376 7486**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

P. அமராவதி

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





*Signature of Dr. 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. करुपन्नण, मॉगनीकाडू, मुत्तमंपट्टी पोस्ट, बोम्मीडी वयॉ, ओमलूर तालुक, सेलम डीस्टीक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक साक्ष्य 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), Bommiidi (Via), Omalur 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.

*Signature of Dr. S. Karuppannan*

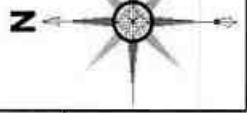
Dr. S. KARUPPANNAN, M.Sc., Ph.D.,  
RQP/MAS/263/2014/A

*Signature of Regional Controller of Mines*

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

**PLATE NO-1**

**APPLICANT:**  
**Mrs.P.AMARAVATHI,**  
W/o.Mr.PALANISAMY,  
D.No.5/18,  
PONNIYAGOUNDANPUDUR,  
PUNNAMCHATRAM POST,  
PUGALUR TALUK,  
KARUR DISTRICT. TAMIL NADU.,



**LEASE APPLIED AREA:**  
S.F.NO : 513/2C & 595/2(Part)  
EXTENT : 2.84.0Hect,  
VILLAGE : KUPPAM,  
TALUK : PUGALUR,  
DISTRICT : KARUR.

**INDEX**

- MINE LEASE AREA 
- APPROACH ROAD 
- CART ROAD 
- VILLAGE ROAD 
- NH -44 ROAD 
- SH-81 ROAD 

**KEY MAP**

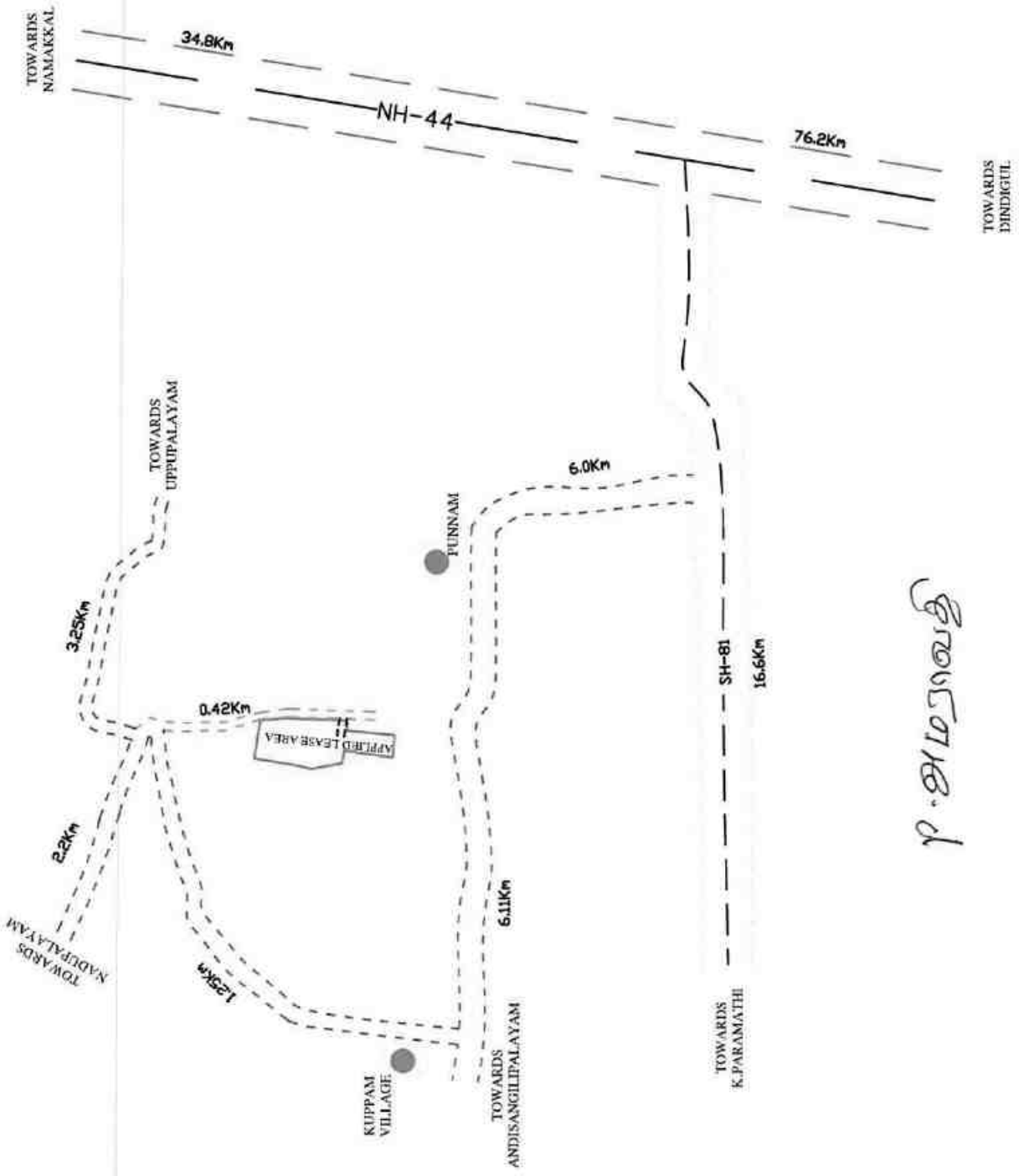
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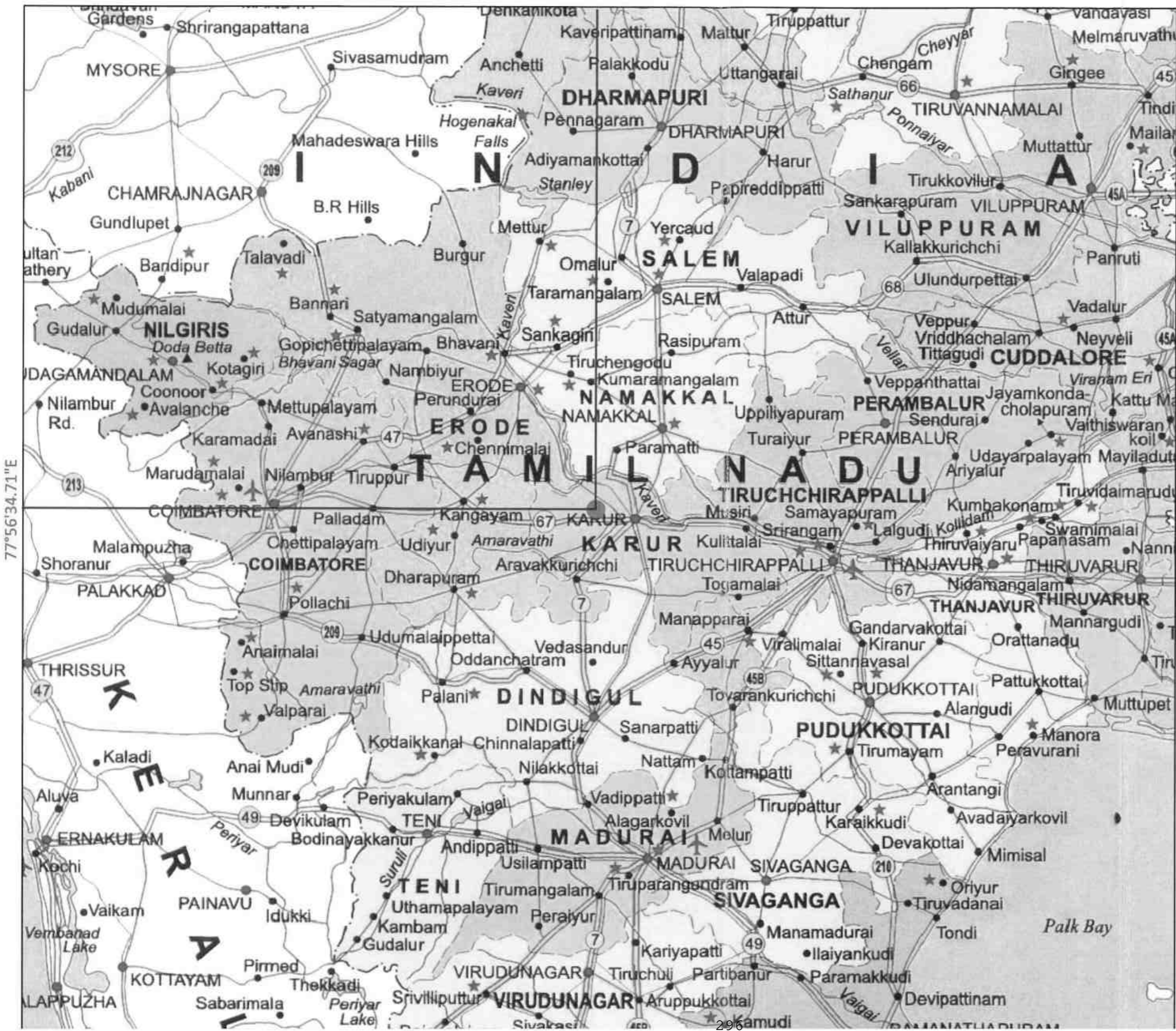
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Dr.S.KARUPPANNAN,M.Sc.,Ph.D.  
RECOGNIZED QUALIFIED PERSON  
RQP/MAS/26579014/A

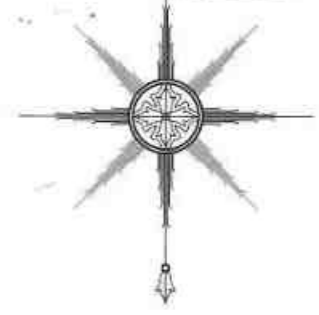


*P. SIVASUBRAMANIAM*

11°0'21.29"N



77°56'34.71"E



P. அமரவதி

PLATE NO-IA

**APPLICANT:**  
 Mrs.P.AMARAVATHI,  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIYAGOUNDANPUDUR,  
 PUNNAMCHATRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT, TAMIL NADU.,

**LEASE APPLIED AREA:**  
 S.F.NO : 513/2C & 595/2(Part)  
 EXTENT : 2.84.0Hect,  
 VILLAGE : KUPPAM,  
 TALUK : PUGALUR,  
 DISTRICT : KARUR.

INDEX

MINE LEASE AREA: ●  
 TOPO SHEET NO : 58-E/16  
 LATITUDE : 11°0'10.90"N to 11°0'21.29"N  
 LONGITUDE : 77°56'34.71"E to 77°56'38.75"E

LOCATION PLAN  
NOT TO SCALE

Prepared By:

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







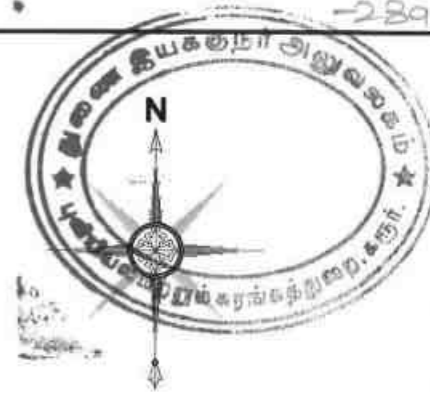


PLATE NO-IC

**APPLICANT:**  
**Mrs.P.AMARAVATHI,**  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIYAGOUNDANPUDUR,  
 PUNNAMCHATRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT, TAMIL NADU.,

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 VILLAGE : KUPPAM,  
 TALUK : PUGALUR,  
 DISTRICT : KARUR.

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SAFETY AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
300m RADIUS	
500m RADIUS	
EXISTING QUARRY PIT	
EB TRANSFORMER & LINE	

TOPO SHEET NO : 58-E/16  
 LATITUDE : 11°0'10.90"N to 11°0'21.29"N  
 LONGITUDE : 77°56'34.71"E to 77°56'38.75"E

**SATELLITE IMAGERY MAP**  
 SCALE- 1:5000

Prepared By:

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



PLATE NO-ID

APPLICANT:  
Mrs.P.AMARAVATHI,  
W/o.Mr.PALANISAMY,  
D.No.5/18, PONNIYAGOUNDANPUDUR,  
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PUGALUR TALUK,  
KARUR DISTRICT. TAMIL NADU.,

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EB TRANSFORMER & LINE	

TOPO SHEET NO : 58-E/16  
LATITUDE : 11°0'10.90"N to 11°0'21.29"N  
LONGITUDE : 77°56'34.71"E to 77°56'38.75"E

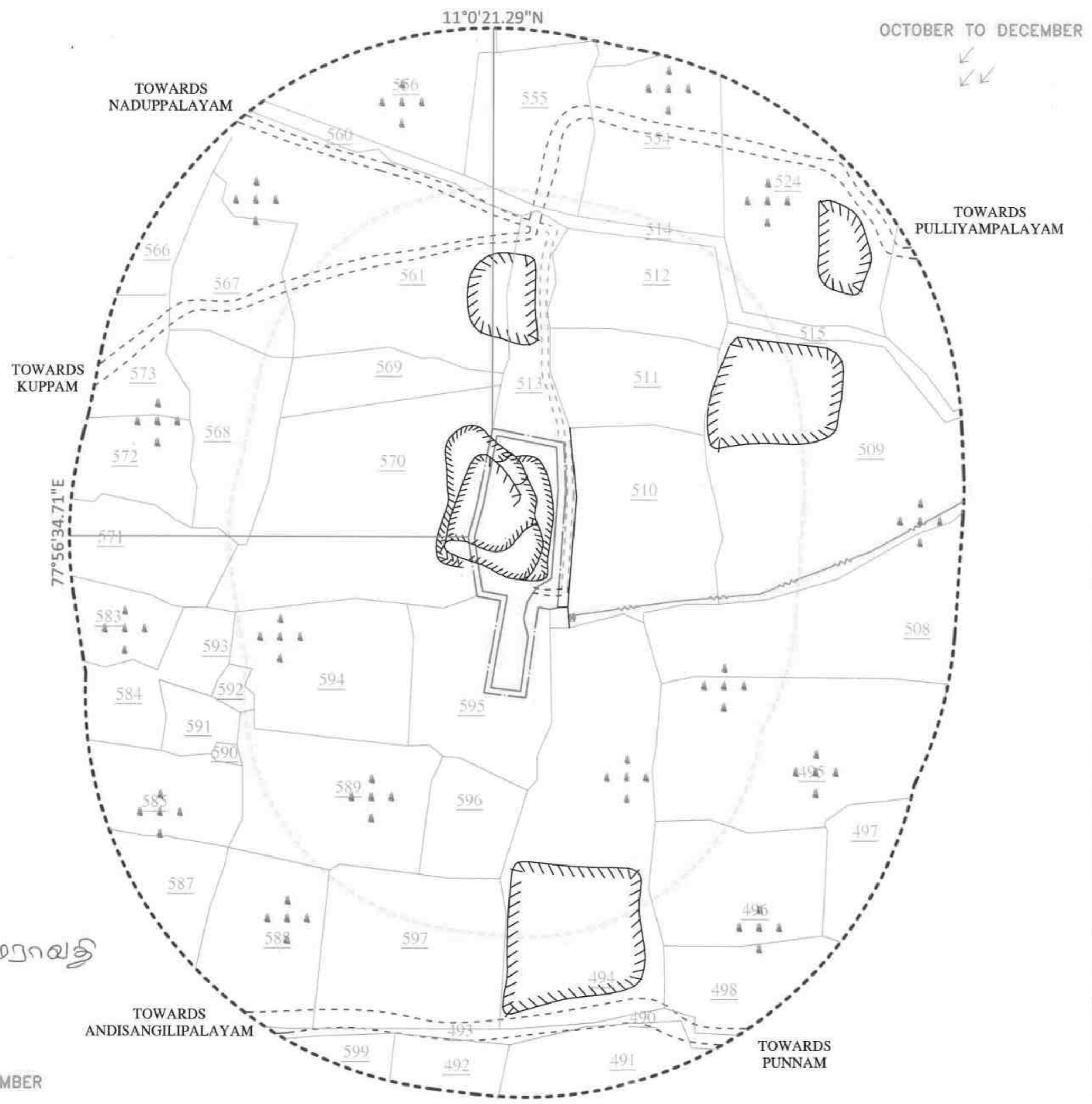
ENVIRONMENTAL PLAN

SCALE- 1:5000

Prepared By:

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



OCTOBER TO DECEMBER



TOWARDS NADUPPALAYAM

TOWARDS PULLIYAMPALAYAM

TOWARDS KUPPAM

77°56'34.71"E

11°0'21.29"N

TOWARDS ANDISANGILIPALAYAM

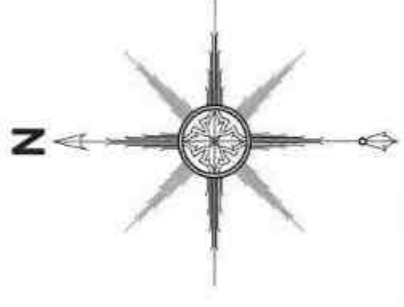
TOWARDS PUNNAM

P. Amaranathan



JULY TO SEPTEMBER





**PLATE NO-II**

PILLAR STONES	LATITUDE	LONGITUDE
1	11° 0'21.29"N	77° 56'38.69"E
2	11° 0'19.38"N	77° 56'38.75"E
3	11° 0'14.57"N	77° 56'38.37"E
4	11° 0'14.50"N	77° 56'38.06"E
5	11° 0'14.59"N	77° 56'37.58"E
6	11° 0'10.90"N	77° 56'37.03"E
7	11° 0'11.12"N	77° 56'35.31"E
8	11° 0'14.88"N	77° 56'36.03"E
9	11° 0'15.06"N	77° 56'35.06"E
10	11° 0'17.48"N	77° 56'34.71"E
11	11° 0'18.85"N	77° 56'35.10"E
12	11° 0'21.89"N	77° 56'35.73"E

**TOPOSHEET NO:58-E/16**

**APPLICANT:**

**Mrs.P.AMARAVATHI,**  
W/o.Mr.PALANISAMY,  
D.No.5/18, PONNIYAGOUNDANPUDUR,  
PUNNAMCHATRAM POST,  
PUGALUR TALUK,  
KARUR DISTRICT. TAMIL NADU.,

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- APPROACH ROAD
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- EB TRANSFORMER & LINE

**MINE LEASE PLAN**

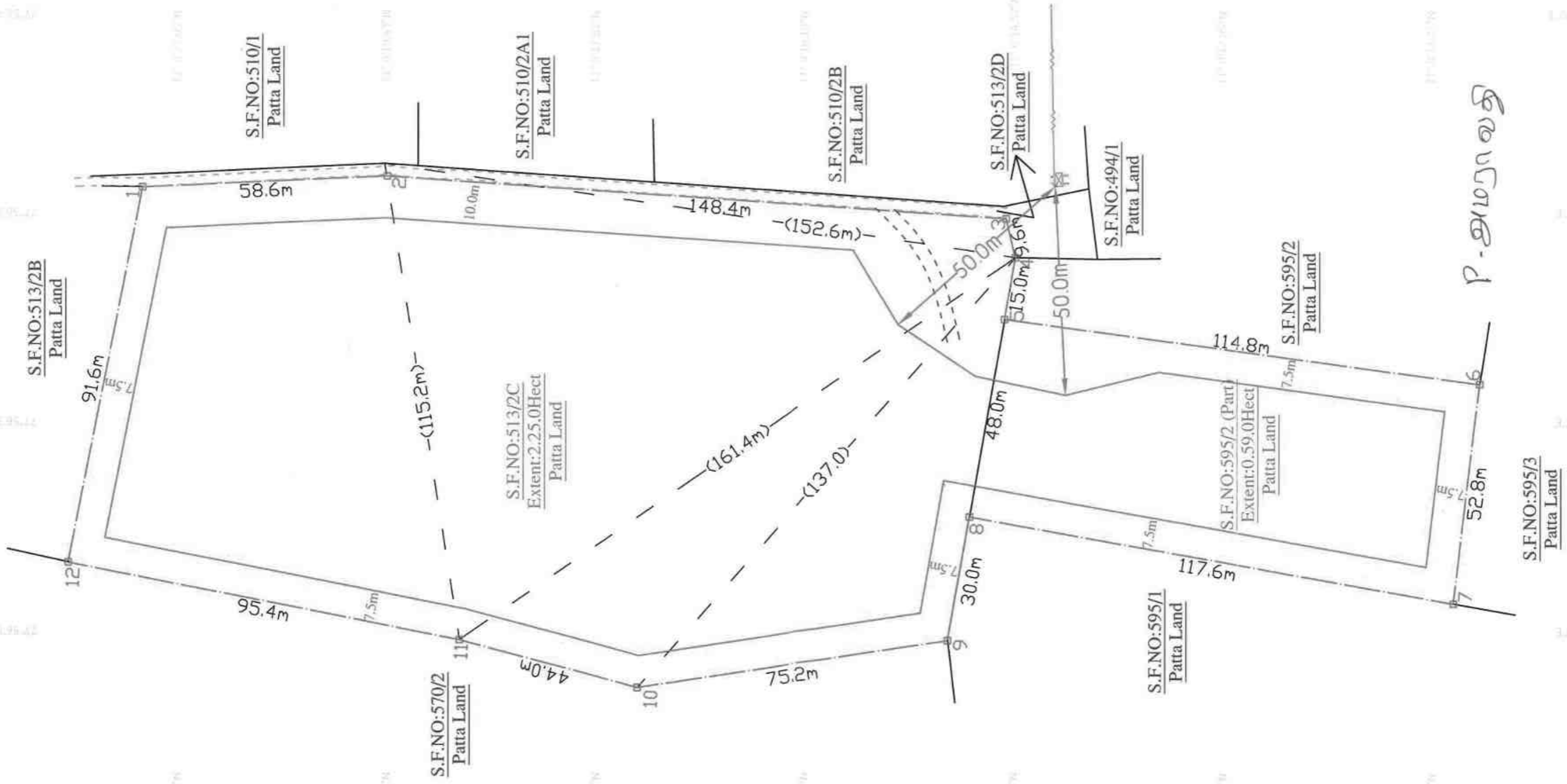
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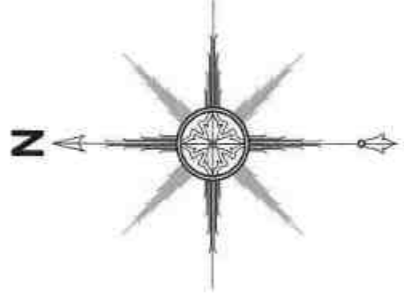
Prepared By:

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*(Signature)*

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RECOGNIZED QUALIFIED PERSON  
RQP/MAS/263/2014/A





EXISTING PIT DETAILS			
Pit level	Length(m)	Width(m)	Depth(m)
1	140	21	5
2	38	86	10
3	112	69	15

**PLATE NO-III**

**APPLICANT:**  
**Mrs.P.AMARAVATHI,**  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIYAGOUNDANPUDUR,  
 PUNNAMCHATRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT, TAMIL NADU.,

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 DISTRICT : KARUR.

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EXISTING PIT	
FENCING	

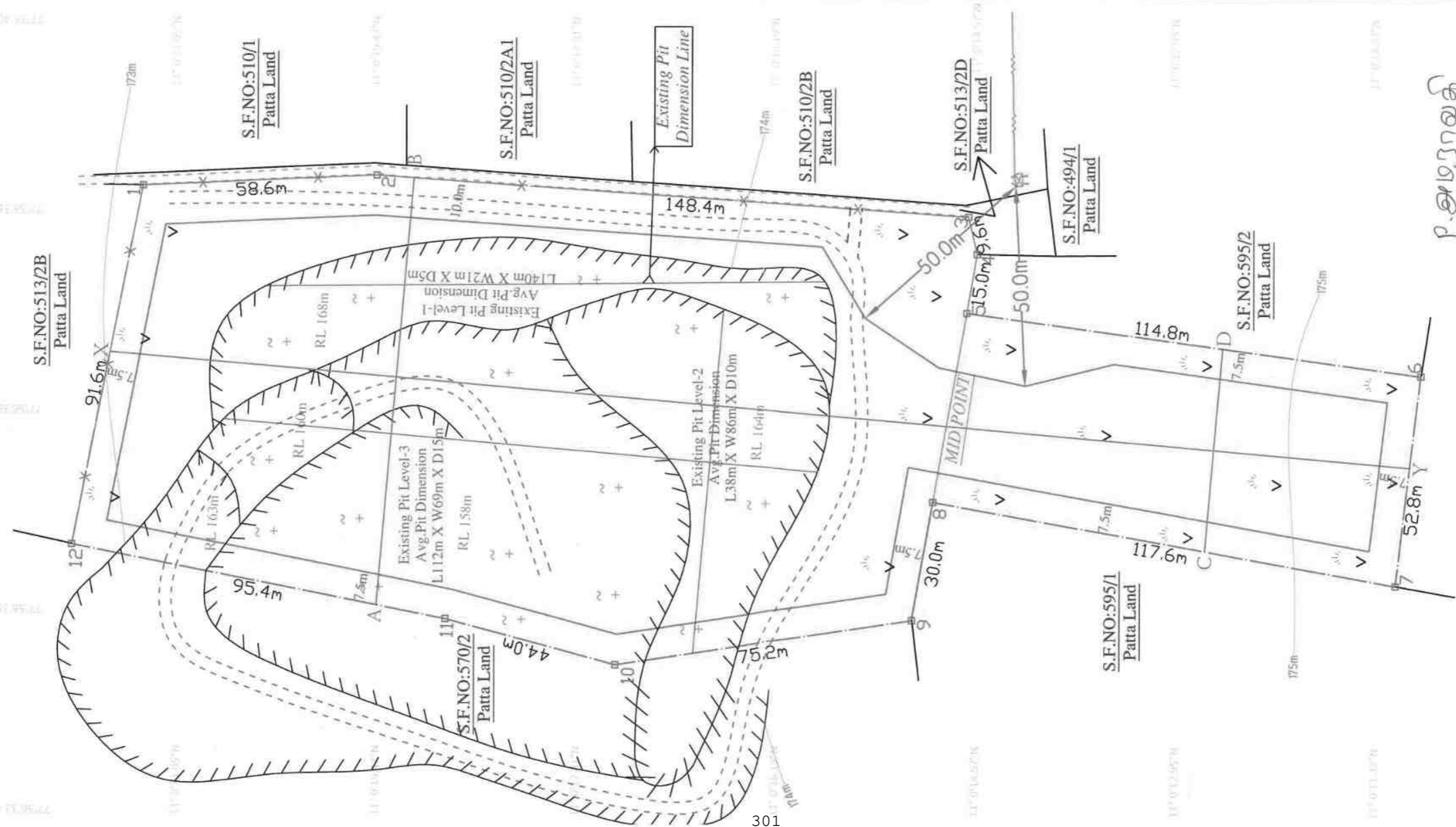
**SURFACE & GEOLOGICAL PLAN**

SCALE: 1:1000

Prepared By:

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

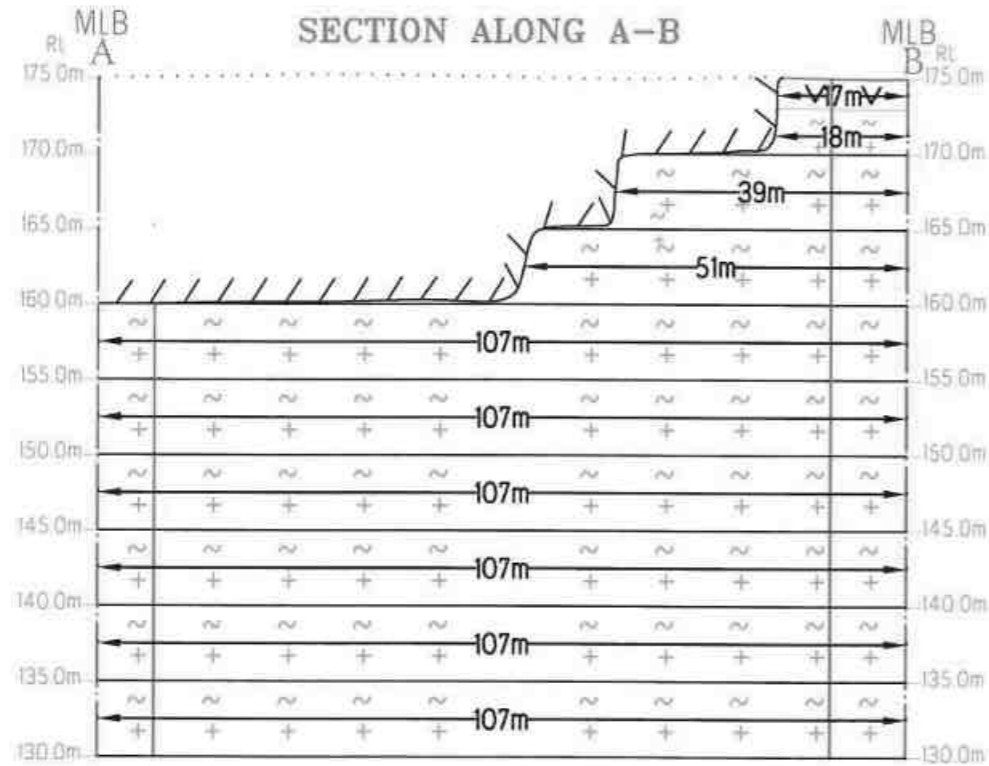
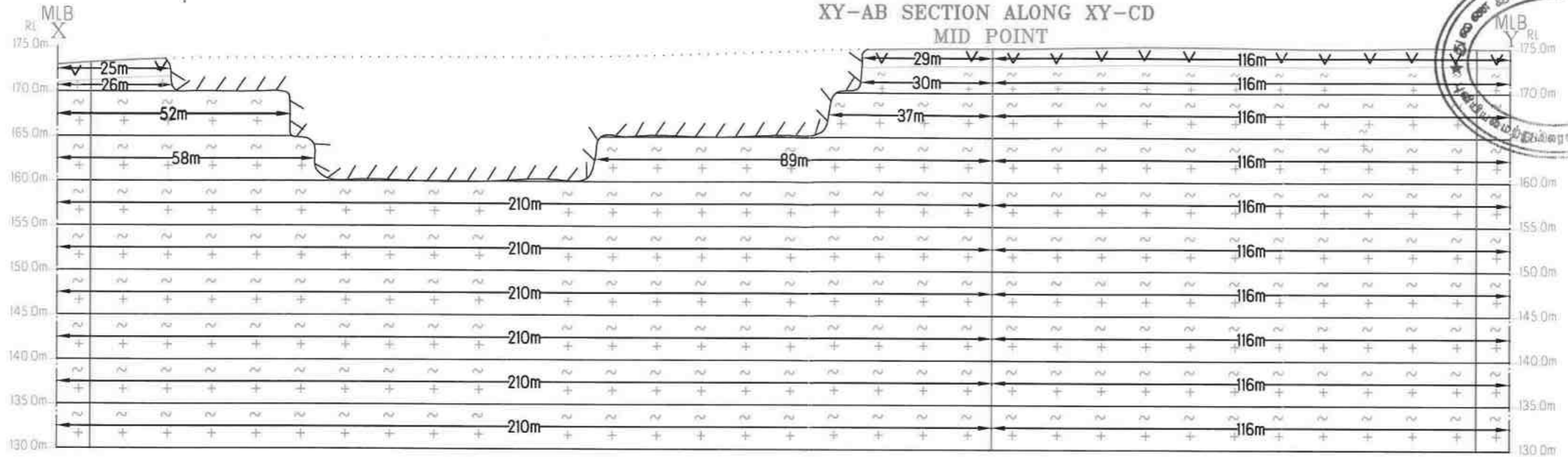


P. அமரவதி

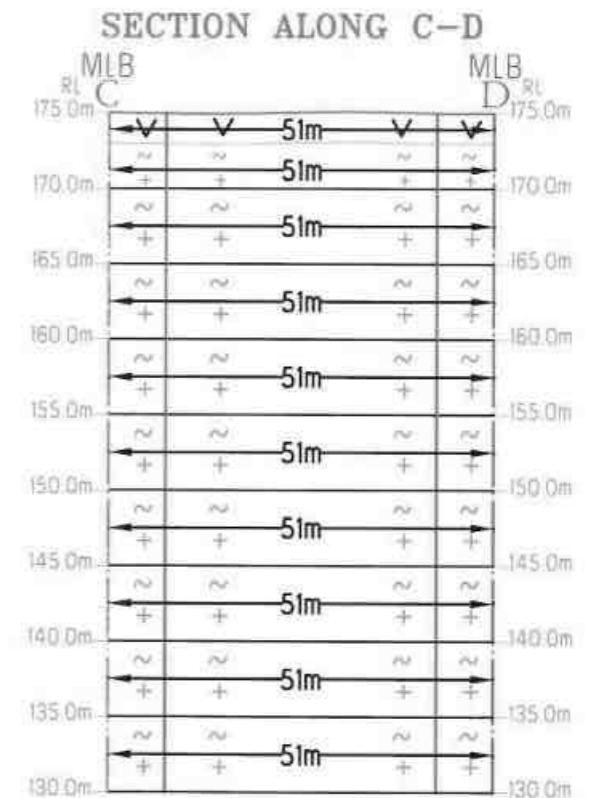


SECTION ALONG X-Y

XY-AB SECTION ALONG XY-CD  
MID POINT








GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Geological Resources in CBM	Top soil in CBM
XY-AB	I	54	17	2	1836	.....	1836
	I	56	18	3	3024	3024	.....
	II	89	39	5	17355	17355	.....
	III	147	51	5	37485	37485	.....
	IV	210	107	5	112350	112350	.....
	V	210	107	5	112350	112350	.....
	VI	210	107	5	112350	112350	.....
	VII	210	107	5	112350	112350	.....
	VIII	210	107	5	112350	112350	.....
IX	210	107	5	112350	112350	.....	
<b>TOTAL</b>					<b>733800</b>	<b>731964</b>	<b>1836</b>
XY-CD	I	116	51	2	11832	.....	11832
	I	116	51	3	17748	17748	.....
	II	116	51	5	29580	29580	.....
	III	116	51	5	29580	29580	.....
	IV	116	51	5	29580	29580	.....
	V	116	51	5	29580	29580	.....
	VI	116	51	5	29580	29580	.....
	VII	116	51	5	29580	29580	.....
	VIII	116	51	5	29580	29580	.....
IX	116	51	5	29580	29580	.....	
<b>TOTAL</b>					<b>266220</b>	<b>254388</b>	<b>11832</b>
<b>GRAND TOTAL</b>				<b>45</b>	<b>1000020</b>	<b>986352</b>	<b>13668</b>



**APPLICANT:**  
Tmt.P.AMARAVATHY,  
W/o.Mr.PALANISAMY,  
D.No.5/18, PONNIYAGOUNDENPUDUR,  
PUNNAMSATHIRAM POST,  
PUGALUR TALUK,  
KARUR DISTRICT, TAMIL NADU.,

**LEASE APPLIED AREA:**  
S.F.NO : 513/2C & 595/2(Part)  
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DISTRICT : KARUR.

**INDEX**

- MINE LEASE AREA 
- SAFETY BOUNDARY 
- TOP SOIL 
- ROUGH STONE 
- EXISTING PIT 

**PLATE NO-III A**

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

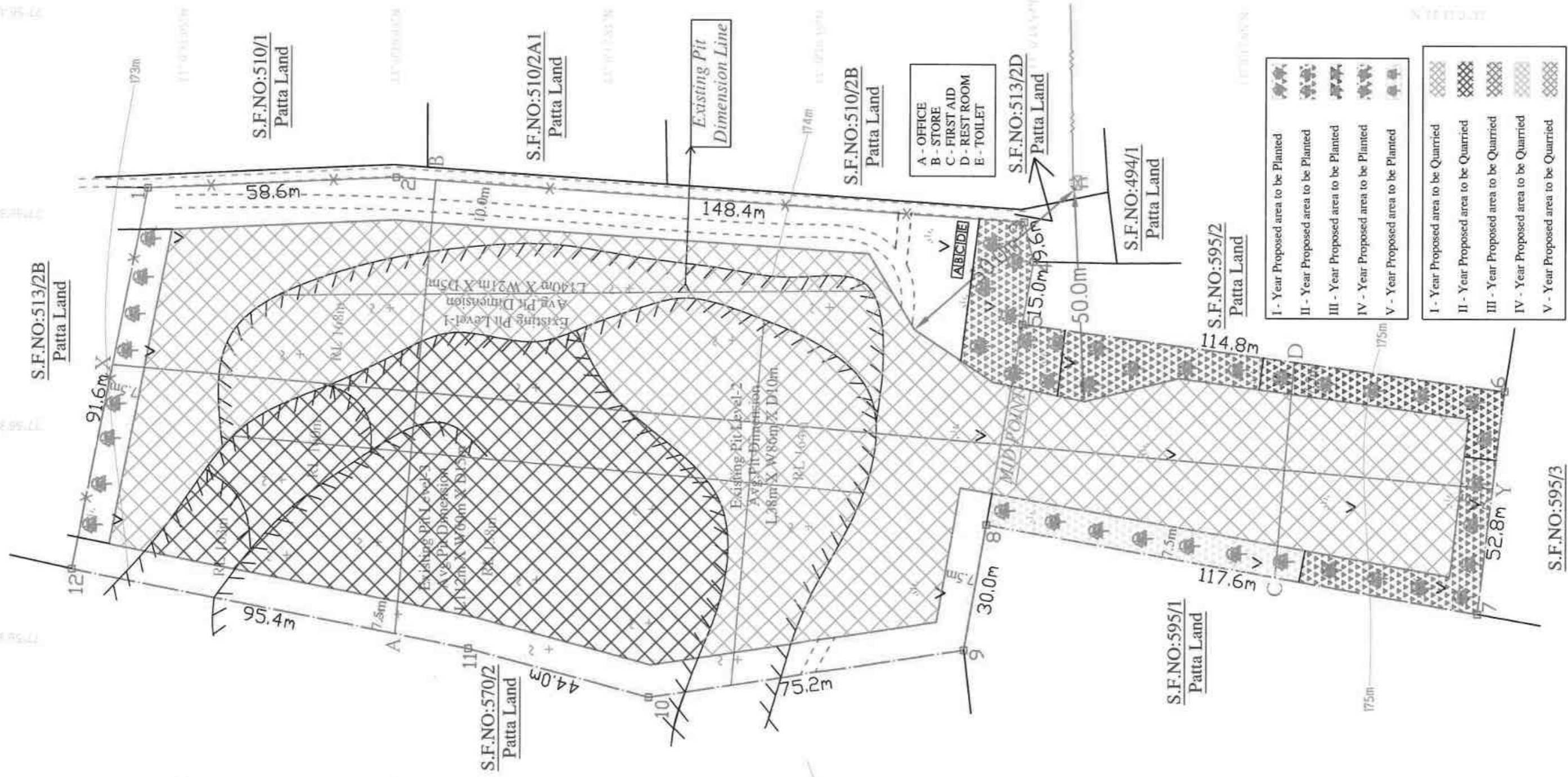
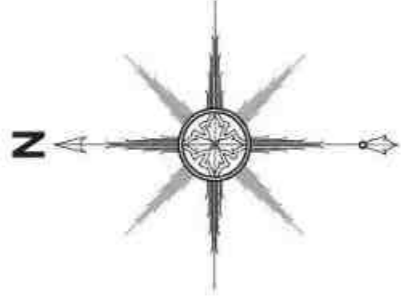
P. S. Karuppannan

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



**PLATE NO-IV**

**APPLICANT:**  
**Mrs.P.AMARAVATHI,**  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIAGOUNDANPUDUR,  
 PUNNAMCHATTRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT, TAMIL NADU.,

**LEASE APPLIED AREA:**  
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 TALUK : PUGALUR,  
 DISTRICT : KARUR.

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- TOP SOIL
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- FENCING

**YEARWISE DEVELOPMENT & PRODUCTION PLAN**

SCALE 1:1000

Prepared By:

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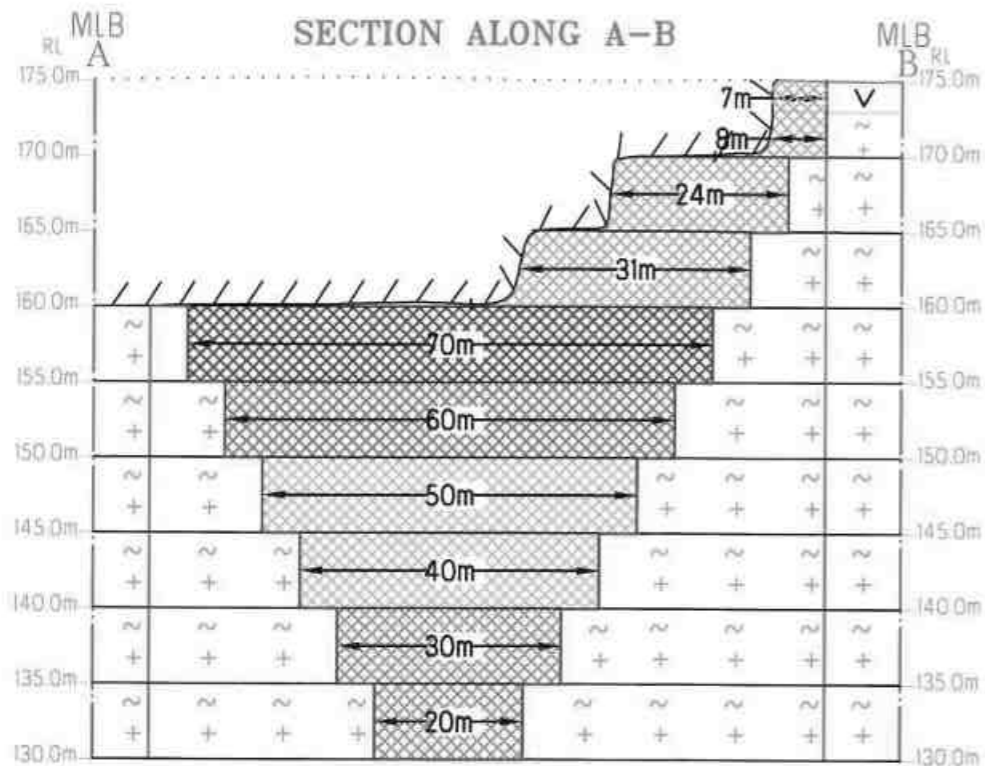
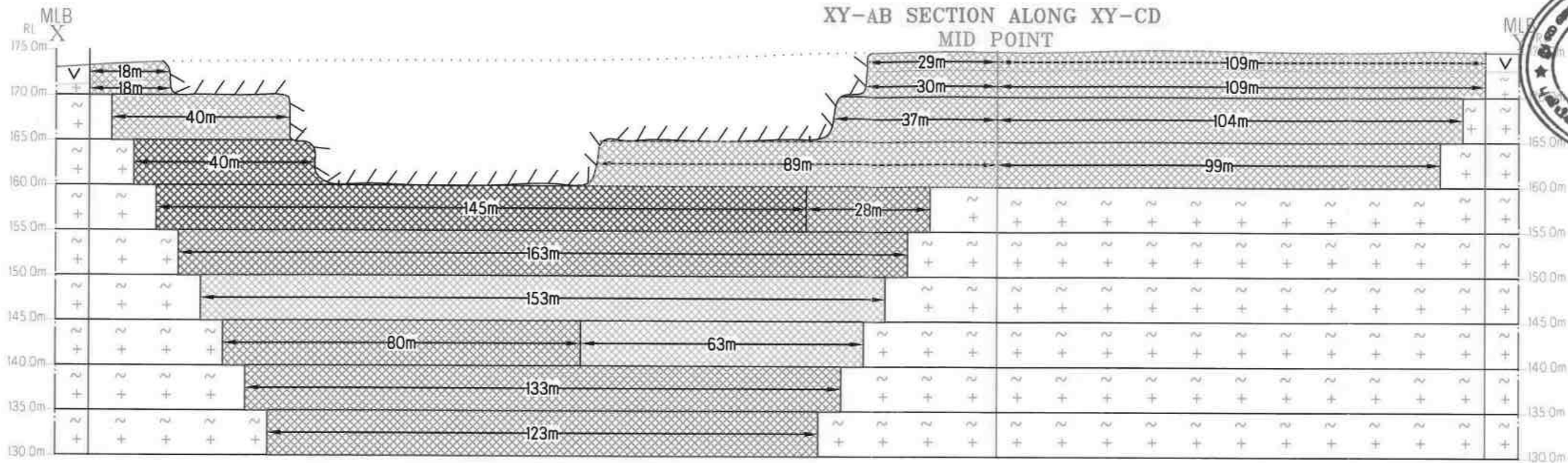


P. BHANU SUDHAN

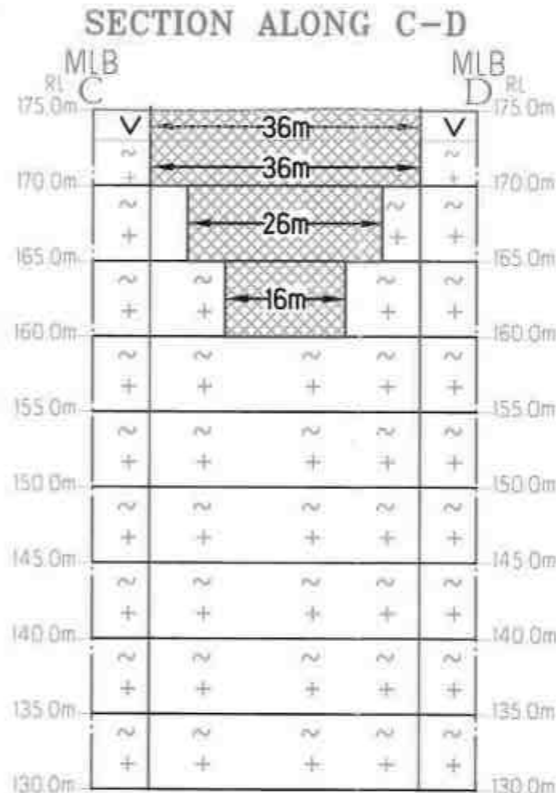


SECTION ALONG X-Y

XY-AB SECTION ALONG XY-CD  
MID POINT



YEARWISE PRODUCTIONS									
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Production Reserves in CBM	Top soil in CBM	
XY-AB	I-YEAR	I	47	7	2	658	.....	658	
		II	77	24	5	9240	9240	.....	
		III	89	31	5	13795	13795	.....	
XY-CD	I-YEAR	I	109	36	2	7848	.....	7848	
		II	104	26	5	13520	13520	.....	
		III	99	16	5	7920	7920	.....	
<b>TOTAL</b>						<b>65905</b>	<b>57399</b>	<b>8506</b>	
XY-AB	II-YEAR	III	40	31	5	6200	6200	.....	
		IV	145	70	5	50750	50750	.....	
	<b>TOTAL</b>						<b>56950</b>	<b>56950</b>	<b>0</b>
	III-YEAR	IV	28	70	5	9800	9800	.....	
		V	163	60	5	48900	48900	.....	
<b>TOTAL</b>						<b>58700</b>	<b>58700</b>	<b>0</b>	
IV-YEAR	VI	153	50	5	38250	38250	.....		
	VII	63	40	5	12600	12600	.....		
<b>TOTAL</b>						<b>50850</b>	<b>50850</b>	<b>0</b>	
V-YEAR	VII	80	40	5	16000	16000	.....		
	VIII	133	30	5	19950	19950	.....		
	IX	123	20	5	12300	12300	.....		
<b>TOTAL</b>						<b>48250</b>	<b>48250</b>	<b>0</b>	
<b>GRAND TOTAL</b>						<b>280655</b>	<b>272149</b>	<b>8506</b>	



- 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

P. 2103703

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- MINE LEASE AREA
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PLATE NO-IVA

YEARWISE DEVELOPMENT & PRODUCTIONS SECTIONS  
SECTION HOR 1 : 1000 & VER 1 : 500

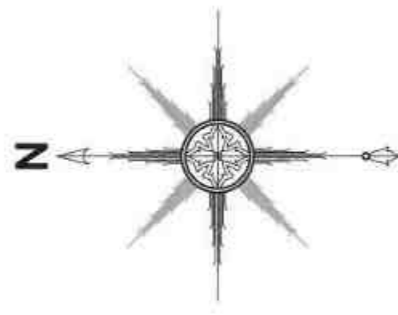
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EXTENT : 2.84.0Hect,  
VILLAGE : KUPPAM,  
TALUK : PUGALUR,  
DISTRICT : KARUR.



**PLATE NO-V**

**APPLICANT:**  
 Mrs.P.AMARAVATHI,  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIYAGOUNDANPUDUR,  
 PUNNAMCHATHRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT, TAMIL NADU.,

**LEASE APPLIED AREA:**  
 S.F.NO : 513/2C & 595/2(Part)  
 EXTENT : 2.84.0Hect,  
 VILLAGE : KUPPAM,  
 TALUK : PUGALUR,  
 DISTRICT : KARUR.

**INDEX**

- MINE LEASE AREA
- SAFETY BOUNDARY
- APPROACH ROAD
- CART ROAD
- PILLAR STONES
- EB TRANSFORMER & LINE
- QUARRY ROAD
- ROUGH STONE
- TOP SOIL
- SHRUB
- EXISTING PIT
- FENCING
- ULTIMATE BENCH

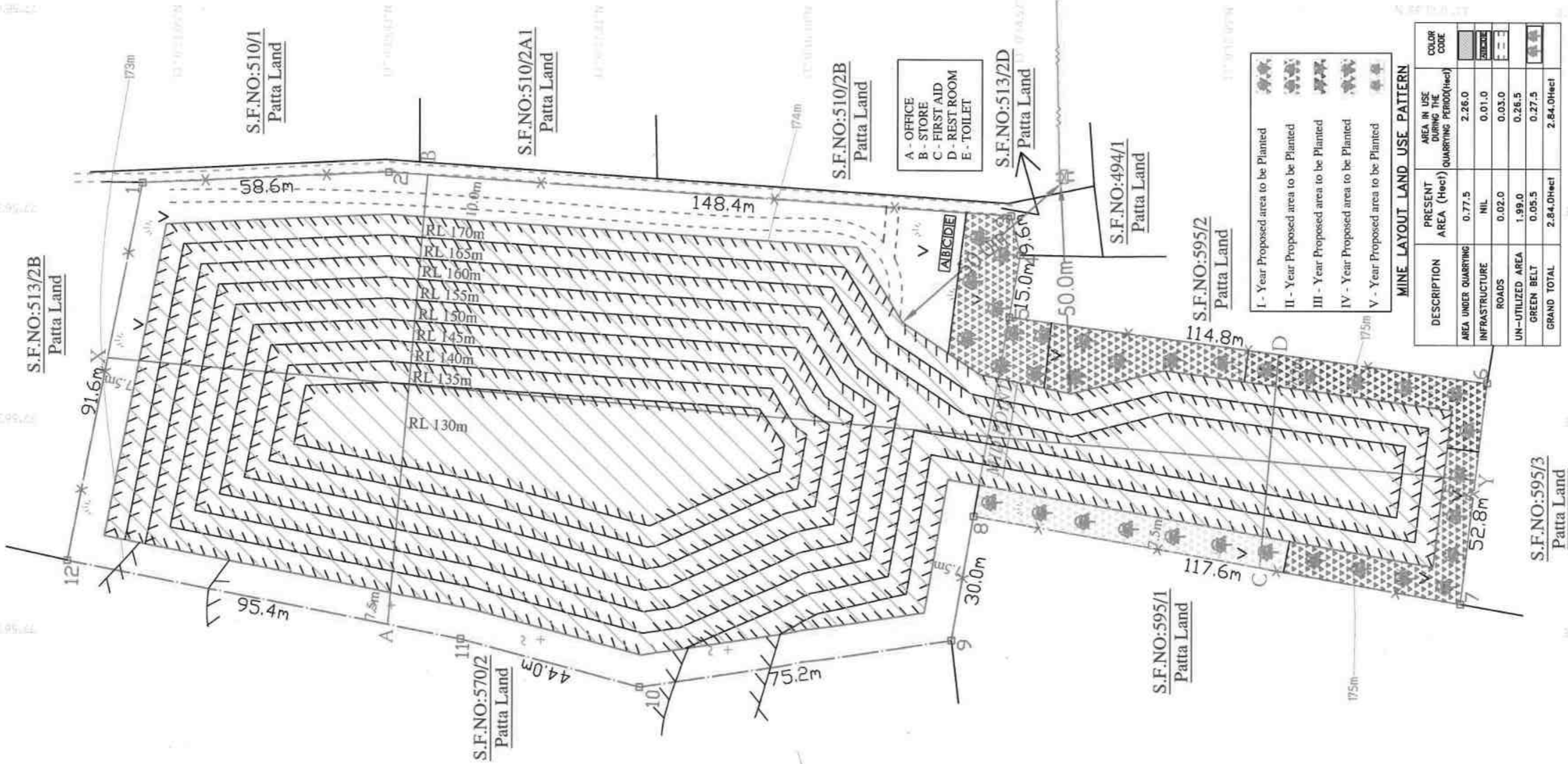
**MINE LAYOUT PLAN AND LAND USE PATTERN**

SCALE: 1:1000

Prepared By: \_\_\_\_\_

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

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



- A - OFFICE
- B - STORE
- C - FIRST AID
- D - REST ROOM
- E - TOILET

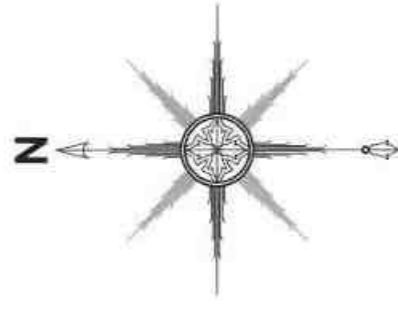
- I - Year Proposed area to be Planted
- II - Year Proposed area to be Planted
- III - Year Proposed area to be Planted
- IV - Year Proposed area to be Planted
- V - Year Proposed area to be Planted

**MINE LAYOUT LAND USE PATTERN**

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	0.77.5	2.26.0	[Pattern]
INFRASTRUCTURE	NIL	0.01.0	[Pattern]
ROADS	0.02.0	0.03.0	[Pattern]
UN-UTILIZED AREA	1.99.0	0.26.5	[Pattern]
GREEN BELT	0.05.5	0.27.5	[Pattern]
<b>GRAND TOTAL</b>	<b>2.84.0Hect</b>	<b>2.84.0Hect</b>	

P. 21105010





**PLATE NO-VI**

**APPLICANT:**  
**Mrs.P.AMARAVATHI,**  
 W/o.Mr.PALANISAMY,  
 D.No.5/18, PONNIYAGOUNDANPUDUR,  
 PUNNAMCHATRAM POST,  
 PUGALUR TALUK,  
 KARUR DISTRICT. TAMIL NADU.,

**LEASE APPLIED AREA:**  
 S.F.NO : 513/2C & 595/2(Part)  
 EXTENT : 2.84.0Hect,  
 VILLAGE : KUPPAM,  
 TALUK : PUGALUR,  
 DISTRICT : KARUR.

**INDEX**

- MINE LEASE AREA
- SAFETY BOUNDARY
- APPROACH ROAD
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- QUARRY ROAD
- ROUGH STONE
- TOP SOIL
- SHRUB
- EXISTING PIT
- FENCING
- ULTIMATE BENCH

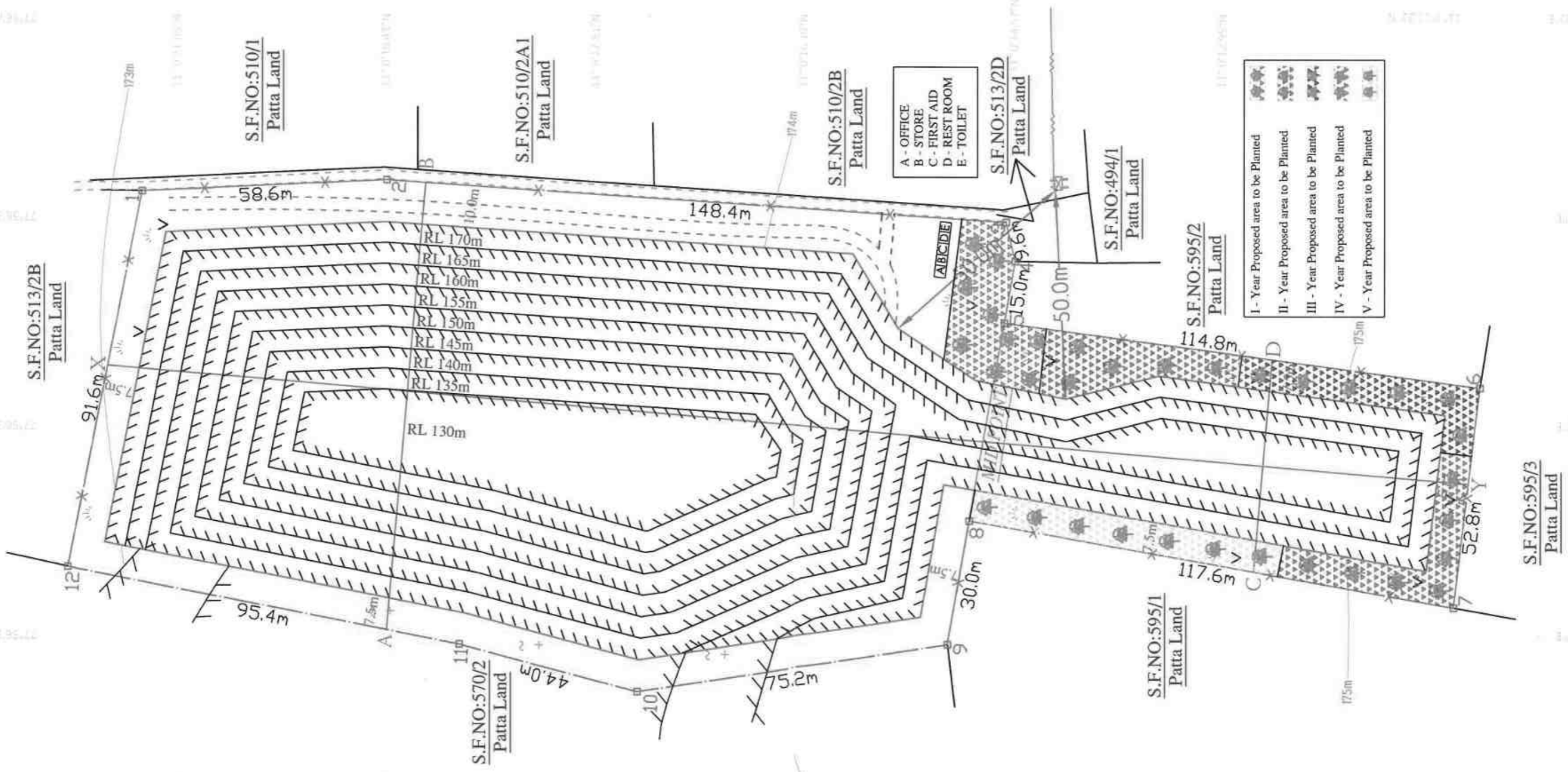
**CONCEPTUAL PLAN**

SCALE 1 : 1000

Prepared By:

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

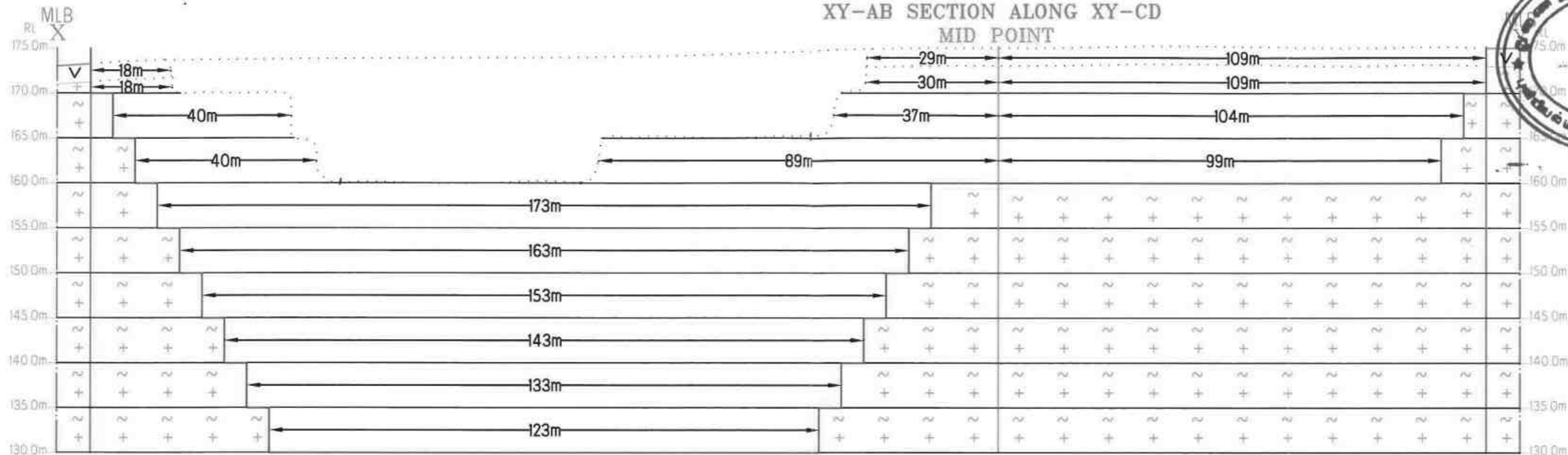
Dr.S.KARUPPANNAN, M.Sc., Ph.D.  
 RECOGNIZED QUALIFIED PERSON  
 RQP/ MAS/ 263/ 2014/A



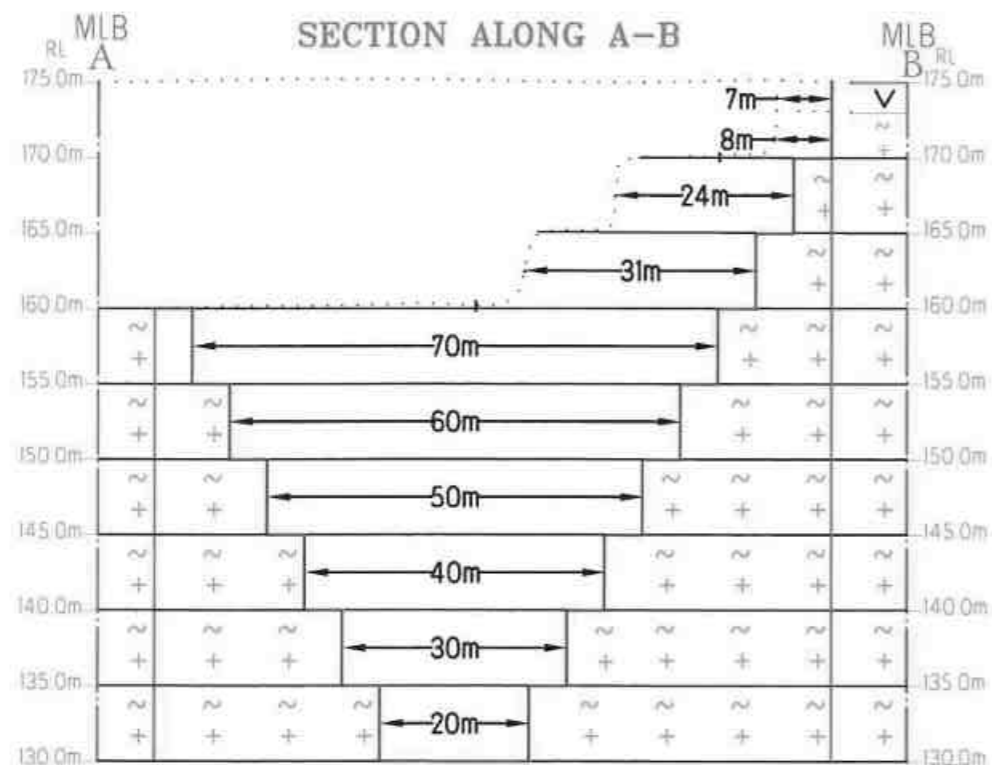
P. Arulogayathi

SECTION ALONG X-Y

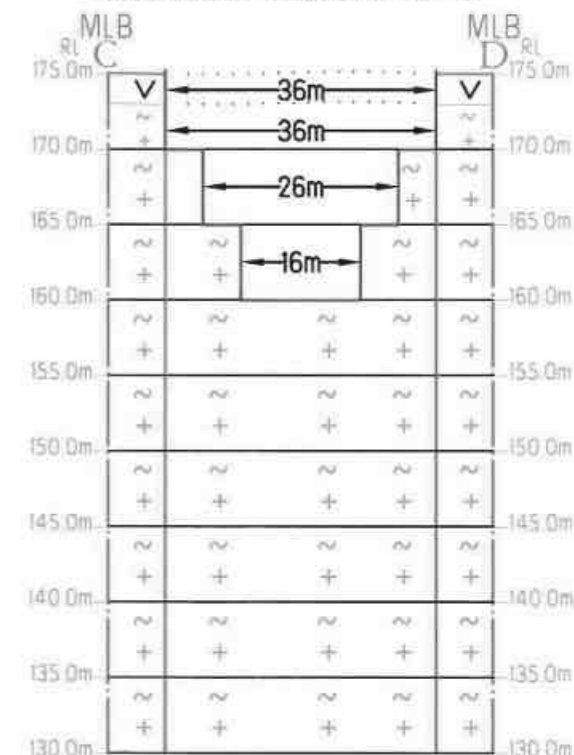
XY-AB SECTION ALONG XY-CD  
MID POINT



SECTION ALONG A-B



SECTION ALONG C-D



MINEABLE RESERVES								
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In CBM	Mineable Reserves in CBM	Top soil in CBM	
XY-AB	I	47	7	2	658	.....	658	
	I	48	8	3	1152	1152	.....	
	II	77	24	5	9240	9240	.....	
	III	129	31	5	19995	19995	.....	
	IV	173	70	5	60550	60550	.....	
	V	163	60	5	48900	48900	.....	
	VI	153	50	5	38250	38250	.....	
	VII	143	40	5	28600	28600	.....	
	VIII	133	30	5	19950	19950	.....	
IX	123	20	5	12300	12300	.....		
<b>TOTAL</b>					<b>239595</b>	<b>238937</b>	<b>658</b>	
XY-CD	I	109	36	2	7848	.....	7848	
	I	109	36	3	11772	11772	.....	
	II	104	26	5	13520	13520	.....	
	III	99	16	5	7920	7920	.....	
<b>TOTAL</b>					<b>41060</b>	<b>33212</b>	<b>7848</b>	
<b>GRAND TOTAL</b>					<b>45</b>	<b>280655</b>	<b>272149</b>	<b>8506</b>

INDEX

- MINE LEASE AREA
- SAFETY BOUNDARY
- TOP SOIL
- ROUGH STONE
- EXISTING PIT
- ULTIMATE BENCH

PLATE NO-VIA

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

P. BILU SIVARAJU

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

**APPLICANT:**  
Mrs.P.AMARAVATHI,  
W/o.Mr.PALANISAMY,  
D.No.5/18, PONNIYAGOUNDANPUDUR,  
PUNNAMCHATRAM POST,  
PUGALUR TALUK,  
KARUR DISTRICT. TAMIL NADU.,

**LEASE APPLIED AREA:**  
S.F.NO : 513/2C & 595/2(Part)  
EXTENT : 2.84.0Hect,  
VILLAGE : KUPPAM,  
TALUK : PUGALUR,  
DISTRICT : KARUR.

From

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

To

Tmt.P.Amaravathi,  
W/o.Mr.Palanisamy,  
Door No.5/18, Ponniyagoundanpudur,  
Punnamchatram Post,  
Pugalur Taluk, Karur District.

**Rc.No.266/Mines/2020, Dated: 25.01.2022**

Sir,

Sub: Mines and Minerals - Minor Mineral - Karur District - Pugalur Taluk - Kuppam Village - Patta lands in S.F.Nos.513/2C(2.25.0 hect), 595/2(Part) 0.59.0 hect over an Extent 2.84.0 Hectares - Quarry lease application - Preferred by Tmt.P.Amaravathi - Rough stone Precise area communicated - mining plan submitted for approval - Approved - Regarding.

- Ref:
1. Quarry lease application for Rough stone and Gravel preferred by Tmt.P.Amaravathi, W/o.Mr.Palanisamy, Door No.5/18, Ponniyagoundanpudur, Punnamchatram Post, Pugalur Taluk, Karur District, dated: 16.06.2020.
  2. Order of the Hon'ble Supreme Court of India in I.A.Nos.12-13/2011 in SLP (C) No.19628-19629/2009, dt: 27.02.2012.
  3. Government of India, Ministry of Environment and Forest Office Memorandum, Dated:18.05.2012.
  4. The Chairman, State Level Environment Impact Assessment Authority, Tamil Nadu D.O.Lr.No.SEIAA-TN/Minor Minerals/2012, Dated: 17.09.2012.
  5. The Commissioner of Geology and Mining, Chennai letter Rc.No.3868/LC/2012, dt: 19.11.2012.
  6. Deputy Director, Geology and Mining, Karur Notice Rc.No.266/Mines//2020, Dated: 21.10.2021.
  7. Mining Plan submitted by Tmt.P.Amaravathi, letter Dated: 02.11.2021.

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In the reference 7<sup>th</sup> cited, as directed by the Deputy Director, of Geology and Mining, Karur, Tmt.P.Amaravathi have submitted three copies of draft mining plan for approval in respect of Rough stone quarry lease applied areas, over an extent 2.84.0 Hects., of patta lands in

*PALANISAMY*



-101-

S.F.Nos. 513/2C(2.25.0 hect), 595/2(Part) of Kuppam Village, Pugalur Taluk, Karur District.

The above submitted mining plan for the grant of quarry lease in respect of Rough Stone in S.F.Nos. 513/2C(2.25.0 hect), 595/2(Part) Over an Extent 2.84.0 hectares of patta lands in Kuppam Village, Pugalur Taluk, Karur District has been examined in detail.

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

- (I) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (II) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (III) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (IV) As per the Deputy Director, Geology and Mining, Karur notice in Rc.No.266/Mines/2020, Dated: 21.10.2021 the following conditions are incorporated in the Mining Plan plates.
  - (i) விண்ணப்ப புலங்களின் கிழக்கே புல எண்.510-இல் அமைந்துள்ள மின்மாற்றி (Transformer) -க்கு 50 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.
  - (ii) விண்ணப்ப புலங்களின் கிழக்கே புல எண்.513/2D-பட்டா நிலத்தில் அமைந்துள்ள வண்டிப்பதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி செய்ய வேண்டும்.

P. அமராவதி




- (iii) விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
- (iv) குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமுமின்றி விதிமுறைகளின்படி குவாரிப்பணி செய்ய வேண்டும்.
- (v) குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
- (vi) குவாரி குத்தகை வழங்க ஏதுவாக துணை இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டம், மாநில அளவிலான சுற்றுச்சூழல் செயல் மதிப்பீட்டு அதிகார அமைப்பு (SEIAA) மற்றும் தமிழ்நாடு மாசுக்கட்டுப்பாட்டு வாரியம் (TNPCB) ஆகியவற்றின் தடையின்மை சான்று பெற்று, விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும். குவாரிப்பணி துவங்குவதற்கு முன் TNPCB-ன் CTO பெற்று சமர்ப்பிக்க வேண்டும்.

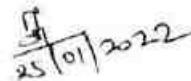
(V) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

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

Encl: Two copies of Approved Mining Plan.

  
 Deputy Director,  
 Geology and Mining,  
 Karur.

Copy to:  
 Dr.S.Karuppannan, M.Sc., Ph.D,  
 RQP/MAS/263/2014/A,  
 GEO Technical Mining Solutions,  
 No.1/213-B Ground Floor,  
 Natesan Complex, Oddapatti, Collectorate Post Office,  
 Dharmapuri - 636 705

  
 25/01/2022

P. அமராவதி

1372/2022

TP/119154857/2022



தமிழ்நாடு தமிழ்நாடு TAMILNADU

05.05.2022

ரூ. 500/-

AK 179101

P. அமராவதி

பொன்னியாக்கவுண்டன் புதூர்

K. SIVASAMY,  
S.V. 19-A, PNS ST.,  
L.No: 1/87, KRR,  
KARUR.

குத்தகை ஒப்பந்தப் பத்திரம்

2022 (இரண்டாயிரத்து இருபத்தி இரண்டு)-ம் வருடம் மே மாதம் 05-ம் தேதி.

கருநர் மாவட்டம், புகளூர் வட்டம், புன்னம் கிராமம், பொன்னியாக்கவுண்டன் புதூரில் வசிக்கும் திரு.R.பழனிச்சாமி அவர்கள் மனைவி P.அமராவதி (ஆதார் அடையாள அட்டை எண்.9607 9376 7486) (கைபேசி எண்.98427 79319) 1-வது பார்ட்டியாகும்,

1. P. அமராவதி

2. R. பழனிச்சாமி

.....புத்தகம்...2022...ம்  
வருடத்திய...1372...ம்  
ஆவணம்..18...தாள்களைக்  
கொண்டது.....1.....வது தாள்

பதிவு அலுவலர்

கருர் மாவட்டம், புகளூர் வட்டம், புன்னம் கிராமம், பொன்னியாக்கவுண்டன் புதூரில் வசிக்கும் திரு.ராமசாமி கவுண்டர் அவர்கள் குமாரர் R.பழனிச்சாமி (ஆதார் அடையாள அட்டை எண்.2636 4530 1998) (கைபேசி எண்.98427 79319) - 2வது பார்ட்டியுமாக ஆகிய நாம் இரண்டு பார்ட்டிகளும் சேர்ந்து ஏகோபித்து மனப்பூர்வமாய் சம்மதித்து எழுதிக்கொண்ட குத்தகை ஒப்பந்தப்பத்திரம் என்னவென்றால்,

நம்மில் 2-வது பார்ட்டிக்கு சுயார்ஜித வகையில் சென்ற 04.12.1995-ம் தேதியில் பழனியப்பன் என்பவரிடமிருந்து ஏற்பட்ட கிரையப்பத்திரப்படி (பத்திர எண்.1-வது புத்தகம், 1066/1995, கருர் 2 நெ. இணைச் சார்பதிவகம்)-யும், மற்றும்,

நம்மில் 2-வது பார்ட்டிக்கு சுயார்ஜித வகையில் சென்ற 28.11.2019-ம் தேதியில் ராமாயி வகையராவிடமிருந்து ஏற்பட்ட கிரையப் பத்திரப்படி (பத்திர எண்.1-வது புத்தகம், 2453/2019, கருர் 2 நெ. இணைச் சார்பதிவகம்)-யும் பாத்தியப்பட்டு, சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வருகிற சொத்துக்களில்

1. P. அழகவேலி

2. R. பழனிச்சாமி

1.....புத்தகம். 2022.....ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்...18.....தாள்களைக்  
கொண்டது .....2.....வது தாள்

பதிவு அலுவலர்

கீழ்க்கண்ட சொத்தை தமிழக அரசிடம் சாதாரண கல் உடைப்பதற்கு அரசு அனுமதி பெற்று, மேற்படி நம்மில் 2-வது பார்ட்டிக்கு சொந்தமான கரூர் பதிவு மாவட்டம், கரூர் 2 நெ. இணைச் சார்பதிவகம், புகரூர் வட்டம், குப்பம் கிராமம், சர்வே.513/2 மற்றும், சர்வே.595/2 கொண்ட நிலத்தில் சாதாரண கல் உடைத்து விற்பனை செய்து கொள்ள ஒப்பந்தம் அளித்ததின் பேரில், அரசால் அனுமதி வழங்கப்பட்டு குத்தகை ஒப்பந்தம் நிறைவேற்றும் நாளிலிருந்து பத்து (10) வருட காலத்திற்கு கல் மற்றும் மண் குவாரி தொழில் நடத்திக்கொள்ள 1-வது பார்ட்டி சம்மதிக்கின்றார். அதற்காக ஆண்டிற்கு ரூபாய்.5,000/- (எழுத்தால் ரூபாய் ஐந்து ஆயிரம் மட்டும்) வீதம் குத்தகை தொகையாக பேசி, பத்து ஆண்டுகளுக்கும் சேர்த்து மொத்தம் குத்தகை தொகை ரூபாய்.50,000/- (எழுத்தால் ரூபாய் ஐம்பதாயிரம் மட்டும்)-யை நம்மில் 2-வது பார்ட்டி, நம்மில் 1-வது பார்ட்டியிடமிருந்து பெற்றுக் கொண்டுள்ளார். இந்த ஆவணம் முன்னிலைக்கு எந்தவொரு அட்வான்ஸ் தொகையும் பெறவோ அல்லது கொடுக்கவோ இல்லை. இதில் கண்ட நிபந்தனைகள்படி நடக்க இரண்டு பார்ட்டிகளும் சம்மதிக்கின்றோம்.

1. P. அலுவலர்

2. R. சூர்

1.....புத்தகம்...2022...ம்  
 வருடத்திய .....1372.....ம்  
 ஆவணம்...18...தாள்களைக்  
 கொண்டது .....3.....வது தாள்

பதிவு அலுவலர்

### நிபந்தனைகள்

1) இதனடியிற்கண்ட புன்செய் நிலங்களில் நம்மில் 2-வது பார்ட்டி, நம்மில் 1-வது பார்ட்டிக்கு நாளிலிருந்து பத்து (10) ஆண்டுகளுக்கு குத்தகைக்கு ஒப்பந்தம் செய்து ஒப்பந்த தொகையாக ரூபாய்.50,000/- (எழுத்தால் ரூபாய் ஐம்பதாயிரம் மட்டும்) என முடிவு செய்து நம்மில் 2-வது பார்ட்டிகள் இன்று தேதியில் முழு ரொக்கமாக 1-வது பார்ட்டியிடமிருந்து நம்மில் 2-வது பார்ட்டி பெற்றுக்கொண்டார்.

2) இந்த ஒப்பந்தம் அரசால் அனுமதி வழங்கப்பட்டு குத்தகை ஒப்பந்தம் நிறைவேற்றும் நாளிலிருந்து பத்து (10) வருட காலத்திற்கு சாதாரண கல் உடைத்து தொழில் நடத்திக் கொள்ள நம்மில் 2-வது பார்ட்டி சம்மதிக்கின்றார்.

3) நம்மில் 1-வது பார்ட்டி இதனடியிற் கண்ட சொத்திற்கு தேவையான வசதிகள் அனைத்தையும் நம்மில் 2-வது பார்ட்டியின் ஒப்புதலுடன் நம்மில் 1-வது பார்ட்டியின் செலவிலேயே செய்து கொள்ள வேண்டியது.

1. P. அமராவதி

2. R. அனாபு

1.....புத்தகம்...2022.....ம்  
 வருடத்திய ...13.7.2.....ம்  
 ஆவணம்...18.....நாள்களைக்  
 கொண்டது ...4.....வது நாள்

பதிவு அலுவலர்



4) இதில் கண்ட இடத்தை நம்மில் 1-வது பார்ட்டி வேறு நபருக்கு கீழ்போக்கியத்திற்கோ, கீழ் வாடகைக்கோ விடக்கூடாது.

5) சொத்து வரி இவைகளை நம்மில் 2-வது பார்ட்டி செலுத்திக்கொள்ள வேண்டியது. உபயோகிக்கும் மின் இணைப்பு வரிகளையும் மற்றும் குடிநீர் இணைப்பில் தொகையை மேற்படி நிறுவனத்திற்காக நம்மில் 1-வது பார்ட்டி செலுத்திக்கொள்ள வேண்டியது.

6) இன்றைய தேதியில் நம்மில் 1-வது பார்ட்டியிடம், நம்மில் 2-வது பார்ட்டி குத்தகை சொத்தினை நல்ல முறையில் ஒப்படைத்துள்ளார். அதன்படி நம்மில் 1-வது பார்ட்டி கெடு முடியும் பொழுது நம்மில் 2-வது பார்ட்டியிடம் மேற்க்கண்ட நிலத்தை முறையாக ஒப்படைக்க வேண்டும்.


7) இதில் கண்ட கெடு முடிந்த பிறகு இரண்டு பார்ட்டிகளும் விருப்பட்டால் அந்த கால விருப்பப்படி வேறு ஒப்பந்தம் செய்து கொள்ளலாம்.

8) இந்தபடிக்கு சம்மதித்து ஏற்படுத்திக்கொண்ட சுத்த குத்தகை ஒப்பந்தப் பத்திரம்.

1. P. அமராவதி

2. R. அருண்

.....புத்தகம் 2022.....ம்  
வருடத்திய .....137.2.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....5.....வது தாள்

  
பதிவு அலுவலர்





**சொத்து விபரம்**

1-வது அயிட்டம்:- (பத்திர எண்.1-வது புத்தகம், 1066/1995, கரூர் 2 நெ. இணைச் சார்பதிவகம்)

கரூர் பதிவு மாவட்டம், கரூர் 2 நெ. இணைச் சார்பதிவகம், குப்பம் கிராமம்,

அ.பு.ச.513/2 நெ. ஹெக்.3.67.5-க்கு ஏக்.9.09 இதில், ஏக்.5.60 செண்டுக்கு ஹெக்.2.26.63 இந்த விஸ்தீர்ணமுள்ள பூமிக்கு நான்கெல்லை விபரம்:-

கா.நாச்சப்பகவுண்டர் வகையரா பூமிக்கும்	கிழக்கு
தென்வடல் இட்டேரிக்கும்	மேற்கு
ரெங்கசாமி பூமிக்கும்	தெற்கு
கிழமேல் இட்டேரிக்கும்	வடக்கு

இதன் மத்தியில் மேற்படி ஏக்.5.60 செண்டுக்கு ஹெக்.2.26.63 இந்த விஸ்தீர்ணமுள்ள பூமியும்,

1. P. அமரலதி

2. R. 254

1.....புத்தகம் 2022.....ம்  
வருடத்திய .....137.2.....ம்  
ஆவணம்.....18.....நாள்களைக்  
கொண்டது .....6.....வரு தாள்

பதிவு அலுவலர்



மேற்படி பூமிக்கு மேற்படி கிழமேல், தென்வடல் இட்டேரிகளில் மாமூல்படி தடப்பாத்தியமும், மேற்படி பூமிக்குண்டான சகல ஈஸ்ட்மெண்ட் பாத்தியங்கள் சகிதம். மற்றும் மாமூல் வழித்தடம் சகிதம். மேற்படி பூமி கே.பரமத்தி பஞ்சாயத்து யூனியனுக்கு கட்டுப்பட்டது. மேற்படி பூமி சப்டிஷனுக்கு முன் சர்வே.513 நெ. ஹெக்.3.84.5-ல் கட்டுப்பட்டது.

2-வது அயிட்டம்:- (பத்திர எண்.1-வது புத்தகம், 2453/2019, கரூர் 2 நெ. இணைச் சார்பதிவகம்)


கரூர் பதிவு மாவட்டம், கரூர் 2 நெ. இணைச் சார்பதிவகம், புகளூர் வட்டம், குப்பம் கிராமம்,

அ.பு.ச.595 (ஊசிப்பில்லுக்காடு) நெ. ஏக்.8.21 செண்ட் இதில் தற்காலம் அளந்து கண்டுள்ளதின்படியும், பட்டாவின்படியும் (கூட்டுப்பட்டா எண்.3598) அ.பு.ச.595/2 நெ. ஹெக்.0.89.5-க்கு ஏக்.2.21 செண்ட் இந்தளவுள்ள பூமிக்கு நான்கெல்லை விபரம்:-

1. P. அமராவதி

2. R. பதிவு

.....புத்தகம்...2022...ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்.....18.....நாள்களைக்  
கொண்டது .....7.....வது தாள்

  
பதிவு அலுவலர்





R.பழனிசாமி மற்றும் பழனியப்ப கவுண்டர் ஆகியோர்களுக்குப் பாத்தியப்பட்ட சர்வே.594 நெ. பூமிக்கும்	கிழக்கு
சர்வே.494 நெ. சுதா பூமிக்கும்	மேற்கு
சர்வே.570 நெ. பூமிக்கும், R.பழனிச்சாமி அவர்களுக்குப் பாத்தியப்பட்ட சர்வே.513 நெ. பூமிக்கும்	தெற்கு
ராமசாமி அவர்களுக்குப் பாத்தியப்பட்ட சர்வே.596 நெ. பூமிக்கும்	வடக்கு

இதன் மத்தியில் மேற்படி ஏக்.2.21 செண்டுக்கு ஹெக்.0.89.5 இந்த விஸ்தீர்ணமுள்ள பூமியும்,

1. P. அமராவதி

2. R. பூமி

...1...புத்தகம்...2022...ம்  
 வருடத்திய .....1372.....ம்  
 ஆவணம்.....18...தாள்களைக்  
 கொண்டது .....8.....வது தாள்

பதிவு அலுவலர்

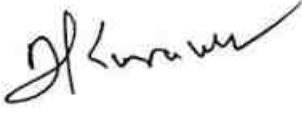



மேற்படி பூமிக்குண்டான சகல ஈஸ்ட்மெண்ட் பாத்தியங்கள் சகிதம் மற்றும் மாமூல் வழித்தடம் சகிதம்.

1. P. அமராவதி

2. R. அப்துல் ரஹ்மான்

சாட்சிகள்:-

வ.எண்	கையொப்பம்	முகவரி
1.	 (A. குமரவேலு)	த/பெ ஆறுமுகம், மீனாட்சி அப்பார்ட்மெண்ட் கோவை மெயின் ரோடு, ஆண்டாங்கோவில், கருர். (ஆதார் அடையாள அட்டை எண்.2924 0266 9440) (கைபேசி எண்.97860 33844)
2.	 (P. சுந்தர்ராஜ்)	த/பெ பழனிச்சாமி, கருர் டு ஈரோடு மெயின் ரோடு, குறுக்குசாலை, வேட்டமங்கலம், கருர். (ஆதார் அடையாள அட்டை எண்.5613 4072 5500) (கைபேசி எண்.98427 69319)

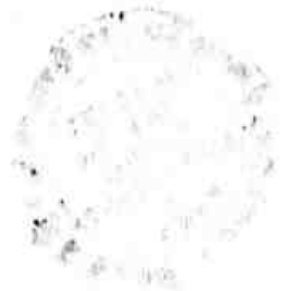
ஆவண அமைப்பு:



*K. Vengadesh*  
K. VENGADESH, MBA., B.L.,  
ADVOCATE  
ENROLL NO: MS 2927/2011  
KARUR.

1.....புத்தகம் 2022.....ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....9.....வது தாள்

பதிவு அலுவலர்



(சொத்தானது நீர்நிலை பகுதியில் அமையப் பெறவில்லை என்பதற்கான சான்று / உறுதிமொழி (Declaration) (நீதிபேராணை எண்.22163/2018-ல் வழங்கப்பட்ட தீர்ப்புரையை காண்க)

இந்த ஆவணத்தில் கண்ட சொத்தானது நீர்நிலைகள், நீர்வழிப்பாதைகள், நீர்ப்பிடிப்பு பகுதிகளில் கட்டுப்படவில்லை என சான்றிளிக்கிறோம். மேலும் இதனில் தங்களுக்கு தவறான தகவல் அல்லது சான்று அளிக்கப்பட்டதாக பின்னாளில் கண்டுபிடிக்கப்பட்டால் அதனால் நான் / நாங்கள் சட்டப்பூர்வ நடவடிக்கைகளுக்கு உட்படுத்தப்படுவோம் என்பதையும் அறிவேன் / அறிவோம்.

P. அலுவலர்

R. S. S.

...1...புத்தகம் 2022...  
வருடத்திய .....1372.....  
ஆவணம்.....18...தாள்களைக்  
கொண்டது .....10.....வது தாள்

பதிவு அலுவலர்





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 1380

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகன்

பழனிசாமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
513	2C	2 - 25.00	3.11	--	--	--	--	---- -- 21-02-2001
557	1	3 - 86.50	5.35	--	--	--	--	---- -- 21-02-2001
570	2	1 - 68.00	2.35	--	--	--	--	273/1415--42/1415 -- 15-12-2005
		7 - 79.50	10.81					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/01380 /10872 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 05-05-2022 அன்று 03:40:44 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode பயன்பாள் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1 புத்தகம் 2022ம்  
வருடத்திய 1372ம்  
ஆவணம் 18 தாள்களைக்  
கொண்டது 11 வந்து தள்ள

பதிவு அலுவலர்





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : குப்பம்

பட்டா எண் : 3817

உரிமையாளர்கள் பெயர்

1. ராமசாமி கவுண்டர்

மகள்

பழனிச்சாமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
595	2	0 - 89.50	1.23	--	--	--	--	2019/0103 /14/114427--- -- 21-12-2019
		0 - 89.50	1.23					

குறிப்பு2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/018/03817 /30849 என்ற குறிப்பு எண்ணை உள்வீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 05-05-2022 அன்று 03:41:13 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

.....பத்திரம் 2022.....ம்  
வருடத்திய .....1372.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....12.....வது தாள்

பதிவு அலுவலர்





இந்திய அரசாங்கம்  
Unique Identification Authority of India  
Government of India

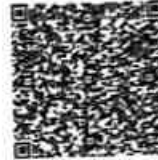
பதிவு அடையாளம் / Enrolment No.: 1189/55807/01512

To  
13/12/2011  
ஈ. பழனிச்சாமி  
R. Palanisamy  
S/O Ramasamy  
5/18 ponniyakaundar pudhur punnamchatram  
ARAVAKURICHI  
Punnamchatram Karur  
Tamil Nadu 639136



2557646

UGO25576465IN



உங்கள் ஆதார் எண் / Your Aadhaar No. :

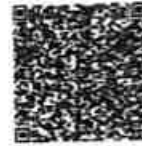
**2636 4530 1998**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



भारत सरकार  
GOVERNMENT OF INDIA

ஈ. பழனிச்சாமி  
R. Palanisamy  
பிறந்த வருடம் / Year of Birth : 1962  
ஆண்பால் / Male



**2636 4530 1998**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

R மயூ

புத்தகம் 2022 ம்  
வருடத்திய 1372 ம்  
ஆவணம் 18 தாள்களைக்  
கொண்டது 13 வது தாள்

பதிவு அலுவலர்



இந்திய அரசாங்கம்  
Unique Identification Authority of India  
Government of India

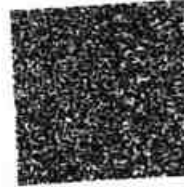
பதிவு அடையாளம் / Enrollment No. : 0658/00823/58165

To  
P Amaravathi  
ப.அமராவதி  
W/O Palanisamy  
5/18, Ponniyagoundanpudur  
Aravakurichi  
Punnamchatram, Karur,  
Tamil Nadu - 639136  
7373799319

08/04/2012  
92515603



KA925156034FH



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**9607 9376 7486**

எனது ஆதார், எனது அடையாளம்



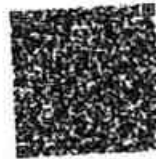
இந்திய அரசாங்கம்  
Government of India



ப.அமராவதி  
P Amaravathi  
பிறந்த நாள் / DOB: 29/07/1967  
புணர்ச்சி / Female

9607 9376 7486

எனது ஆதார், எனது அடையாளம்



P. அமராவதி

.....புத்தகம் 2022.....

வருடத்திய 1372.....

ஆவணம் 18.....தூள் கமலன்

கொண்டது 14.....வது தாள்

பதிவு அலுவலர்





இந்திய அரசாங்கம்  
Unique Identification Authority of India  
Government of India

பதிவு அடையாளம் / Enrollment No.: 0000/00507/12024

To  
பு சுந்தராஜ்  
P Sundarraj  
S/O Palanisamy  
335-c Karur To Erode Main Road  
Kurukkusalai  
Vettamangalam (west)  
Vettamangalam  
Karur  
Tamil Nadu 639117  
9842769319  
118767898  
07/10/2011  
ME187678983FH



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**5613 4072 5500**

எனது ஆதார், எனது அடையாளம்



இந்திய அரசாங்கம்  
Government of India



பு சுந்தராஜ்  
P Sundarraj  
பிறந்த நாள் / DOB : 10/12/1986  
ஆண்பால் / Male



**5613 4072 5500**

எனது ஆதார், எனது அடையாளம்

Handwritten signature/initials

.....புத்தகம் 2022  
வருடத்திய .....1372.....ம்  
ஆவணம்.....18.....தாள்களைக்  
கொண்டது .....15.....வது தாள்

Handwritten signature  
பதிவு அலுவலர்






**இந்திய அரசாங்கம்**  
**Government of India**  
 குமரவேலு ஆறுமுகம்  
**Kumaravelu Arumugam**  
  
 பிறந்த நாள்/DOB: 16/02/1975  
 ஆண்கள் / Male  
  
**2924 0266 9440**  
**ஆதார் - சாதாரண மனிதனின் அதிகாரம்**


**Unique Identification Authority of India**  
**ஆதார்**  
 முகவரி: 23-4 ஆறுமுகம், 23-4  
 மீனாக்ஷி அபார்ட்மென்ட், கோவை கோவை  
 ரோடு, ஆண்டாங்கோவில் (கிழக்கில்)  
 ஆண்டாங்கோவில் கட்டிடம், தஞ்சை  
 639002  
 Address: S/O: Arumugam,  
 23-4, MEENAKSHI  
 APPARTMENT KOVAI MAIN  
 ROAD, Andankovil East,  
 Andankoil, Karur, Tamil  
 Nadu, 639002  
**2924 0266 9440**  
 1947  
 1800 300 1947  
 help@uidai.gov.in  
 www.uidai.gov.in

*Kumaravelu*



.....புத்தகம் 2022.....  
 வருடத்திய 1372.....  
 ஆவணம் 18.....தாள்களைக்  
 கொண்டது 16.....வருதாள்  
 பசீவ அலுவலர்



பு/2 எண் இணை சார்பதிவாளர் கருர்புத்தகம்-1/1372/2022

2022 ஆம் ஆண்டு மே மாதம் 18-ம் தேதி 11-ம் வகுப்பு மாண்புமிகு 2 எண் இணை சார்பதிவாளர் கருர்புத்தகத்தில் தாக்கல் செய்த கட்டணம் 1 நாள் செலுத்தியவர்



இடது பெருவிரல்

P. அமராவதி

கட்டுதல் விவரங்கள் சூவண வாசகத்தில் உள்ளபடி



வலதுக் கொடுக்கதாக ஓயலக் கொண்டவர் இடது பெருவிரல்

R. முருகன்

கட்டுதல் விவரங்கள் சூவண வாசகத்தில் உள்ளபடி

வலது வான்கிடதாக ஓயலக் கொண்டவர் இடது பெருவிரல்

P. அமராவதி

கட்டுதல் விவரங்கள் சூவண வாசகத்தில் உள்ளபடி

இணைமொன்று சிறுபித்தவர்கள்

1. *C. சி*  
 2. *A. முருகன்*

சிறு அந்நாடு தலை அழகிசையம் கருர்பு 10-ம் மொறு பெயின் மொறு குறுக்கசாலை கருர்பு 8-ம் சிறு சமியுநாடு இந்நிலா வரை

சிறு துறாவெழு தலை சூறுமுதல் மீளா. சி. அப்பா. பெண்ட. கொண்ட பெயின் மொறு சூண்டுகொயில் கருர்பு 8-ம் சமியுநாடு இந்நிலா வரை

2022 ஆம் ஆண்டு மே மாதம் 18-ம் நாள்

புத்தகம் 2022 ி  
 வகுத்திய 1372  
 சூவணம் 18 நாட்களைய  
 கொண்டது 17 மது நாள்

மொகனாது பெருமான்  
 சார்பதிவாளர்  
 2 எண் இணை சார்பதிவாளர் கருர்பு

*சூவண அமராவதி*



உ2 எண் இணை சார்பதிவாளர் கருர்புத்தகம்-1/1372/2022

உ2 எண் இணை சார்பதிவாளர் கருர்புத்தகம்-1/1372/2022 எண்ணாகப் பதிவு செய்யப்பட்டது


தூண் மலையாடு

உ2 எண் இணை சார்பதிவாளர் கருர்பு

  
பதிவு செய்து கொள்ள  
சார்பதிவாளர்



1.....புத்தகம் 2022.....ம்  
வருபுத்திய 1372.....ம்  
ஆவணம் 18.....நாள்களைக்  
கொண்டது 18.....வது நாள்

  
பதிவு செய்தவர்



சான்றி

- 317 -

கிராம டாண்டல், டாண்டல் வட்டம்,  
இய்யம் கிராமம், டாண்டல் 513/2C டாண்டல்  
595/2 ஆய்வகத்தில் விநியோகம் 2.84.0  
டாண்டல் கிராமம் சிறப்பு 300 டாண்டல்  
சிறப்பு விநியோக கிராம டாண்டல், கிராமம்  
டாண்டல் வட்டம், டாண்டல் கிராமம் சிறப்பு  
கிராம டாண்டல் சான்றி வழங்கிய பரிசீலனை.

Hij 23/5/2022  
கிராம நிர்வாக அலுவலர்  
டாண்டல் கிராமம்  
புலவர் வட்டம்  
கிராம டாண்டல்

P. அமராவதி



**National Accreditation Board  
for Education and Training**



**Certificate of Accreditation**

**Geo Technical Mining Solutions**

1/213B, Natesan Complex, Dharmapuri Salem Main Road, Oddapatti, Collectorate post office,  
Dharmapuri, Tamil Nadu-636705

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

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

**Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated September 13, 2022 posted on QCI-NABET website.**

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2641 dated January 19, 2023. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions following due process of assessment.

Sr. Director, NABET  
Dated: January 19, 2023

Certificate No.  
NABET/EIA/2124/SA 0184

Valid up to  
Dec 31, 2023

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