

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
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 = 19.50,0 hectares**

**Thiru. J. Vijayakumar Rough Stone Quarry
At
Gopnampalli Village, Hosur Taluk, Krishnagiri District**

**ToR issued vide Letter No. , SEIAA-TN/E.No.9593/SEAC/ToR-1334/2022
dated 10.02.2023**

Name and Address Thiru.J. Vijayakumar S/o. Jayaram, D.No.1/41, T.Shoolaganda, Madakkal Village, Denkanihottal Taluk, Krishnagiri District-635 118.	Extent & S.E.No. 2.00,0 ha & S. E. No. 220/1(Part-4)
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**NABET ACC. NO: NABET/EIA/2023/LA0067
Valid till : 29th Dec.2023**

ENVIRONMENTAL LAB



**ENVIRO FARMERS LABS & TECHNOLOGIES
Coimbatore, Tamilnadu.
Baseline Study Period December-2022 to February-2023**

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR issued vide Letter No. SEIAA-TN/F.No.9593/SEAC/ToR-1334/2022 dated

10.02.2022 for J.Vijayakumar Roughstone Quarry

REMARKS FROM SEAC		
1	The project proponent, Thiru.J.Vijayakumar has applied for Terms of Reference for the proposed Rough stone quarry lease over an extent 2.00.0 Ha (Govt. – land) at S.F.No.200/1 (part-4) Gopanapalli village ,Hosur Taluk, Krishnagiri District, Tamil Nadu.	The project proponent applied for Terms of Reference on 29.11.2022 and the proposal was placed in the 346 th meeting of SEAC on 12.01.2023, as mentioned in Section 1.2 under Chapter I, pp.4 & 5. 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). Details about the project proponent and the lease area have been provided in Sections 1.7 & 1.8 under Chapter I, pp.6 &7.
2	The project is covered under category, B1 of Item 1(a) “Mining of Minerals Projects” of the schedule to the EIA Notification,2006.	As this proposed project falls within the cluster of 19.50 ha, it is categorized to be B1, as discussed in Section 1.0 under Chapter I, pp.1 & 2.
3	As per the precise area communication, the lease period is for 10 years. The mining plan is for 5 years. The production for 5 years not to exceed 257243 m ³ of roughstone with an ultimate depth of 58 m BGL (2 m topsoil and 56 m roughstone).	Details about estimated production for 5 years and year wise production have been provided in Section 2.5 under Chapter II, pp.15-18.
SPECIFIC CONDITIONS		
1	The structures within the radius of 50 m, 100 m, 200 m, 300 m shall be enumerated with details such as dwelling houses with number of occupants,whether it belongs to the owner or not, places of worship, industries, factories, sheds,etc.	The report about the structures within the radius of 50 m, 100 m, 200 m, 300 m will be attached with the final EIA report.
2	The study on impact of the dust & other	The report on impact of dust due to proposed

	environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.	quarrying operations on the nearby rose flowers will be attached with the final EIA report.
3	The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.	Photographs showing green belt, fencing and garland drain will be provided in the final EIA report.
4	The proponent shall furnish a revised EMP budget for entire life/lease of proposed mining.	A revised EMP budget for the proposed project has been given in Tables 10.10 and 10.11 following suggestion offered by SEAC under Chapter X, pp.174-179.
5	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining plan, the project proponent (PP) shall prepare and submit an 'Action plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.	This condition is not applicable to this proposed project as this project is a green field project.
6	The proponent shall submit a conceptual 'slope stability plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.	As the depth of the proposed project is 30 m BGL, a conceptual slope stability plan is not provided in this report.
7	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman,	The affidavit for blasting will be attached with final EIA report.

	II/I Class mines manager appointed by the proponent.	
8	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	A conceptual design of blasting has been given in Section 2.6 under Chapter II, pp.19-30.
9	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The project proponent is a new one to the quarrying project. Hence, photographic evidences have not been attached to this report.
10	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?	As this is a newly proposed lease area, the conditions are incompatible to this project.
	b. Quantity of minerals mined out.	
	c. Highest production achieved in any one year	
	d. Detail of approved depth of mining.	
	e. Actual depth of the mining achieved earlier.	
	f. Name of the person already mined in that leases area.	
	g. If EC and CTO already obtained, the copy of the same shall be submitted.	
	h. Whether the mining was carried out as	

	per the approved mine plan (or EC if issued) with stipulated benches.	
11	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).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.3, p.13 under Chapter II.
12	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	Drone video and 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.
13	The PP shall furnish the revised manpower including the statutory & competent persons as required under-the provisions of the MMR 1961 for the prosed quarry based on the volume of rock handled & area of excavation.	Details of manpower required for this project have been given in Table 2.14 under Chapter II, p.31.
14	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.	Photographs showing fencing, green belt will be included in the final EIA report.
15	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	The mineral reserves of the project have been discussed in Section 2.5 under Chapter II, pp.15-20. The anticipated impact of mining on land, air, noise, water, soil, biology, and socio economy is discussed under Chapter IV, pp.108-135.

	environment and the remedial measures for the same.	
16	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act, 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Details of manpower required for this project have been given in Table 2.14 under Chapter II, p.31.
17	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.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.42-53.
18	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III, pp. 33-107.
19	The Proponent shall carry out the	Results of cumulative impact study due to mining

	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.	operations are given in Section 7.4 under Chapter VII, pp.149-156.
20	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The rainwater harvesting management plan will be submitted along with the final EIA report.
21	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1, pp.33-41 under Chapter III. The details of surrounding sensitive ecological features have been provided in Table 3.39 under Chapter III, pp.103-104. 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.
22	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease. such as extent of land area, distance from mine lease' its land use, R&R issues. If any, should be provided.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
23	Proximity to Areas declared as 'Critically	This condition is not applicable to this project

	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.	because this project is not located in proximity to the areas of areas declared as 'Critically Polluted' (or) the project areas which attracts the court restrictions for mining operations.
24	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.	Details about rainwater harvesting structures will be included in the final EIA report.
25	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section 3.7 under Chapter III, pp.101-103.
26	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.68-96.
27	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II, p.22.
28	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	The comments made in public hearing meeting will be updated in the final EIA report after public hearing meeting.

	Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	
29	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.
30	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.
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the importance of protecting the biological environment.
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV, pp.124-131.
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old

	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.	raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
34	A Disaster management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII, pp.145-148.
35	A Risk Assessment and management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII, pp.142-144.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV, pp.132 & 133.
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.160 & 161.

38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 18 people directly as discussed in Section 8.1 under Chapter VIII, p.159.
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII, pp.159-161.
41	If any quarrying operation were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF & CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	This condition is not applicable to this project because the project is a green field project.
42	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act' 1986.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act,

		1986.
	<p>The proposal was placed in the 591th Authority meeting held on 10.02.2023. the authority noted that this proposal was placed for appraisal in the 346th meeting of SEAS held on 12.01.2023. After detailed discussions, the Authority accepts the recommendation of SEAS 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 SEAS & normal conditions in addition to the condition to the conditions in ‘Annexure B’ of this minute.</p>	
	Annexure ‘B’	
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	A cluster management committee including all the proponents of the roughstone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development Water sprinkling, tree plantation, blasting etc.,	The members of the cluster management committee will be instructed to carry out EMP in coordination.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	All the information has been discussed in Section 2.6 & 2.7 under Chapter II, pp.19-31.
5	The committee shall deliberate on risk	It will be informed to the committee.

	management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	It will be advised to the cluster management committee to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised will be given in detail.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
10	The committee shall furnish an action plan to achieve sustainable 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.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The committee will submit the fire safety and evacuation plan as discussed in Section 7.3 under Chapter VII, pp.145-148.
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following	

	a)	Soil health & soil biological,physical land chemical features.	The study is under process. The results will be updated in the final EIA report.
	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.	
13		Impact on surrounding agricultural fields around the proposed mining area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6 under Chapter IV, pp.124-131.
14		Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III, pp.68-96. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study

		area.
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area shall be given and if so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.5 under Chapter III, pp.68-96. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV, pp.124-131.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.5 under Chapter III, pp.68-96 and measures have been provided in Section 4.6 under Chapter IV, pp.124-131.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV, pp.109 and 110.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV, pp.108 & 109.
19	The project proponent shall study on impact of mining on Reserve forests free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site among other environmental protection measures.
20	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.124-131.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV, pp.124-131.

	action suggested for protection.	
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National parks, corridors and wildlife pathways, near project site.	There are no protected areas, National Parks, Corridors and Wildlife pathways near project site. The list of environmentally sensitive areas within 10 km radius has been provided in Table 3.39 under Chapter III, pp.103 & 104.
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc.within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.42-53.
24	Erosion control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV, pp.109 & 110.
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, waterbodies/rivers & any ecological fragile areas.	The matter has been discussed under Chapter IV, pp.108-135.
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem is under process and report will be added to the final EIA report.
27	The project proponent shall study and furnish the details on potential	The impacts of the proposed project on the surrounding environment have discussed in

	fragmentation impact on natural environment, by the activities.	Chapter IV, pp.108-135.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	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.124-131.
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV, p.109.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV, pp.109 & 110.
31	The measures taken to control Noise, Air, water, Dust control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control Noise, Air, water, and dust have been given under Chapter IV, pp.108-135.
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV, pp.124-131.
33	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.
34	Detailed Mine closure plan covering the	A progressive mine closure plan has been

	entire mine lease period as per precise area communication order issued.	attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II, p.22.
35	Detailed Environment Management plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	A detailed Environment Management plan has been given under Chapter X, pp.163-179.
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	A detailed Environment Management plan has been given in Tables 10.10 & 10.11 under Chapter X, pp.174-179.
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII, pp.142-144.
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII, pp.145-148.
39.	The project proponent shall furnish VAO certificate with reference to 300 m radius regard to approved habitations, schools, Archaeological sites, structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, river, lake pond, tank etc.	The VAO certificate of 300 m radius will be attached with final EIA report.

40	As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation 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.
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in Section 7.5 under Chapter VII, p.156 &157.
STANDARD TERMS OF REFERENCE		
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. 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 government poromboke land. A copy of the document showing that the proponent is the rightful lessee 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	All the documents related to mining plan, EIA and public hearing are compatible to each other and have been provided in the annexure part.

	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/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.3, p.13 under Chapter II.
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.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in 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 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	The proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under chapter X, p.163 & 164.

	<p>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.</p>	
8.	<p>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.</p>	<p>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 90⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p>
9.	<p>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.</p>	<p>The study area considered for this study is of 5 km radius for air, soil, water, and noise level sample collections, while the study area is 10 km radius for ecology and biodiversity studies and all data contained in the EIA report such as waste generation etc., is for the life of the mine / lease period.</p>
10.	<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 other ecological features should be indicated. Land use plan of the</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 other ecological features has been discussed in Section 3.1, pp.33-41 under Chapter III. The details of surrounding</p>

	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.	sensitive ecological features have been provided in Table 3.39 under Chapter III, pp.103-104. 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.
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	It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.
12.	Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to 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.	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.39 under Chapter III, pp.103 & 104.
13.	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	It is not applicable as the proposed project area does not involve any forest land.

14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. 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.	No Reserve Forest is found within the study area. The matter has been discussed Table 3.39 under Chapter III, pp.103-104.
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.	There is no any wildlife/protected area within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.39 under Chapter III, pp.103-104.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished	There 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 3.39 under Chapter III, pp.103-104..

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.	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.68-96.
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'.
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining	Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.

	Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	Not Applicable. There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.
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	Baseline data were collected for the period of December 2022 - February 2023 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III, pp. 33-107.

	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 modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV, pp.111-119.
24.	The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II, p.29.
25.	Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.	Not Applicable. 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.
26.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	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.
27.	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV, pp. 109-110.
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 65 m below ground level. The ultimate depth of quarry is 30 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.42-53.

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 866 m AMSL. Ultimate depth of the mine is 30 m BGL. Depth to the water level in the area is 65 m BGL.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Greenbelt development plan has been given in Section 4.6 under Chapter IV, pp.124-131.
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	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

	(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.	transportation from the project area. Details have been provided in Section 3.7 under Chapter III, pp.101-103.
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 2.6.7 under Chapter II, p.29.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.4 under Chapter II, p.22.
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.132 & 133.
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	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.160 & 161.

	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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 18 people directly as discussed in Section 8.1 under Chapter VIII, p.159.
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	A detailed Environment Management Plan has been prepared and provided in Tables 10.9 & 10.10 under Chapter X, pp.174-179.
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. 2,45,70,000/- CER Cost is Rs. 5,00,000/- In order to implement the environmental protection measures, an amount of Rs. 1962000 as capital cost and recurring cost as Rs. 1823056 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. 12035536, as shown in Tables 10.9 & 10.10 under Chapter X, pp.174-179.
42	A disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII, pp.145-148.
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII, pp.159-161.
44.	Besides the above, the below mentioned general points are also to be followed:	
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 included in the final EIA report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
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 for the Proponents and	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4th August, 2009

	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.	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 are 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.	As it is a greenfield project, the project does not require certified report of the status of compliance of the conditions.
j)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

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CHAPTER I

INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided in to B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B1 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 50 ha in the case of non-coal mine lease, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance as per the order dated 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018.

In compliance with ToR obtained vide letter No. SEIAA-TN/F.No.9593/SEAC/ToR-1334/2022 dated,10.02.2023 this EIA report has been prepared for the project proponent, **Thiru.J.Vijayakumar** applied for Rough stone quarry lease in the Government Poramboke land falling in S. F. No.220/1(Part-4), over an extent of 2.00.0 ha in Gopanapalli Village, Hosur Taluk, Krishnagiri District and Tamil Nadu. This EIA report takes into account the rough stone quarry within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contains six proposed projects known as P1, P2, P3, P4, P5 and P6, two Existing Project E1 and E2. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016. The total extent of all the quarries in the cluster is 19.50.0 ha also known as the cluster extent. The quarries involved in the calculation of cluster extent are shown in Figure 1.1.

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

Proposed Quarries				
Code	Name of the Owner	S.F. No and Village	Extent (ha)	Status
P1	Thiru. Vijayakumar	220/1(Part-4) Gopanapalli	2.00.0	Proposed Area
P2	Thiru. S. Raghu	381(Part-1) Gopanapalli	1.30.0	Applied Area
P3	M/s. Natural Stone	220/1(Part-1) Gopanapalli	3.00.0	Applied Area
P4	Thiru. Nithin Reddy	220/1(Part-2) Gopanapalli	3.00.0	Applied Area
P5	Thiru. Sri Krish	220/1(Part-3) Gopanapalli	3.00.0	Applied Area
P6	Thiru. Dhivakar	381/1(Part-2) Gopanapalli	1.50.0	Applied Area
Existing Quarries				
E1	P. Nagarajareddy	457(Part-1) Hosapuram	2.00.0	17.08.2016 To 16.08.2026
E2	P. Venkata Reddy	457(Part-2) Hosapuram	3.70.0	26.02.2020 To 25.02.2030
Expired Quarries				
--Nil--				
Total Cluster Extent			19.50.0	---

Source:

DD Letter: Rc.No.538/Mines/2022, Dated:04.07.2022

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

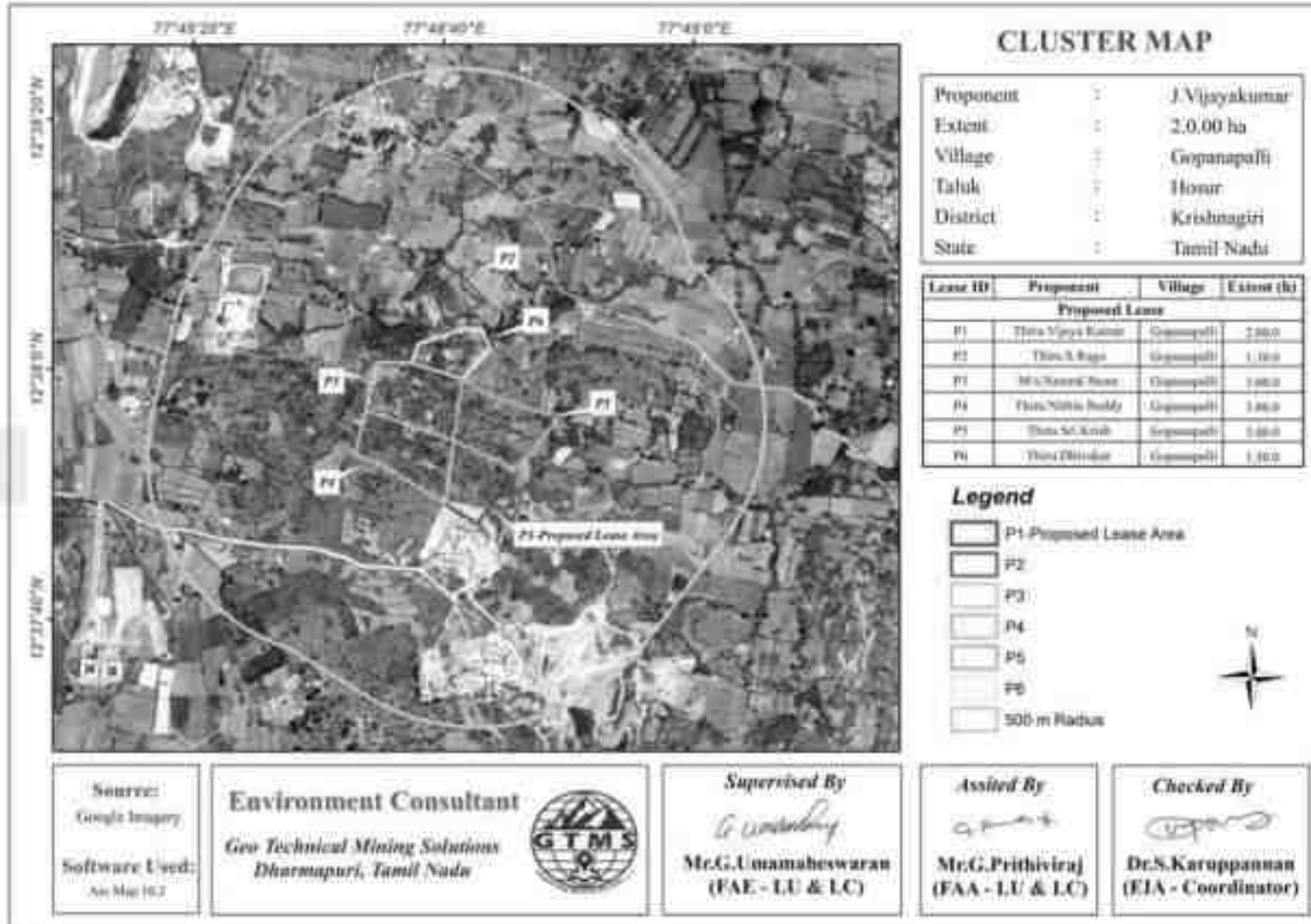


Figure 1.1 Location of Proposed and Existing Rough Stone Quarry in the Cluster of 500 m Radius

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 December 2022 to February 2023 according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015 to analyse impacts and provide mitigation measures.

1.2 ENVIRONMENTAL CLEARANCE

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

Screening

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No. SIA/TN/ MIN/40621/2022, dated.12.11.2022) 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 29.11.2022.

Scoping

The proposal was placed in the 346th meeting of SEAC on 12.01.2023. 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.9593/SEAC/ToR-1334/2022 Dated: 10.02.2023 for the preparation of an EIA report.**

1.4 POST ENVIRONMENT CLEARANCE MONITORING

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed. After obtaining EC, the project proponent will submit a half-yearly compliance report of stipulated environmental clearance terms and conditions to MoEF & CC Regional Office & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

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

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

Name of the Project Proponent	Thiru. J.VijayaKumar
Address	S/o. Jayaram, D.No.1/41, T.Shoolagunda, Madakkal Village, Denkanikottai Taluk, Krishnagiri District-635 118.
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 Gopanapalli Village, Hosur Taluk, Krishmagiri 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 P1

Name of the Quarry	Thiru. J. Vijayakumar
Type of Land	Government Poramboke Land
Extent	2.00.0 ha
S.F.No	220/1(Part-4)
Toposheet No.	57-H/14
Highest Elevation	866 m AMSL
Latitude	12°37'51.83"N to 12°37'49.10"N

Longitude	77°48'45.92"E to 77°48'40.11"E	
Proposed mining Depth	30 m (11m AGL + 19M BGL)	
Ultimate Pit Dimension	140.0 m (L) X 107.0 m (W) X 58 m (D)	
Geological Resources	Rough stone (m ³)	Top Soil (m ³)
	1009267	39878
Mineable Reserves	396263	29960
Proposed production for 5 years	257243	29960
Method of Mining	Open cast semi mechanized mining method involving drilling and blasting	
Topography	Hilly Terrain	
Machinery proposed	Jack hammer	4
	Excavator	1
	Compressor	1
	Tipper	2
Blasting Method	Controlled blasting method involving shot hole drilling and slurry explosives of 25 mm diameter is proposed for removal of rough stone.	
Proposed Manpower Deployment	18	
Project Cost	Rs.2,45,70,000/-	
Proposed Water Requirement	3.6 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 **December 2022-February 2023** for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.

1.10 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, 14th September, 2006
- ❖ Terms of Reference (ToR) issued by SEIAA.
- ❖ Approved Mining Plan of this Project.
- ❖ The Water (Prevention and Control of Pollution) Act, 1974
- ❖ The Air (Prevention and Control of Pollution) Act, 1981
- ❖ The Environment (Protection) Act, 1986
- ❖ The Forest (Conservation) Act, 1988
- ❖ The Wildlife (Protection) Act, 1972.

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, Thiru. J. Vijayakumar 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 19.04.2022 to extract rough stone. The precise area communication letter was issued by Department of Geology and Mining, Krishnagiri vide (Rc.No.538/Mines/2022 Dated 26.04.2022. 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, Krishnagiri (Rc.No.538/Mines/2022, Dated 04.07.2022). 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 Gopanapalli Village, Hosur Taluk, Krishnagiri District, as shown in Figure 2.2. The area lies between Latitudes from $12^{\circ}37'51.83''\text{N}$ to $12^{\circ}37'49.10''\text{N}$ and Longitudes from $77^{\circ}48'45.92''\text{E}$ to $77^{\circ}48'40.11''\text{E}$. The maximum altitude of the project area is 866 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

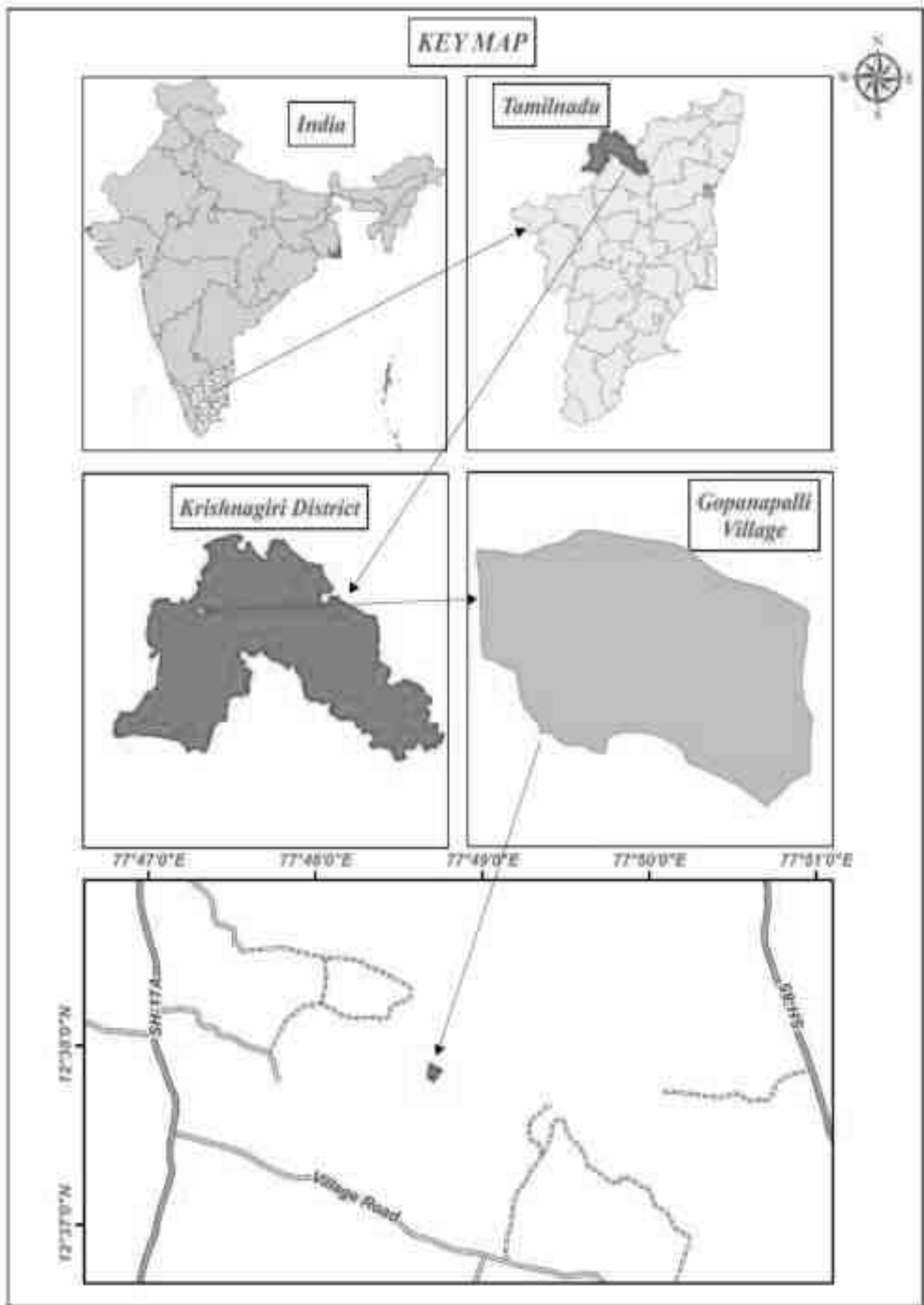


Figure 2.2 Key Map Showing Location of Project Site

Table 2.1 Site Connectivity to the Project Area

Type of Features	Name/Location	Distance (km)	Direction
Nearest Roadways	(NH-44) Dharmapuri-Hosur	8	NE
	(SH-17A) Hosur- Thenkanikottai	2.80	W
Nearest Railway	Hosur	14.0	N
Nearest Airport	Bangalore	88.0	N
Nearest Seaport	Chennai	322.0	E

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 2.00.0 ha.
- ❖ The proposed project is site specific.
- ❖ There is no mineral beneficiation or processing proposed inside the project area.
- ❖ There is no forest land involved in the proposed area and is devoid of major vegetation and trees.

2.3.1 Corner Coordinates

- ❖ The boundary corner geographic coordinates are given in Table 2.2 and the proposed project site with boundary coordinates has been shown in Figure 2.3.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	12°37'49.2085"N	77°48'40.1127"E
2	12°37'54.3668"N	77°48'40.8039"E
3	12°37'51.9387"N	77°48'45.9251"E
4	12°37'47.6537"N	77°48'42.6373"E

2.4 GEOLOGY

The lease area geologically consists of charnockite, commercially called as Roughstone, as shown in Figure 2.4. Also, the lease area geomorphologically occurs over inselberg complex, as shown in Figure 3.2.

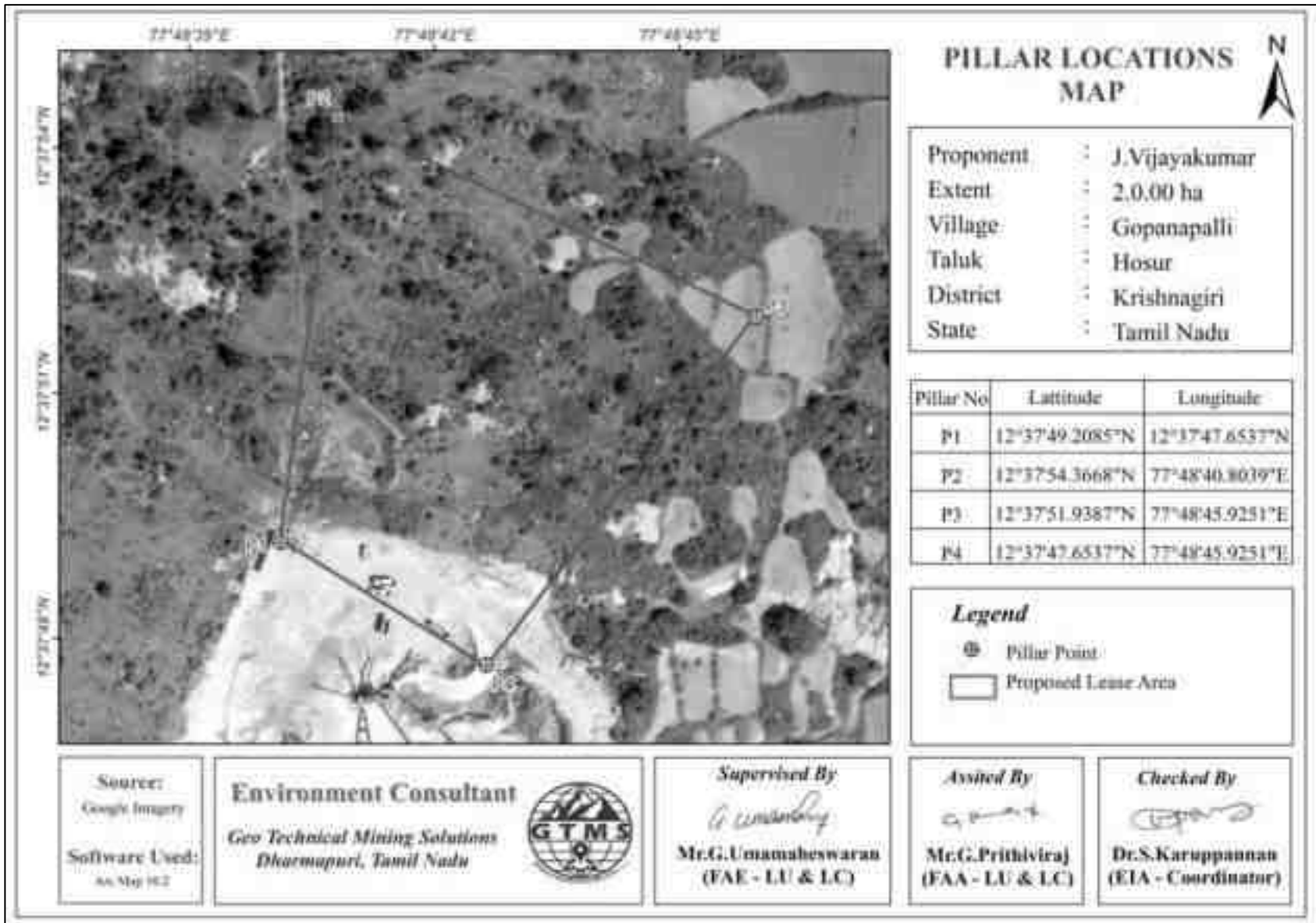


Figure 2.3 Google Earth Image Showing Pillar Coordinates of Lease Area

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone and gravel were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety margins, as shown in Figure 2.5 and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 30 m 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 ³	Top Soil in m ³
Geological Resource in m ³	1009267	39878
Mineable Reserves in m ³	396263	29960
Proposed production for 5 years m ³	257243	29960

Based on the year wise development and production plan and sections, as exemplified in Figures 2.6, 2.6.1 the year wise production results have been provided in Table 2.4.

Table 2.4 Year-Wise Production Details

Year	Rough Stone (m ³)	Top Soil (m ³)
I	63973	13696
II	52500	16264
III	36540	-
IV	40950	-
V	63280	-
Total	257243	29960

Source: Approved Mining Plan & ToR

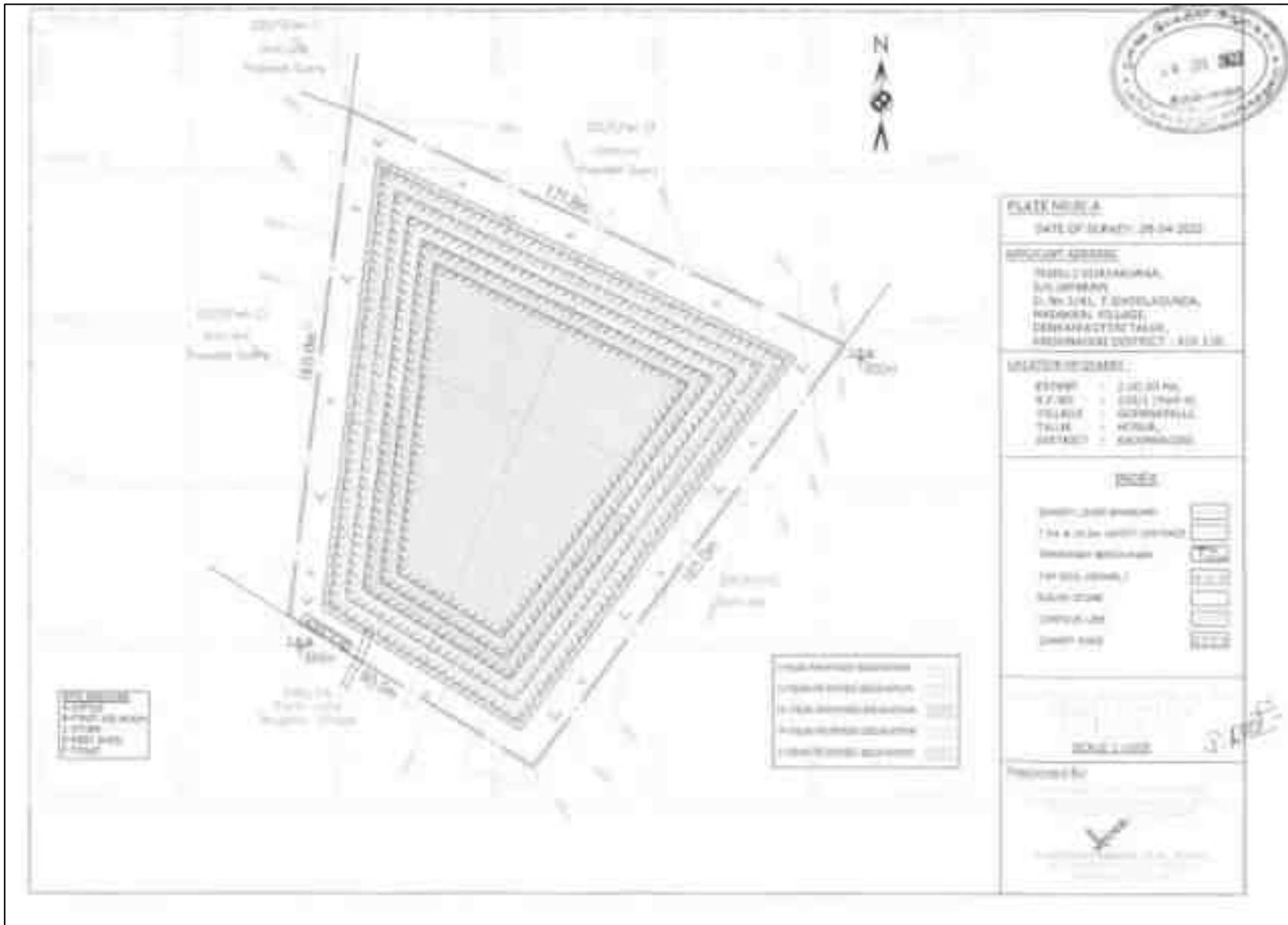


Figure 2.6 Yearwise Development and Production Plan

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 ³	1.59
Production of rough stone/day in m ³	191
Number of blastholes/day	120
Blasthole pattern	Staggered/Rectangular
Mass of explosive /day in kg	48
Powder factor in kg/m ³	0.25
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	23

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

	Rough Stone/5 years
Proposed production	257243
Number of Working Days	270
Production /Day (m ³)	191
No. of Lorry Loads	32

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/ H. P
1	Jack Hammers	4	Hand Held	25.5 mm/Atlas Copco	Diesel Drive 60 H.P
2	Compressor	1	Air	-	Diesel Drive
3	Excavator	1	1.2 M. T	L&T or EX200	Diesel Drive 120 H.P
Haulage & Transport Equipment					
4	Tipper	2	10 M. T	Ashok Leyland	Diesel Drive 110 H.P

2.6.4 Progressive Quarry Closure Plan

The progressive quarry closure plan (Figure 2.7,2.8) 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 2.00.0 ha of land is designated as unutilized area. Whereas, at the end of the mine life, about 1.51.0 ha of land would have been quarried; about 0.01.0 ha of land would have been used for establishing infrastructures; about 0.01.0 ha of land would have been used for road development; about 0.47.0 ha of land would have been used for green belt development.

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	Nil	1.51.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.01.0
Green Belt	Nil	0.47.0
Unutilized area	2.00.0	Nil
Total	2.00.0	2.00.0

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
400 Plants Inside the Lease Area	80000	12000
600 Plants Outside the Lease Area	180000	18000
Wire Fencing	400000	20000
Garland Drain	20000	10000
Total	680000	60000

Source: Environment Management Plan

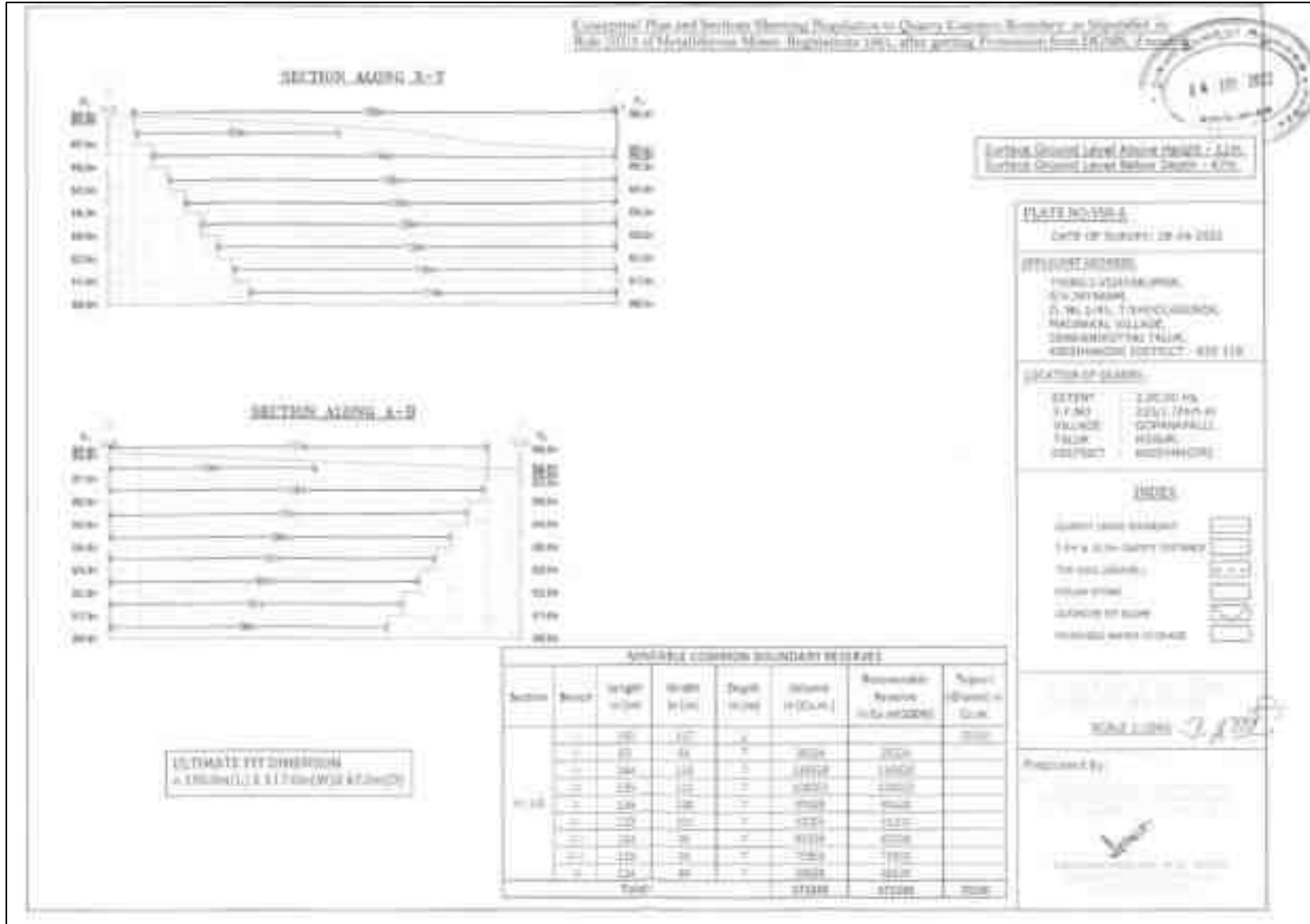


Figure 2.12 Conceptual Sections Common Boundary

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 is provided in Table 2.10.

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m)	Depth (m)
I	140	107	58

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	0.7 KLD	Existing bore wells and approved water vendors
Total	2.7 KLD	

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 1133064 litres of HSD will be used for rough stone extraction during this 5 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.12 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (257243 m³)	Top Soil (29960 m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	12862	499	---
Total Diesel Consumption for 5 years (litre)	205794	4993	210787
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	120	---	---
Total Diesel Consumption for 5 years (litre)	64800	---	64800
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	0	---
Carrying Capacity in m ³	6	0	---
Number of Trips / days	32	0	---
Number of Trips / 5 years	42874	0	---
Total Diesel Consumption for 5 years (litre)	857477	0	857477
Total Diesel Consumption by Excavator, Compressor and Tipper			1133064

2.6.10 Capital Requirement

The project proponent will invest Rs.2,45,70,000/- 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	2,12,20,000/-
2	Machinery	30,00,000/-
3	EMP	3,50,000/-
Total Project Cost		2,45,70,000/-

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	Skilled	Operator	2
		Mechanic	1
		Blaster/Mat	1
2	Semi-Skilled	Driver	2
3	Unskilled	Musdoor/ Labours	5
		Cleaners	3
		Office Boy	1
4	Management & Supervisory Staff		3
Total			18

Source: Prefeasibility Report

2.8 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the environmental clearance will be compiled before the start of mining operation. Expected time schedule for the quarrying operation is given Table 2.15.

Table 2.15 Expected Time Schedule

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

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

CHAPTER III
DESCRIPTION OF THE ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as land, water, air, noise, biological and socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering **December-2022 through February-2023**, with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Enviro Farmers labs & Technologies** for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

Study Area

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

Table 3.1 Monitoring Attributes and Frequency of Monitoring

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land Use/ Land Cover	Land-use Pattern within 5 km radius of the study area	Once during the study period	Study Area	Satellite Imagery & Primary Survey
*Soil	Physico- Chemical characteristics	Once during the study period	6 (1 in core & 5 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	7 (2 surface water & 5 ground water)	IS 10500& CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ NO _x Fugitive dust	24 hours, twice a week	8 (1 core & 7 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	9 (1 core & 8 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing flora and fauna	Through field visit during the study period	Study area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-economic characteristics, Population statistics and existing infrastructure in the study area	Site visit & Census Handbook, 2011	Study area	Primary Survey, census handbook & need based assessments.

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

3.1 LAND ENVIRONMENT

3.1.1 Geology and Geomorphology

Study area is mainly composed of migmatite and aeolian sediments, as shown in Figure 3.1. The lease area occurs in migmatite terrain.

Among the geomorphic units, shallow weathered/buried pediplain and pediment dominate the study area, as shown in Figure 3.2. The lease area occurs in shallow weathered/buried pediplain terrain.

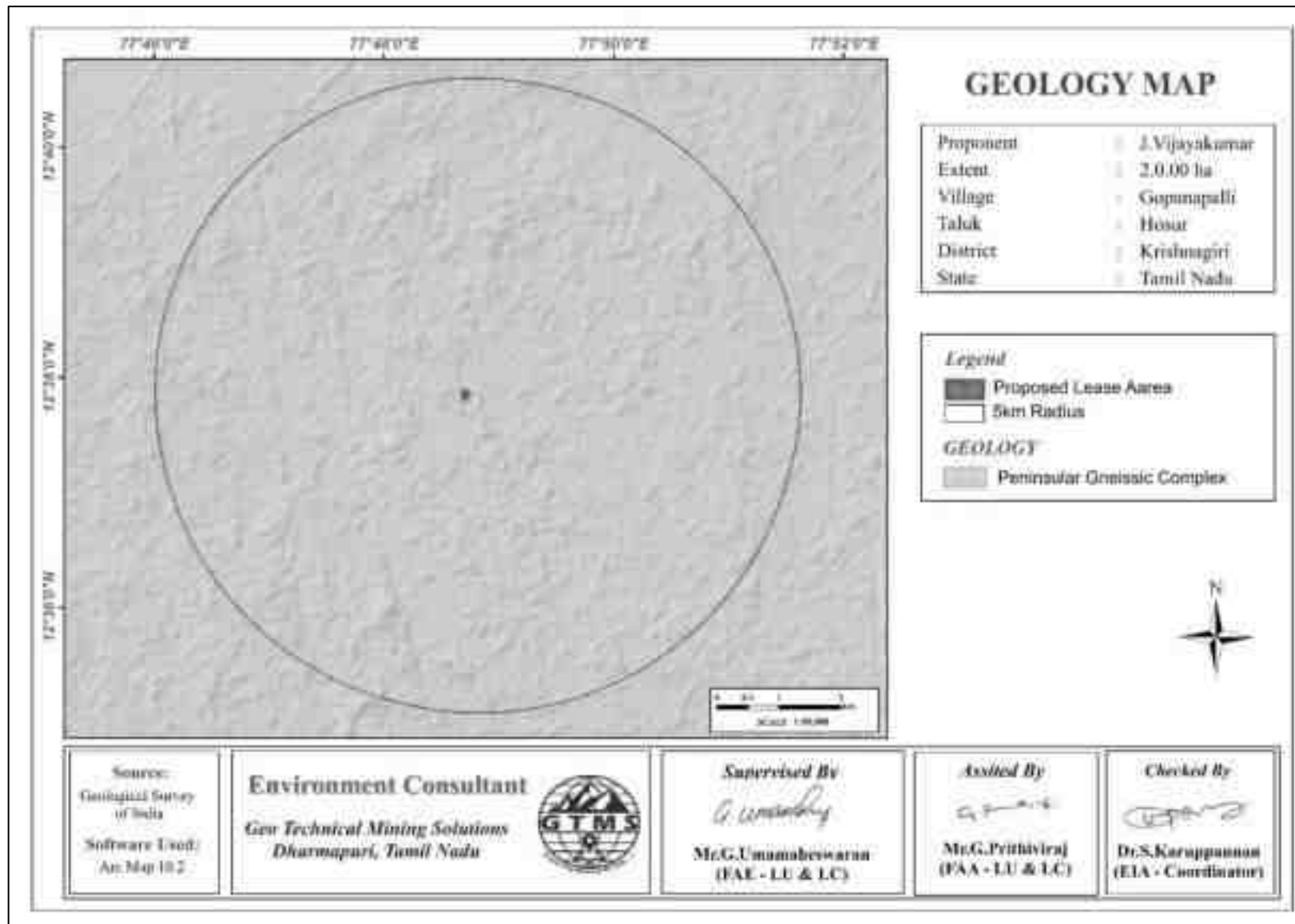


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

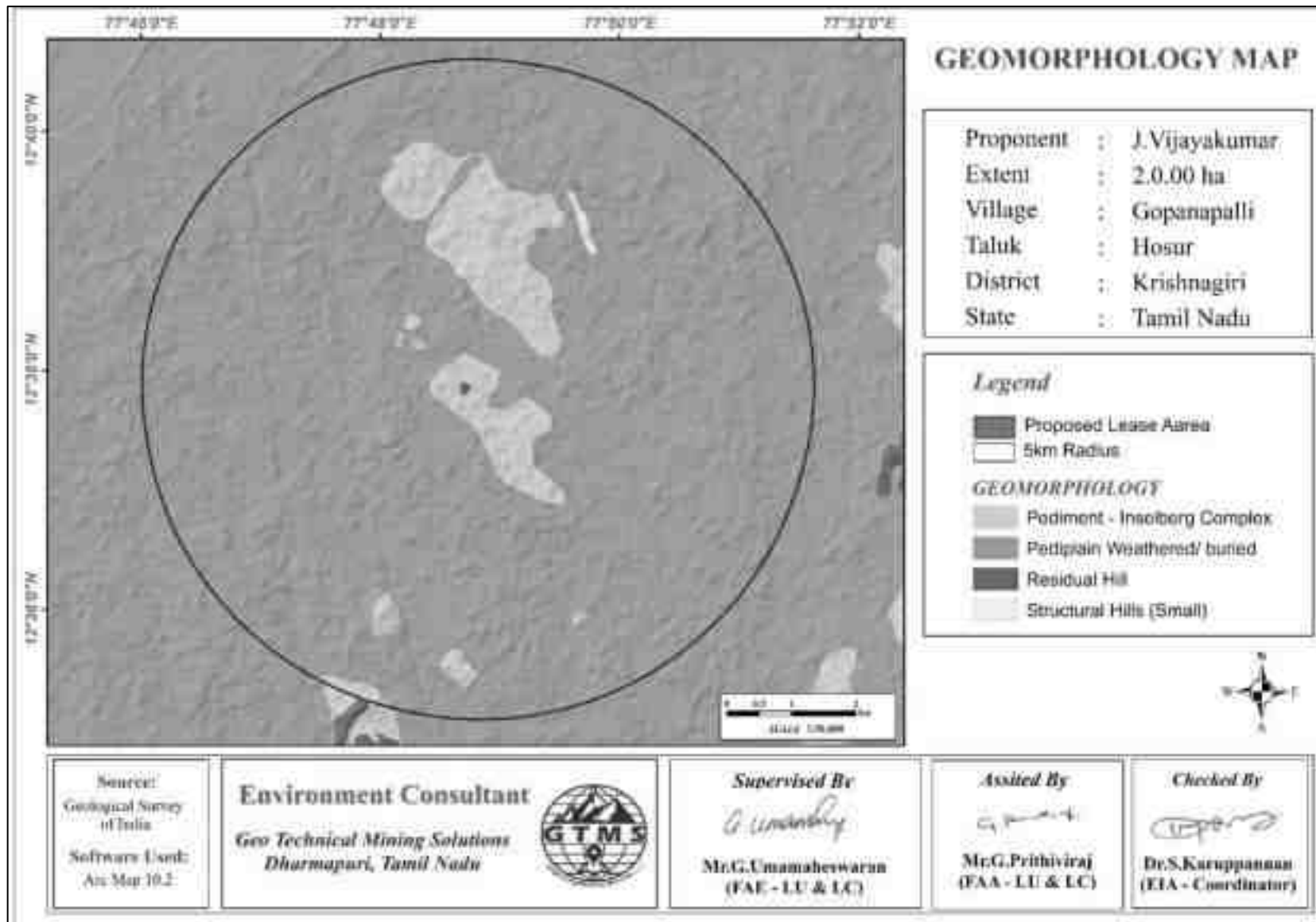


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 8 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 55 ha accounting for 0.72 %, of which lease area of 2.00.0 ha contributes only about 0.026 %. This small percentage of mining activities shall not have any significant impact on the land environment.

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop land	5325.56	70.22
2	Dense Forest	1.01	0.01
3	Fallow land	30.76	0.41
4	Mining Area	55.00	0.72
5	Land with or without scrub	1209.37	15.94
6	Plantations	843.79	11.13
7	Settlement	5.04	0.07
8	Water bodies	113.50	1.50
Total		7584.03	100

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area is located in a flat terrain with an altitude range of 850-866 m AMSL, showing relief of 16 m.

3.1.4 Drainage Pattern

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

3.1.5 Seismic Sensitivity

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

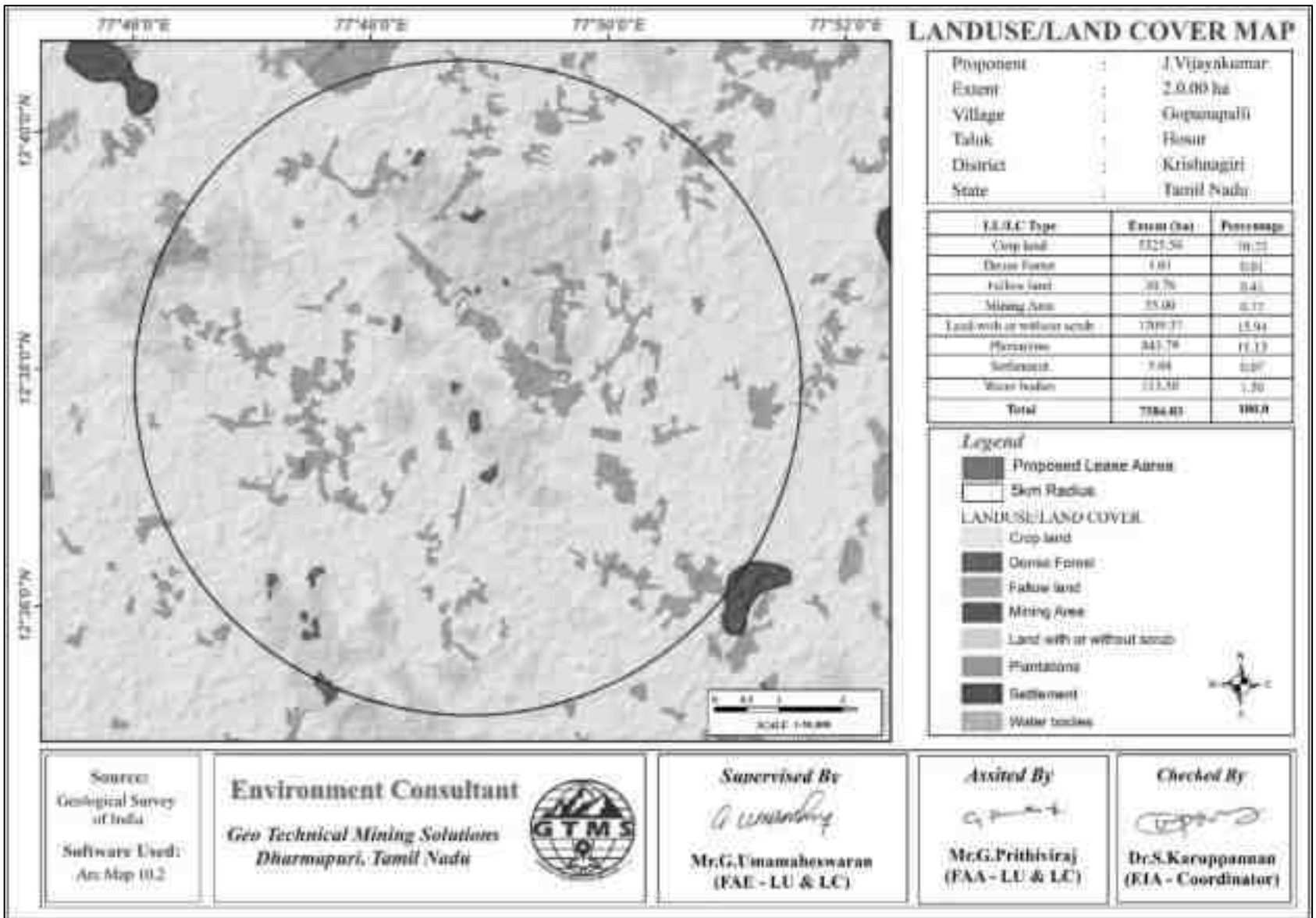


Figure 3.3 LULC Map of 5 km Radius from Proposed Project Site

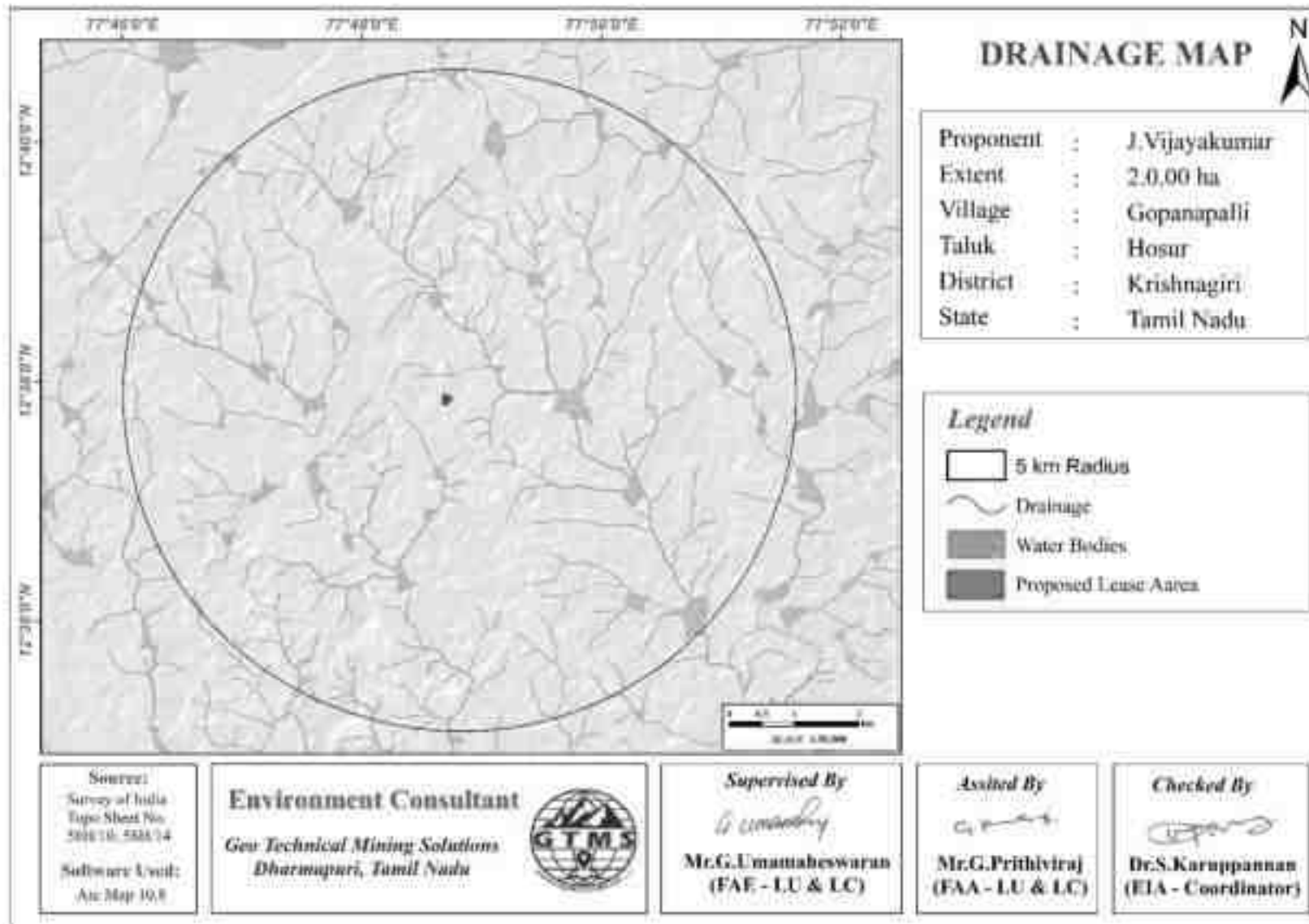


Figure 3.4 Drainage Map of 5 km Radius from Proposed Project Site

3.1.6 Soil

Composite soil samples were collected from 6 locations of the study area to determine the baseline soil characteristics of the soil. The locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.3. The samples thus collected were analysed for physical and chemical characteristics. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

Table 3.3 Soil Sampling Locations

S. No.	Sampling ID	Location	Distance (km)	Direction	Coordinates
1	S1	Core Zone	-----	-----	12°37'51.39"N 77°48'44.02"E
2	S2	Mugalur	1.48	W	12°37'52.02"N 77°47'51.06"E
3	S3	Machnayakanpalli	3.45	SW	12°36'32.33"N 77°47'16.65"E
4	S4	Edapalli	4.27	NNE	12°40'9.51"N 77°49'13.29"E
5	S5	Sankaranarayanapuram	4.28	E	12°37'48.97"N 77°51'7.83"E
6	S6	Kelamangalam	4.79	SE	12°35'56.53"N 77°50'34.16"E

Source: Sampling Results by Enviro Farmers labs & Technologies, in Association with GTMS.

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 6.93 to 8.22 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 2.93 to 3.65 dsm^{-1} . Bulk density ranges between 0.79 and 0.92 g/cm^3 .

Chemical Characteristics

Nitrogen ranges between 1.27 and 1.63 %. Phosphate ranges between 0.88 and 2.22 %. Potassium ranges between 2.23 and 4.27 %. Boron ranges between 13.58 and 19.81 mg/kg. Zinc content ranges between 13.58 and 19.81 mg/kg soil.

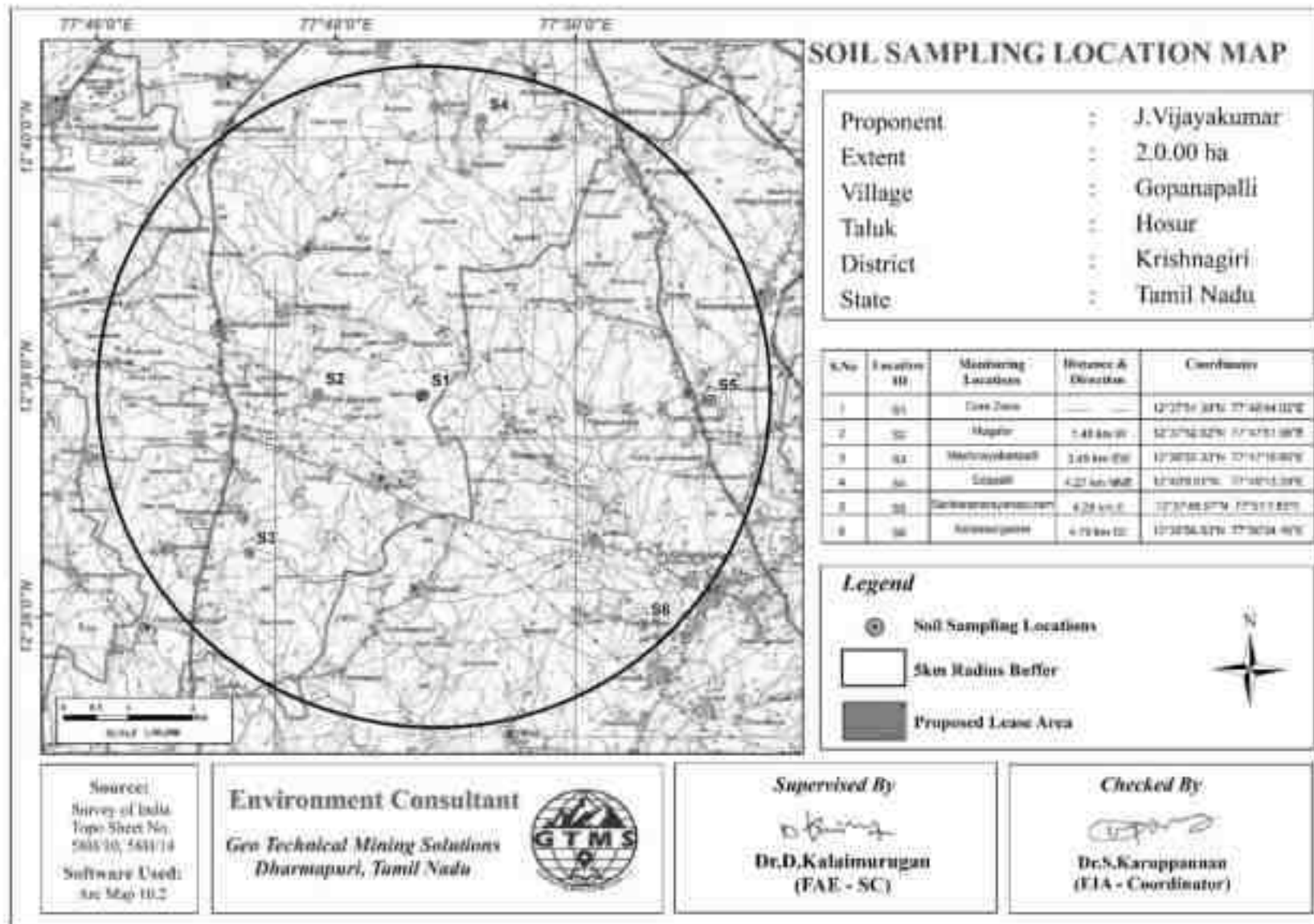


Figure 3.5 Toposheet Showing Soil Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S. No	Parameters	Unit	S01	S02	S03	S04	S05	S06
1	Colour	-	Brown	Brown	Pale Grey	Red	Red	Grey
2	Odour	-	Characteristic Plant Constituents	Characteristic Plant Constituents	Characteristic Plant Constituents	Characteristic Plant Constituents	Characteristic Plant Constituents	Characteristic Plant Constituents
3	Moisture@105 ⁰ C	%	21.54	16.84	17.4	16.89	19.78	19.86
4	Bulk Density	g/cm ³	0.89	0.92	0.79	0.92	0.86	0.86
5	Particle Size	%	Complies (90%Passes)	Complies (80%Passes)	Complies (85%Passes)	Complies (90%Passes)	Complies (80%Passes)	Complies (85%Passes)
6	Sand	%	41.2	39.2	40.5	37.4	38.8	36.8
7	Silt	%	36.6	37.5	32.8	34.2	33.1	35.5
8	Clay	%	22.2	23.3	26.7	28.4	28.1	27.7
9	pH value @ 25°C	--	7.21	6.98	7.08	7.08	8.22	6.93
10	EC @ 25°C	dsm ⁻¹	3.26	3.21	3.18	2.96	3.65	3.08
11	Nitrogen (N)	%	1.58	1.53	1.41	1.43	1.27	1.63
12	Phosphorous (P)	%	2.06	2.22	2.05	2.21	0.88	2.21
13	Potassium (K)	%	4.06	4.27	3.98	3.78	2.23	3.63
14	Total Carbon	%	21.4	21.7	20.4	20.6	17.42	20.47
15	C:N Ratio	-	9:1	9:1	8:1	8:1	8:1	9:1
16	Arsenic (As)	mg/kg	BDL	BDL	BDL	BDL	BDL	BDL
17	Boron (B)	mg/kg	16.21	13.58	14.25	15.74	19.81	18.72
18	Mercury (Hg)	mg/kg	BDL	BDL	BDL	BDL	BDL	BDL
19	Lead (Pb)	mg/kg	16.35	21.39	14.89	17.89	14.78	17.48
20	Cadmium (Cd)	mg/kg	1.98	2.06	1.76	2.23	2.03	2.09
21	Chromium (Cr)	mg/kg	5.22	5.74	4.22	4.79	4.52	6.38
22	Copper (Cu)	mg/kg	24.78	21.55	16.78	20.56	21.41	22.85
23	Zinc (Zn)	mg/kg	141.23	128.74	133.6	163.47	133.47	156.37
24	Nickel (Ni)	mg/kg	BDL	BDL	BDL	BDL	BDL	BDL

Source: Sampling Results by *Enviro Farmers labs & Technologies*, 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	GW1	Near Core Zone	0.10	SW	12°37'44.28"N 77°48'42.49"E
2	GW2	Hosappuram	1.30	SW	12°37'10.28"N 77°48'22.45"E
3	GW3	Muduganapally	3.04	NW	12°38'29.03"N 77°47'6.34"E
4	GW4	Kelamangalam	4.85	SE	12°36'20.71"N 77°50'56.67"E
5	GW5	Agondapalli	4.66	NE	12°39'44.58"N 77°50'29.32"E
6	SW1	Mugalur	0.57	W	12°37'45.87"N 77°48'21.55"E
7	SW2	Gopanapalli	3.01	NNW	12°39'20.16"N 77°47'52.41"E

Source: Sampling Results by Enviro Farmers labs & Technologies, in Association with GTMS.

3.2.1 Surface Water Resources and Quality

Lakes near Mugalur and near Gopanapalli are the prominent surface water resources present in the study area. The proposed project area is located 0.57 km W of the lake near Mugalur and 3.12 km NNW of the lake near Gopanapalli, as shown in Table 3.5 and Figure 3.4. Totally, two surface water samples, known as SW1 and SW2 were collected from the lakes 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.

3.2.2 Ground Water Resources and Quality

Groundwater in the study area occurs in the crystalline rocks of Archaean age and recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose.

Five groundwater samples, known as GW1, GW2, GW3, GW4 and GW5 were 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 five 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 March through May 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 10.1 to 14.1 m BGL in pre monsoon and 11.5 to 16.3 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 63.8 to 66.3 m and from 62.3 to 65.8 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.

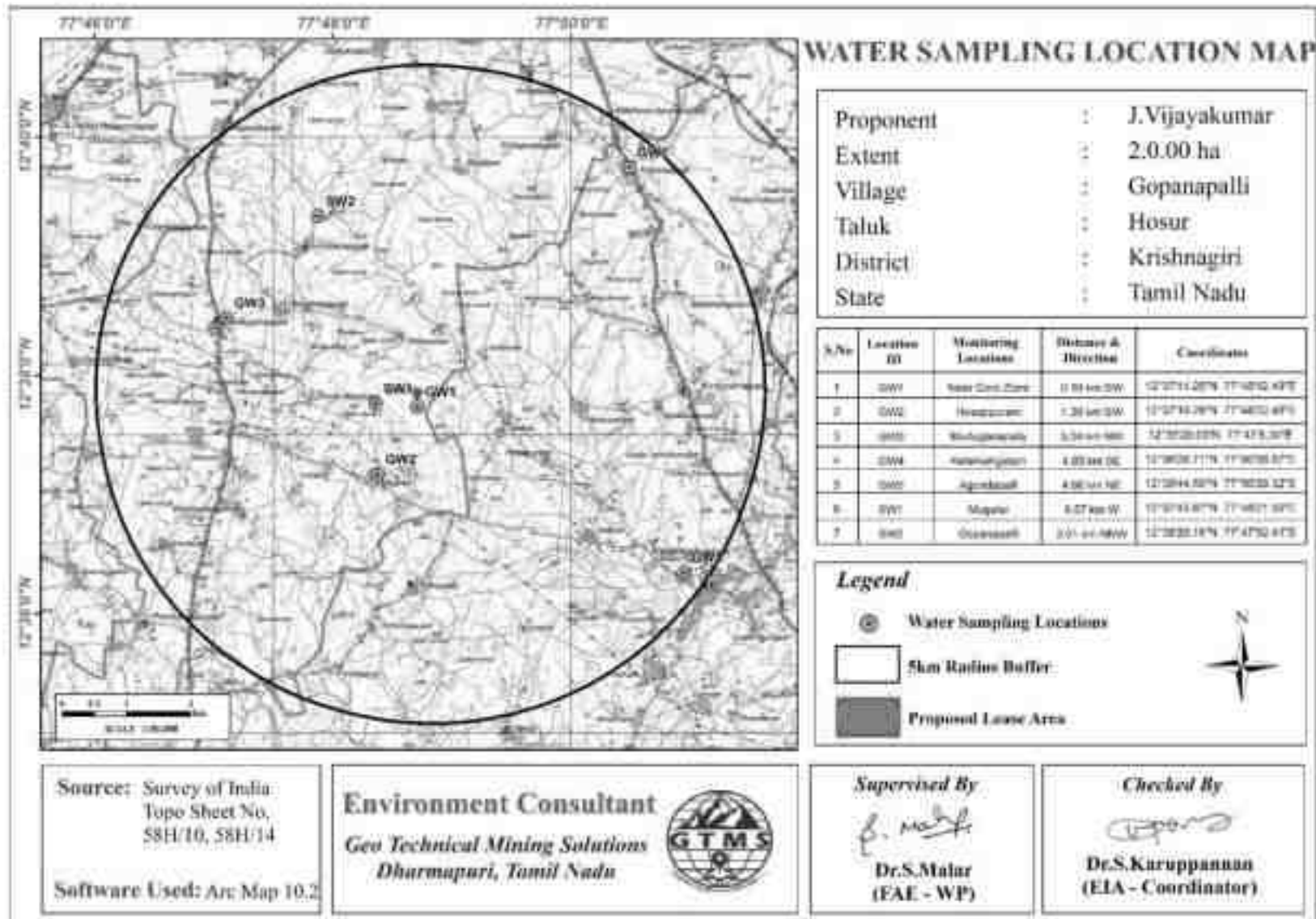


Figure 3.6 Toposheet Showing Water Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.6 Ground and Surface Water Quality Result

S.No	Parameters	Units	Surface Water		Ground Water		Acceptable Limit (IS:10500:2012)	Permissible Limit (IS:10500:2012)
			Minimum	Maximum	Minimum	Maximum		
1.	Color	Hazen	<5.0	<5.0	<5.0	<5.0	5 Max	15
2.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity	NTU	0.3	0.3	0.1	0.4	1.0	5
5.	pH @ 25°C	-	6.92	6.95	6.91	7.23	6.5-8.5	6.5-8.5
6.	EC @ 25°C	µS/cm	436	579	200	1940	-	-
7.	TDS @180°C	mg/l	249	330	130	1511	500	2000
8.	Total Alkalinity	mg/l	88	104	30	216	-	600
9.	Chloride (Cl)	mg/l	95	125	25	420	250	1000
10.	TH (CaCO ₃)	mg/l	88	96	50	360	200	600
11.	Calcium (Ca)	mg/l	24.1	28.9	12.0	96	75	200
12.	Magnesium (Mg)	mg/l	5.83	6.80	4.86	29.2	30	100
13.	Residual Chloride	mg/l	BDL	BDL	BDL	BDL	0.2	1.0
14.	Sulphate (SO ₄)	mg/l	21.6	67	12.0	193	200	400
15.	Nitrate (NO ₃)	mg/l	1.03	1.32	1.03	5.62	45.0	45
16.	Sodium (Na)	mg/l	67.0	88.5	17.6	296.	-	-
17.	Potassium (K)	mg/l	19.2	20.6	4.5	75.7	-	-
18.	Iron (Fe)	mg/l	0.94	1.27	0.067	1.37	0.3	1.0
19.	Fluoride (F)	mg/l	0.42	0.69	0.21	0.37	1.0	1.5
20.	Arsenic (As)	mg/l	BDL	BDL	BDL	BDL	0.001	0.001
21.	Copper (Co)	mg/l	BDL	BDL	BDL	BDL	0.05	0.05
22.	Zinc (Zn)	mg/l	BDL	BDL	BDL	BDL	5.0	5.0
23.	Cadmium (Cd)	mg/l	BDL	BDL	BDL	BDL	0.01	0.01
24.	Lead (Pb)	mg/l	BDL	BDL	BDL	BDL	0.01	0.01
25.	Mineral Oil	mg/l	BDL	BDL	BDL	BDL	0.5	0.5
26.	<i>E.Coli</i>	CFU/ml	Absent	Absent	Absent	Absent	Shall not be Detected in any 100 ml sample	Shall not be Detected in any 100 ml sample
27.	<i>Coliform</i>	CFU/ml	Absent	Absent	Absent	Absent	Shall not be Detected in any 100 ml sample	Shall not be Detected in any 100 ml sample

Source: Sampling Results by *Enviro Farmers labs & Technologies*, in Association with GTMS.

From the maps of open well groundwater flow direction shown in Figures 3.7-3.8, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 5 located in northwestern direction of the proposed project site. The groundwater flow maps in Figures 3.9-3.10 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 5 and 7. It is located in northwestern and northern 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)				Latitude	Longitude
	Mar-2022	Apr-2022	May-2022	Average		
DW01	11	12.5	14.7	12.7	12°38'9.30"N	77°48'30.12"E
DW02	12.5	13.7	14.9	13.7	12°38'4.51"N	77°48'18.11"E
DW03	10	11.5	12.5	14.3	12°37'34.58"N	77°47'48.51"E
DW04	11.5	12.5	13.5	12.7	12°37'53.46"N	77°49'13.93"E
DW05	13.5	14.7	15.5	14.5	12°37'59.95"N	77°49'8.87"E
DW06	12	13.7	14.5	14.5	12°36'49.36"N	77°48'31.73"E
DW07	13.0	14.5	15.7	14.4	12°37'27.65"N	77°48'33.45"E
DW08	12	13.5	15.5	13.6	12°38'15.87"N	77°49'7.27"E
DW09	12.5	13.5	15.0	13.6	12°38'35.08"N	77°48'28.30"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	OCT-2022	NOV- 2022	DEC-2022	Average		
DW01	10.0	11.5	12.7	11.4	12°38'9.30"N	77°48'30.12"E
DW02	11.5	12.7	13.9	12.7	12°38'4.51"N	77°48'18.11"E
DW03	9.0	11.0	12.5	10.8	12°37'34.58"N	77°47'48.51"E
DW04	10.5	11.5	13.0	11.6	12°37'53.46"N	77°49'13.93"E
DW05	12.4	13.0	14.5	13.3	12°37'59.95"N	77°49'8.87"E
DW06	11.0	12.7	13.2	12.3	12°36'49.36"N	77°48'31.73"E
DW07	12.5	13.5	14.5	13.5	12°37'27.65"N	77°48'33.45"E
DW08	11.0	12.5	13.5	12.3	12°38'15.87"N	77°49'7.27"E
DW09	11.5	12.5	13.5	12.5	12°38'35.08"N	77°48'28.30"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface				Latitude	Longitude
	BGL(m)					
	Mar-2022	Apr-2022	May- 2022	Average		
BW01	76.0	77.0	78.0	77	12°37'52.94"N	77°49'11.51"E
BW02	74.0	76.0	77.0	75	12°37'29.38"N	77°49'24.04"E
BW03	75.0	76.0	79.0	76	12°37'16.28"N	77°48'48.89"E
BW04	73.0	74.0	76.0	74	12°37'9.31"N	77°48'18.49"
BW05	76.0	77.0	78.0	77	12°37'45.13"N	77°47'49.61"E
BW06	75.0	76.0	77.0	76	12°38'10.40"N	77°48'0.43"E
BW07	74.0	76.0	78.0	76	12°38'20.41"N	77°48'35.68"E
BW08	75.0	77.0	78.0	76	12°38'12.74"N	77°49'23.67"E
BW09	76.0	77.0	78.0	77	12°37'49.14"N	77°48'50.47"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface				Latitude	Longitude
	BGL (m)					
	Oct-2022	Nov-2022	Dec-2022	Average		
BW01	75.0	77.0	79.0	77	12°37'52.94"N	77°49'11.51"E
BW02	72.0	74.0	76.0	74	12°37'29.38"N	77°49'24.04"E
BW03	74	76.0	78.0	76	12°37'16.28"N	77°48'48.89"E
BW04	73.0	75.0	77.0	75	12°37'9.31"N	77°48'18.49"
BW05	71.0	73.0	75.0	73	12°37'45.13"N	77°47'49.61"E
BW06	72.0	74.0	75.0	74	12°38'10.40"N	77°48'0.43"E
BW07	70.0	72.0	74.0	72	12°38'20.41"N	77°48'35.68"E
BW08	74.0	76.0	77.0	75	12°38'12.74"N	77°49'23.67"E
BW09	72.0	74.0	76.0	74	12°37'49.14"N	77°48'50.47"E

Source: Onsite Monitoring Data

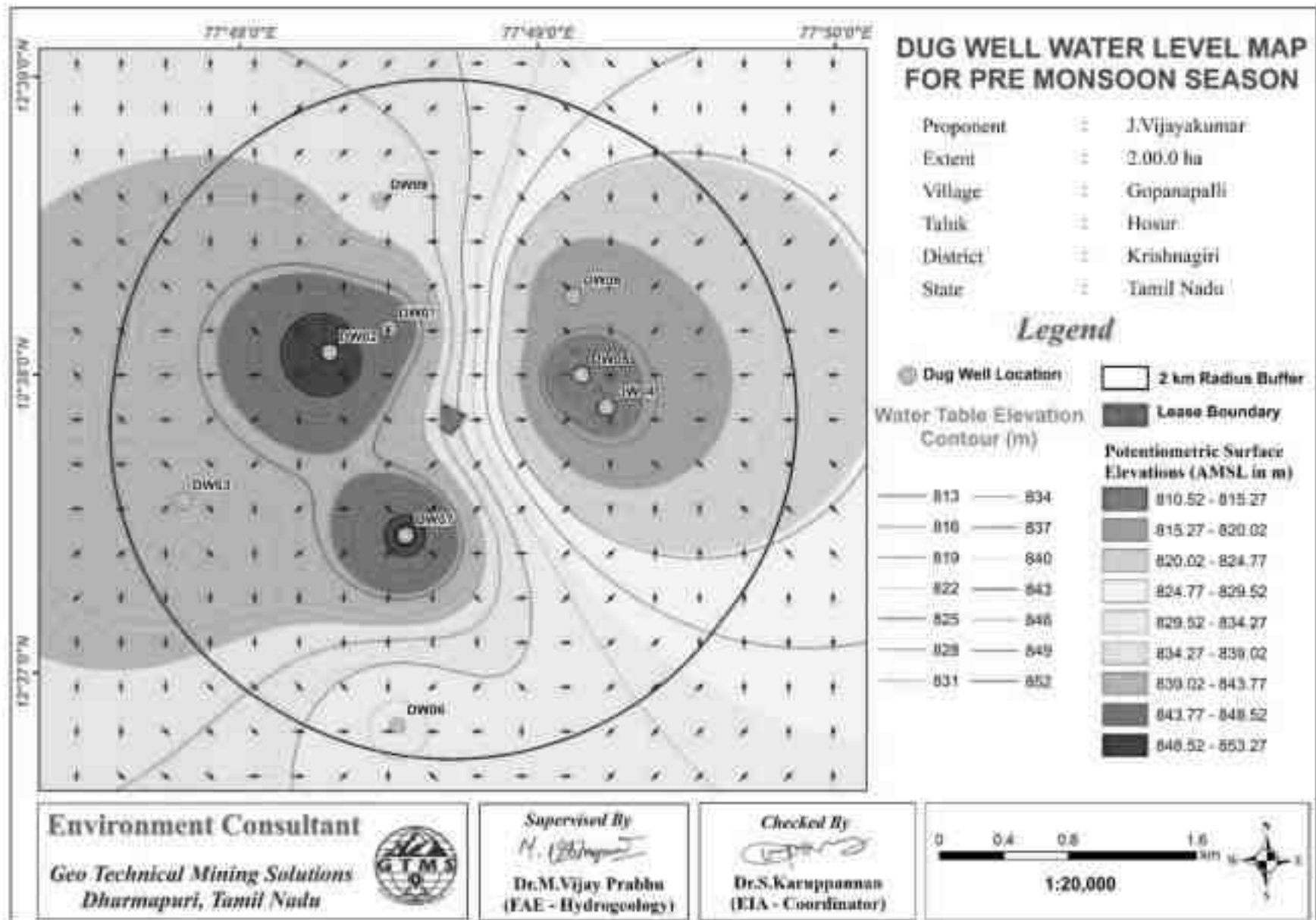


Figure 3.7 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Pre-Monsoon Season

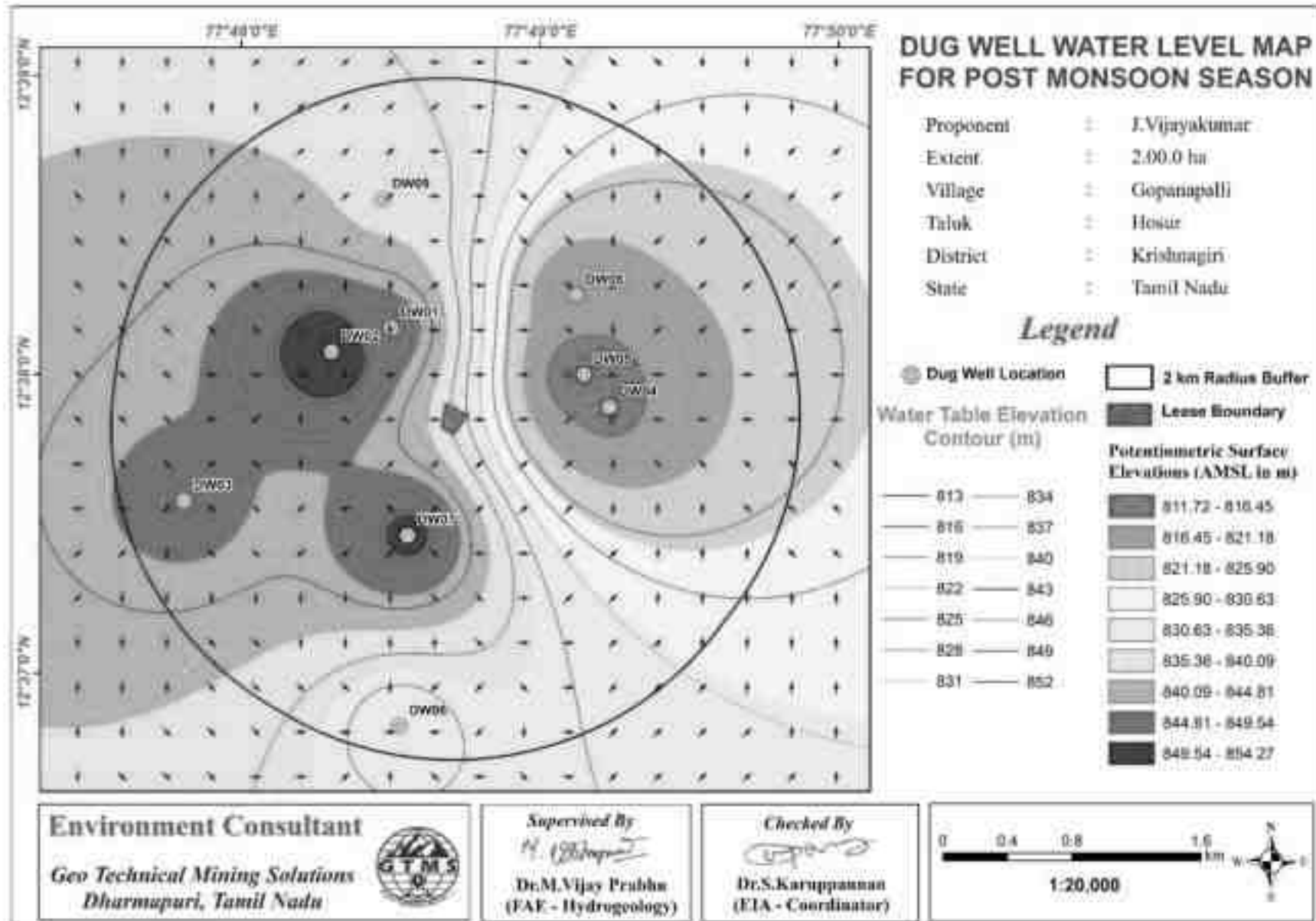


Figure 3.8 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Post-Monsoon Season

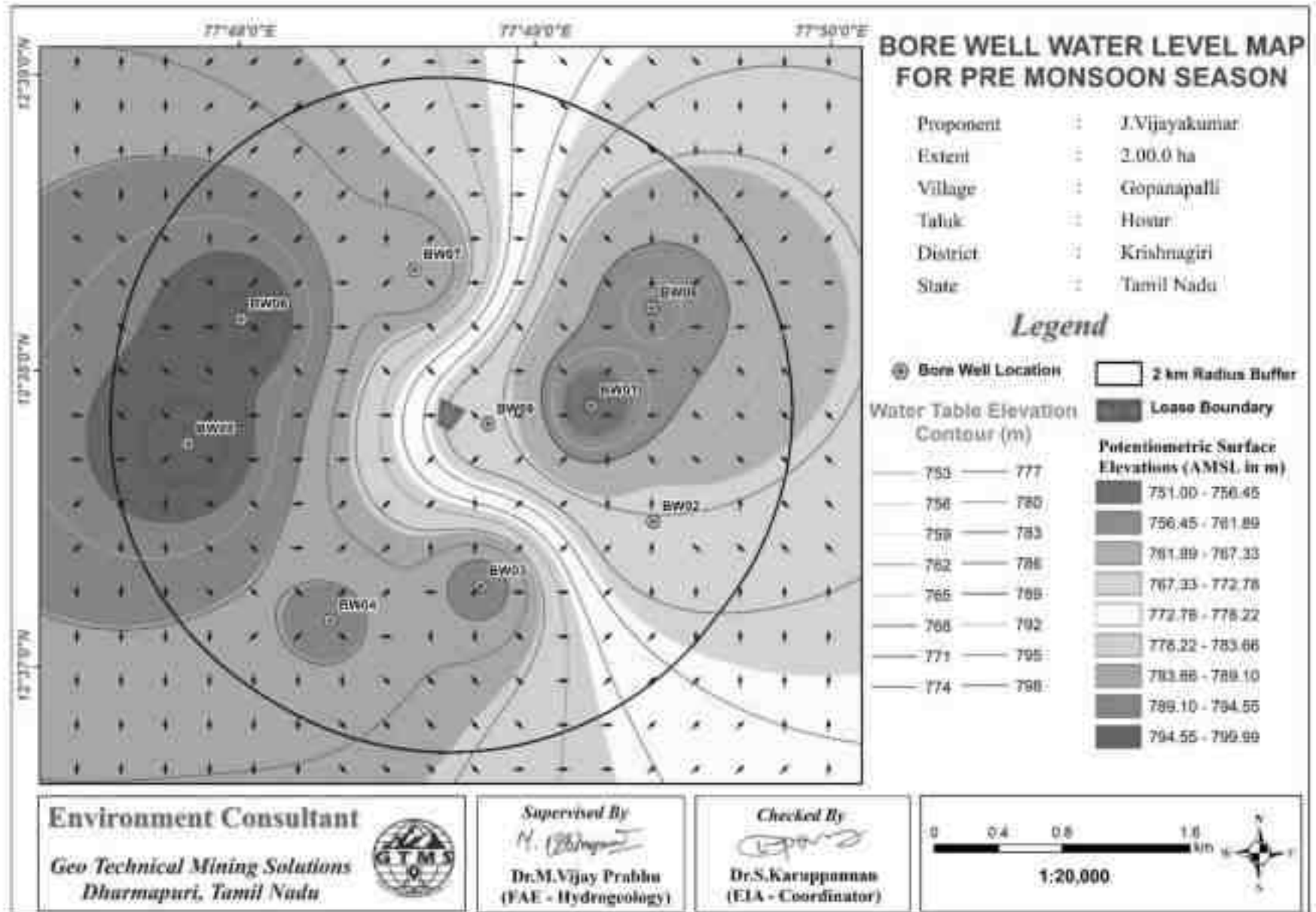


Figure 3.9 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Pre-Monsoon Season

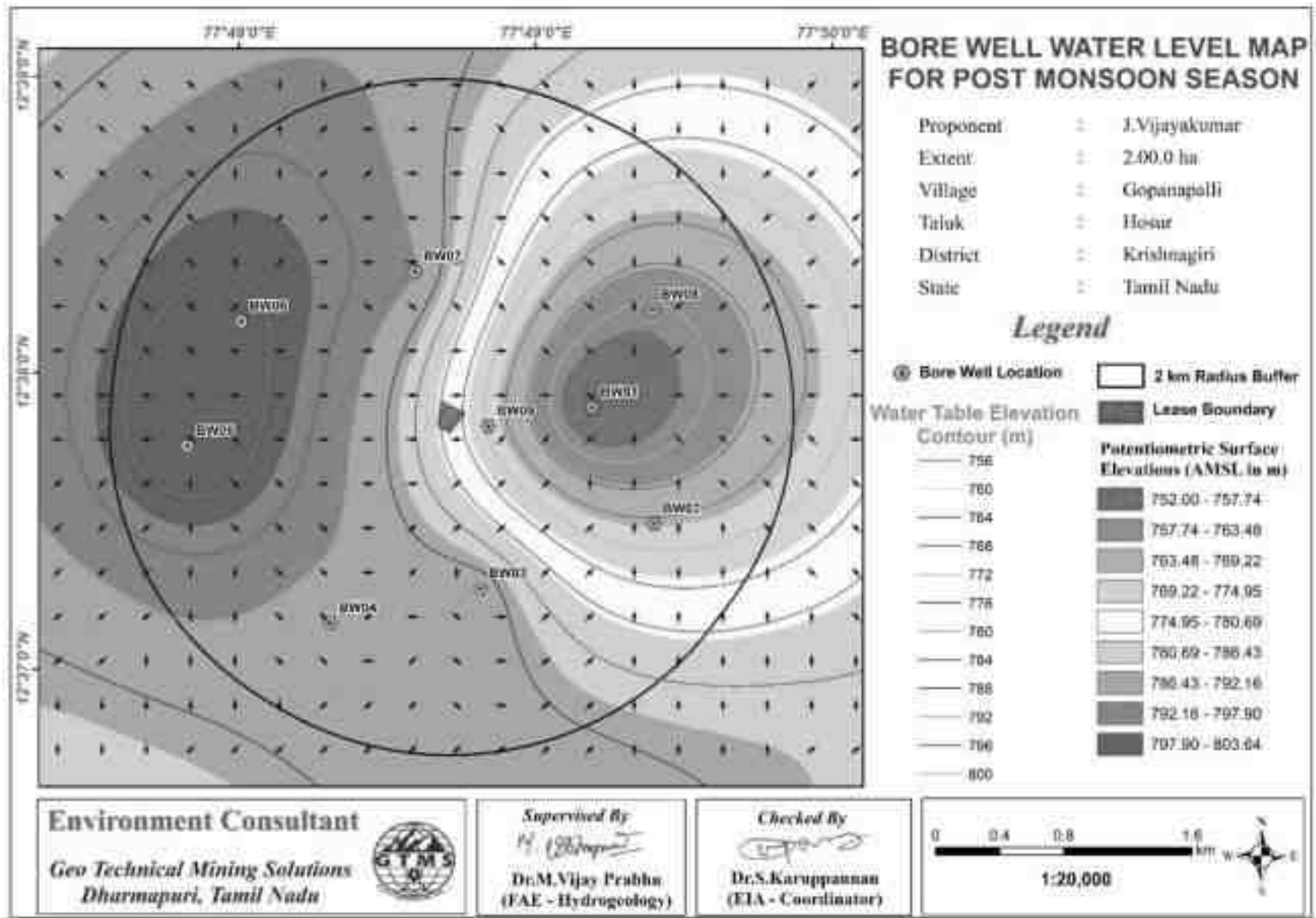


Figure 3.10 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Post-Monsoon Season

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 3.11.

Table 3.11 Vertical Electrical Sounding Data

Location Coordinates - 11° 0'44.46"N 77°56'40.43"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ω 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	441.97
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	900.07
7	20	10	310.86	3.558	1106.04
8	25	10	487.49	2.603	1268.94
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	1562.78
12	45	10	628	2.683	1684.92
13	50	10	777.15	1.943	1510.00
14	65	20	453.6	2.213	1003.82
15	70	20	989.1	2.651	2622.10
16	80	20	1256	2.196	2758.18
17	90	20	1554.3	1.846	2869.24
18	100	20	1653.6	2.213	3659.42

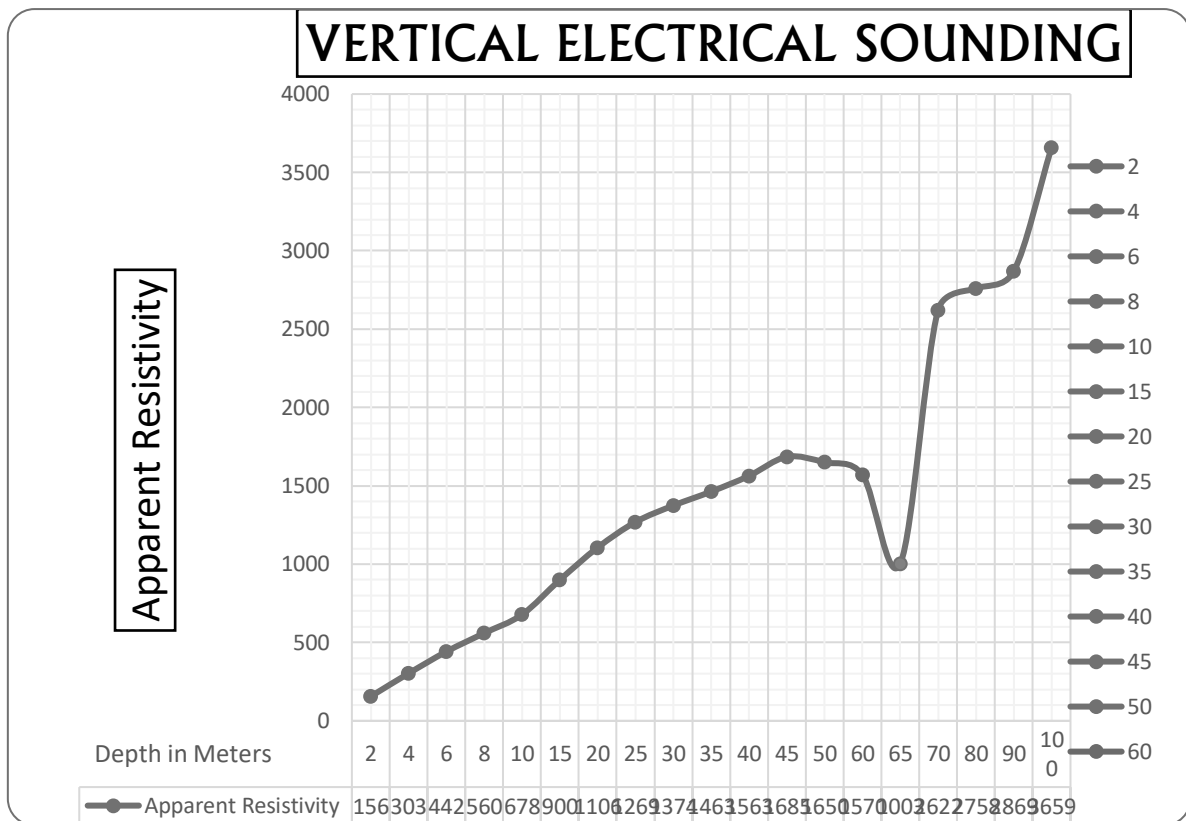


Figure 3.11 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 65 m Below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 65 m below ground level. The maximum depth proposed for the proposed project is 30 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 December, 2022 varied from 14.15⁰ C to 27.32⁰ C with the average of 20.64⁰ C; in January, 2023 from 9.90 to 27.83⁰ C with the average of 19.18⁰ C; and in February, 2023 from 13.27 to 33.82⁰ C with the average of 23.16⁰C. In December, 2022, relative humidity ranged from 45.44 to 100 % with the average of 85.58%; in January, 2023, from 35.94 to 100 % with the average of 78.25 %; and in February, 2023, from 10.69 to 100 % with the average of 62.98 %. The wind speed in December, 2022 varied from 0.72 to 6.52 m/s with the average of 2.98 m/s; in January, 2023 from 0.49 to 5.68 m/s with the average of 2.82 m/s; and in February, 2023 from 0.43 to 6.50 m/s with the average of 2.89 m/s. In December,2022, wind direction varied from 2.80 to 353.95⁰ with the average of 99.77⁰; in January, 2023, from 31.12 to 140.32⁰ with the average of 87.68⁰; and in February, 2023, from 1.56 to 356.45⁰ with the average of 111.38⁰. In December,2022, surface pressure varied from 92.42 to 99.43kPa with the average of 93.46 kPa; in January, 2023, from 92.78 to 93.78 kPa with the average of 93.27 kPa; and in February, 2023, from 92.43 to 93.65 kPa with the average of 93.09 kPa.

Table 3.12 Onsite Meteorological Data

S. No.	Parameters		DEC,2022	JAN, 2023	FEB,2023
1	Temperature (°C)	Min	14.15	9.90	13.27
		Max	27.32	27.83	33.82
		Avg	20.61	19.18	23.16
2	Relative Humidity (%)	Min	45.44	35.94	10.69
		Max	100.00	100.00	100.00
		Avg	85.58	78.25	62.98
3	Wind Speed (m/s)	Min	0.72	0.49	0.43
		Max	6.52	5.68	6.50
		Avg	2.98	2.82	2.89
4	Wind Direction (degree)	Min	2.80	31.12	1.56
		Max	353.95	140.32	356.45
		Avg	99.77	87.68	111.18
5	Surface Pressure(kPa)	Min	92.42	92.78	92.43
		Max	99.43	93.78	93.65
		Avg	93.46	93.27	93.09

Source: Sampling Results by *Enviro Farmers labs & Technologies*, 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 monthly rainfall in 2021 is generally high in the months of May, July, October, and November when compared to the long term monthly average rainfall.

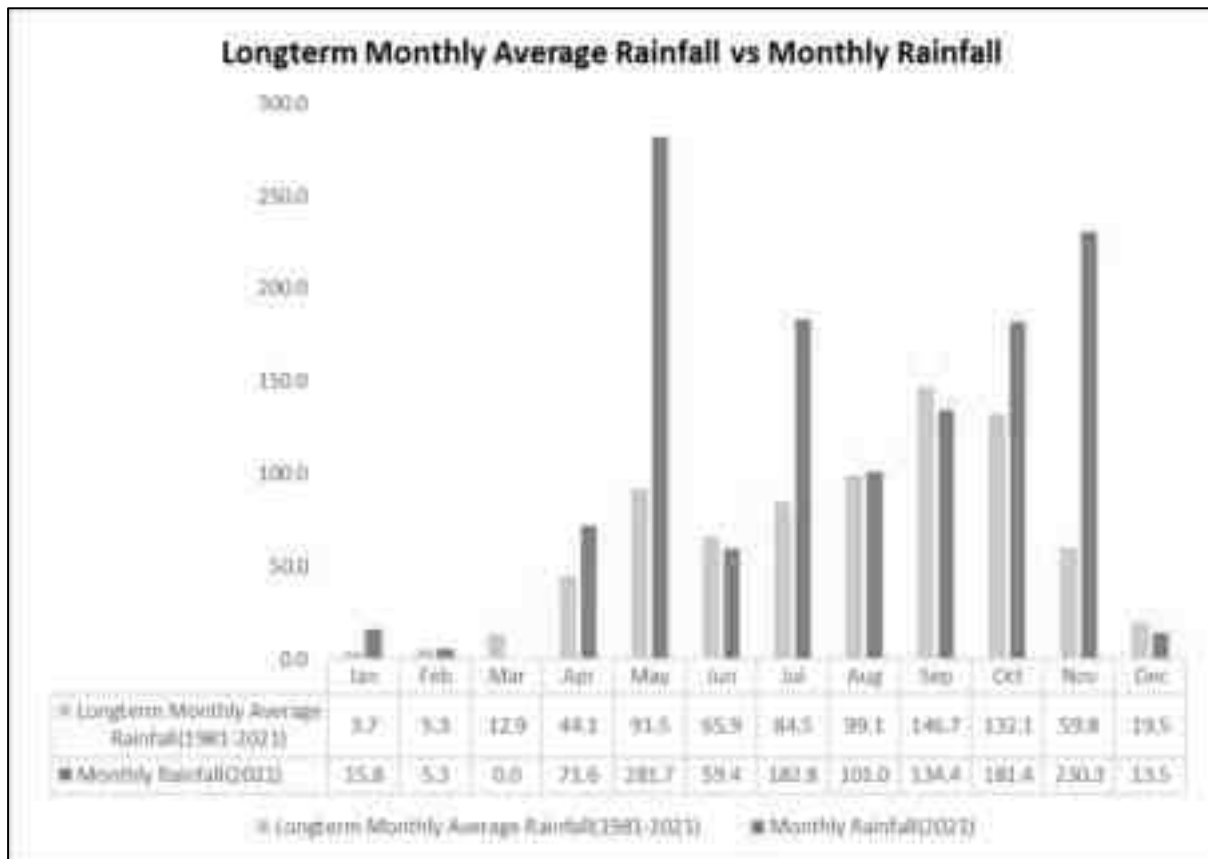
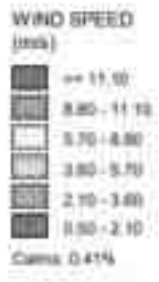
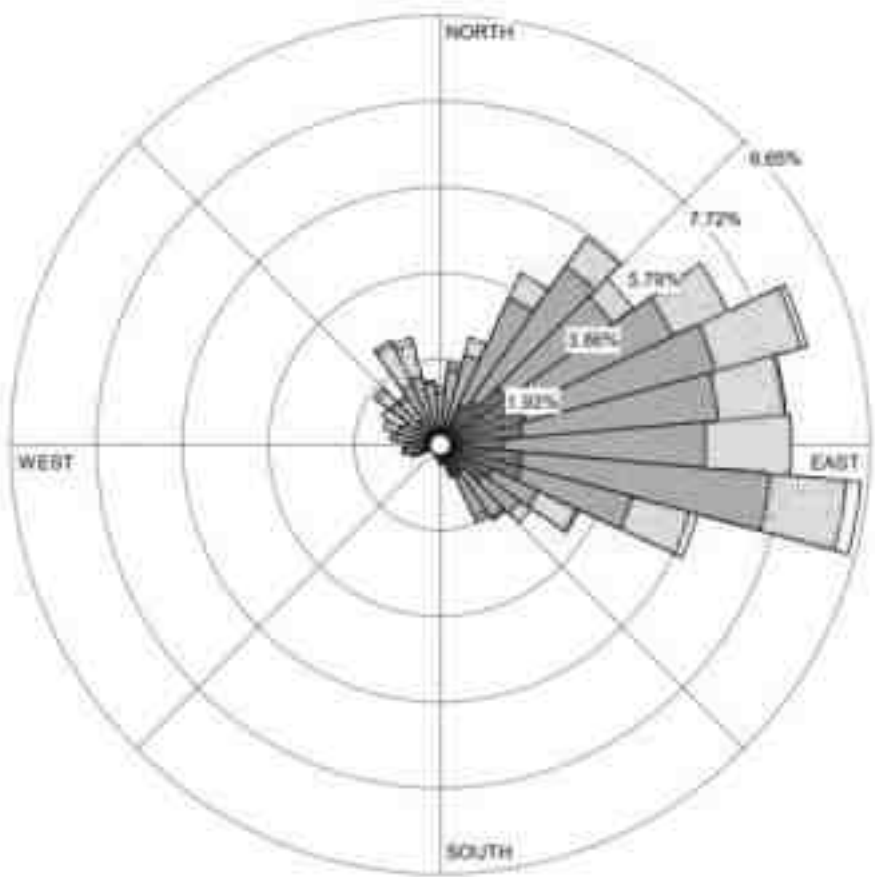


Figure 3.12 Long-Term Monthly Average Rainfall Vs Monthly Rainfall

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 December through February of the years from 2018 to 2023 and the seasonal wind rose for the study period of December 2022 through February-2023. The wind rose diagrams thus produced are shown in Figures 3.13-3.13a. Figure 3.14 reveals that:

- ❖ The measured average wind velocity during the study period is 2.74 m/s.
- ❖ Predominant wind was dominant in the directions ranging from Southeast to Northwest.



COMMENTS	START/END DATE	PROJECT NAME	
	Start Date: 01-12-2022 - 00:00 End Date: 01-03-2023 - 00:00	ADDRESS	
	CALM PERCENT	TOTAL COUNT	
	0.41%	2130 hrs.	
	Avg. Wind Speed	DATE	PROJECT NO.
	2.74 m/s		

WINDOT - New - 3.0.0.0 Environmental Software

Figure 3.14 Onsite Wind Rose Diagram

3.3.2 Ambient Air Quality Study

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

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

Table 3.13 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method Beta attenuation method	Fine Particulate Sampler
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hoch heiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based on *Enviro Farmers labs & Technologies & CPCB Notification*

Table 3.14 National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	SO ₂ (µg/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	NO _x (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	PM ₁₀ (µg/m ³)	Annual Avg. 24 hours	60.0 10°0	60.0 10°0
4	PM _{2.5} (µg/m ³)	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

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

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period **December 2022 through February 2023**, as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least 3 ± 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_{2.5}, PM₁₀, sulphur dioxide (SO₂) and nitrogen dioxide (NO₂). The sampling locations are shown in Figure 3.15 and average concentrations of air pollutants are summarized in Tables 3.15 and are shown in Figures 3.16-3.20.

Table 3.15 Ambient Air Quality (AAQ) Monitoring Locations

S. No.	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates
1	AAQ1	Core	--	---	12°37'48.72"N, 77°48'43.02"E
2	AAQ2	Kallu Barundur	1.56	W	12°37'47.92"N, 77°47'48.34"E
3	AAQ3	Barandhur	2.86	SW	12°37'19.90"N, 77°47'10.03"E
4	AAQ4	Muduganappalli	3.21	NW	12°38'30.20"N, 77°47'00.91"E
5	AAQ5	Beegisetipalli	4.42	SW	12°36'33.31"N, 77°46'35.51"E
6	AAQ6	Kottur	1.34	SE	12°37'35.03"N, 77°49'26.71"E
7	AAQ7	Kamaiyanur	4.25	SSW	12°35'34.79"N, 77°48'03.92"E
8	AAQ8	Angondapalli	4.55	NE	12°39'39.66"N, 77°50'29.30"E

Source: On-site monitoring/sampling by *Enviro Farmers labs & Technologies* in association with GTMS

Results

As per the monitoring data,

- PM_{2.5} ranges from 14.7 µg/m³ to 20.2 µg/m³
- PM₁₀ from 28.9 µg/m³ to 35.3 µg/m³
- SO₂ from 6.0 µg/m³ to 9.3 µg/m³
- NO₂ from 11.2 µg/m³ to 17.5g/m³.

The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

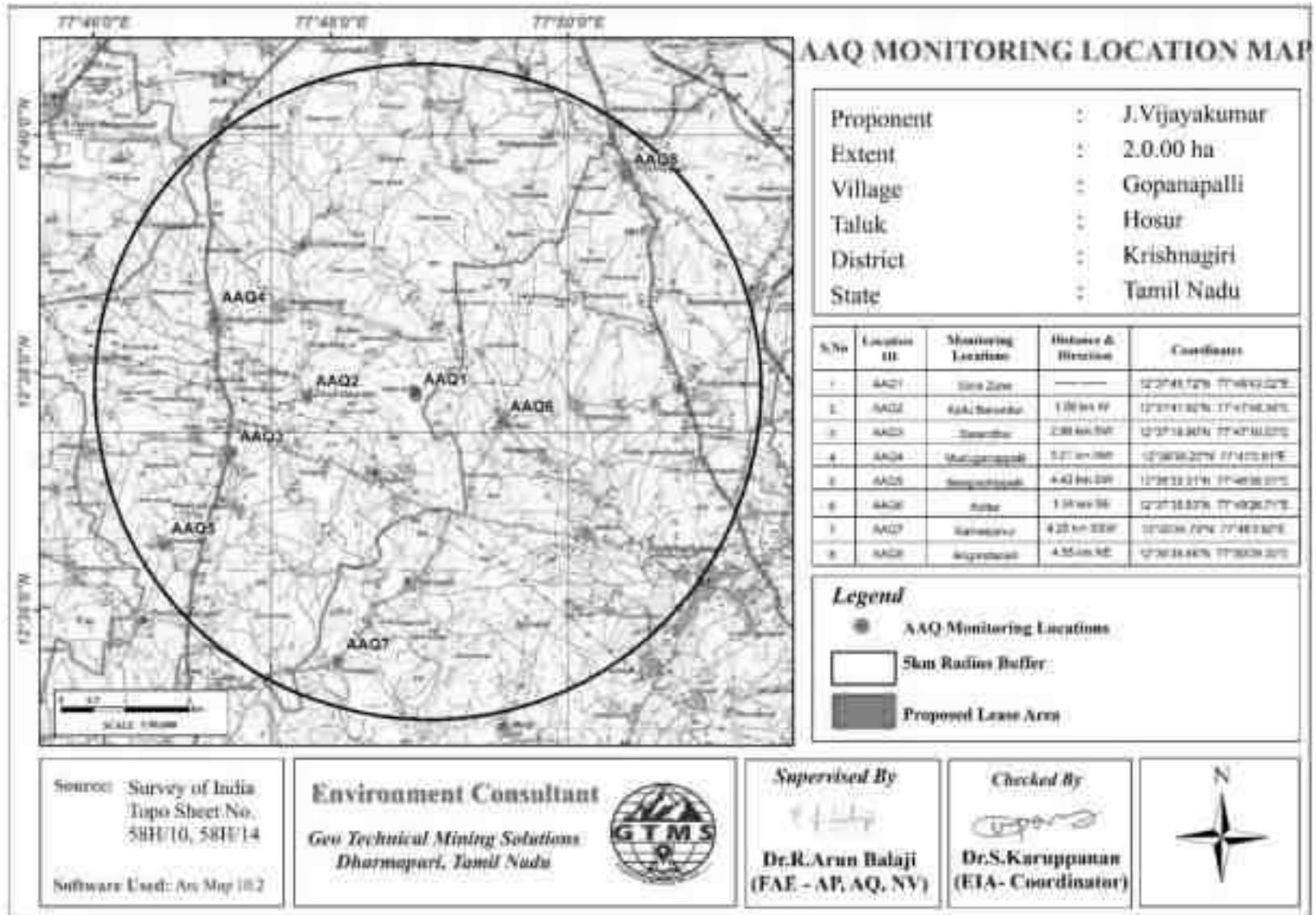


Figure 3.15 Toposheet Showing Ambient Air Quality Monitoring Station Locations Around 5 km Radius from Proposed Project Site

Table 3.16 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	26.9	19.2	24.0	26.9	47.1	35.3	44.3	47.1
AAQ2	23.1	14.2	18.9	22.9	38.1	28.9	33.4	38.1
AAQ3	24.8	18	21.6	24.4	39.9	34.7	37.3	39.9
AAQ4	23.9	19.5	22.0	23.6	40.6	35.3	37.7	40.462
AAQ5	19.8	14.2	16.5	19.8	38.1	30.3	33.2	37.318
AAQ6	17.4	13.2	15.6	17.3	36.2	29.7	33.5	36.2
AAQ7	22.3	18.3	20.4	22.3	37.9	34.1	36.0	37.9
AAQ8	23.9	16	19.9	23.6	40.2	32	36.4	40.2
SO ₂					NO _x			
AAQ1	12.9	9.4	10.9	12.6	22.9	16.4	20.7	22.9
AAQ2	10.4	6.3	8.2	10.4	18.4	12.5	15.6	18.2
AAQ3	11	6.6	8.4	9.7	20.1	8.9	17.1	19.9
AAQ4	10.2	7.1	8.7	10.1	20.8	14.3	17.8	20.5
AAQ5	8.2	5	6.4	8.2	17.6	10.5	13.7	17.6
AAQ6	10.3	7.2	8.3	10.0	18.3	13.8	15.6	18.3
AAQ7	9.1	6.3	7.8	9.0	18.5	12	15.1	16.9
AAQ8	11.5	6.3	9.1	11.5	20.6	12.8	17.0	20.5

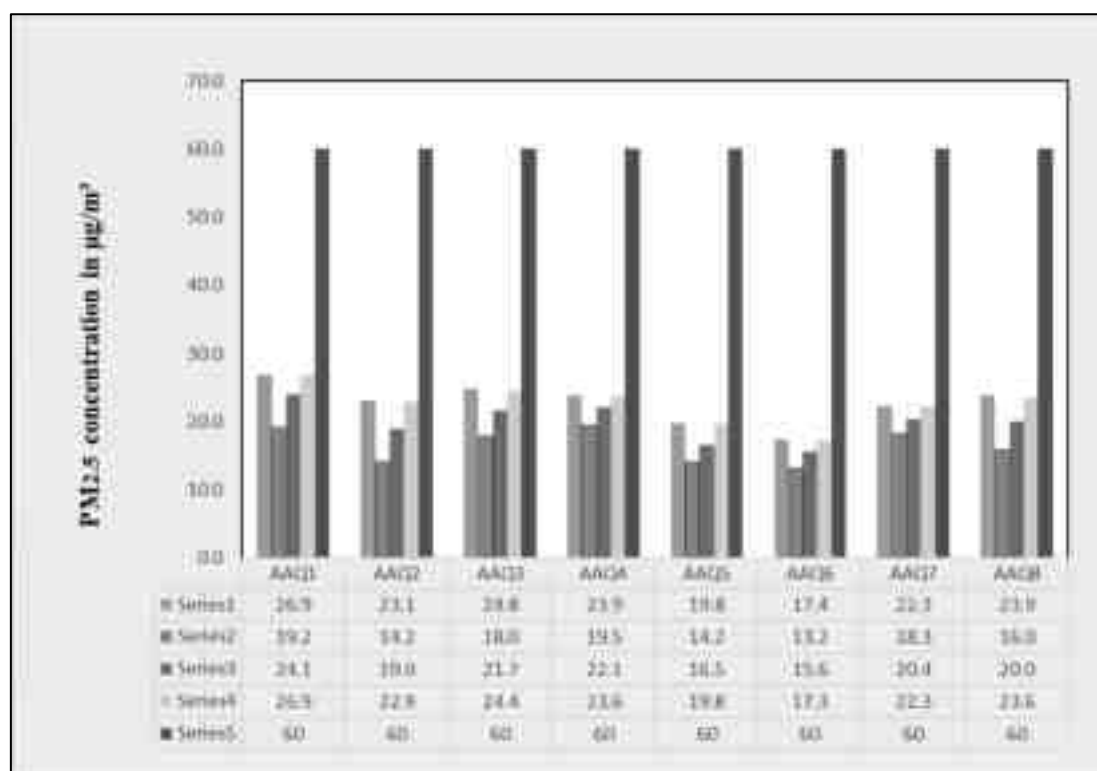


Figure 3.16 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 8 Air Quality Monitoring Stations within 5 km Radius

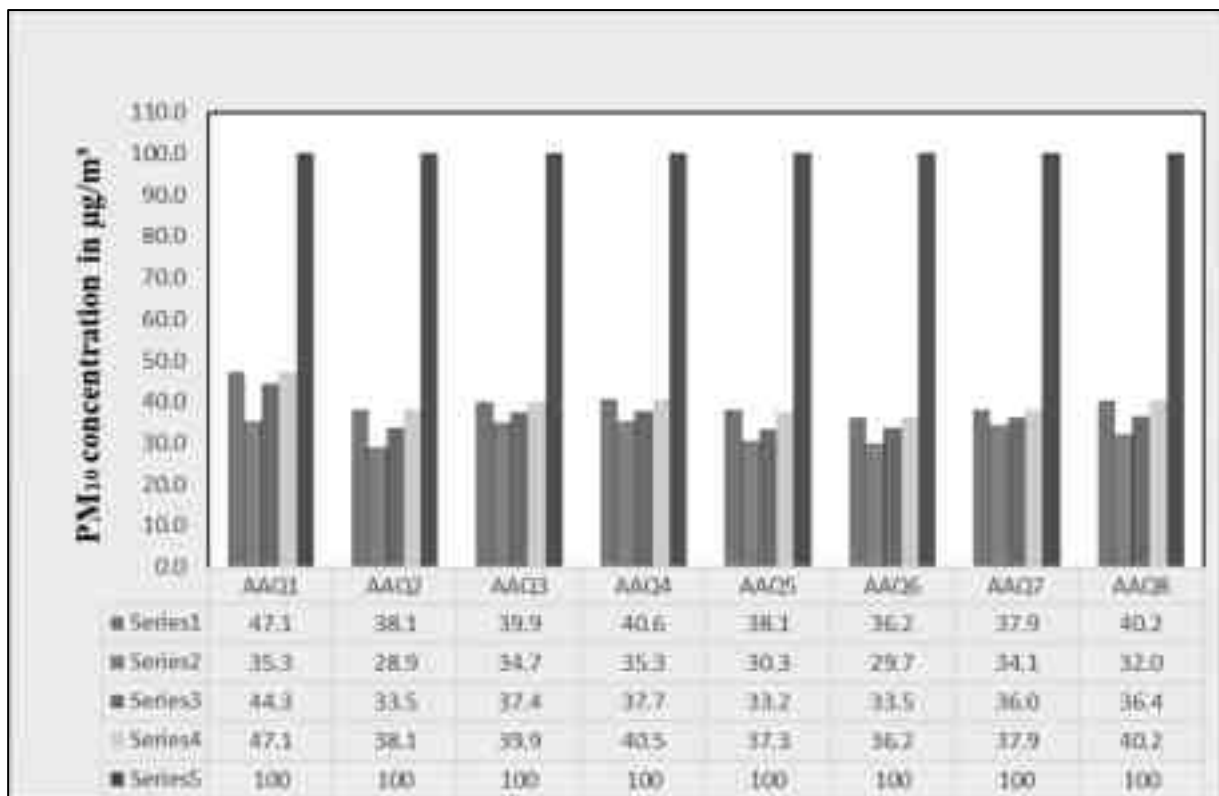


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

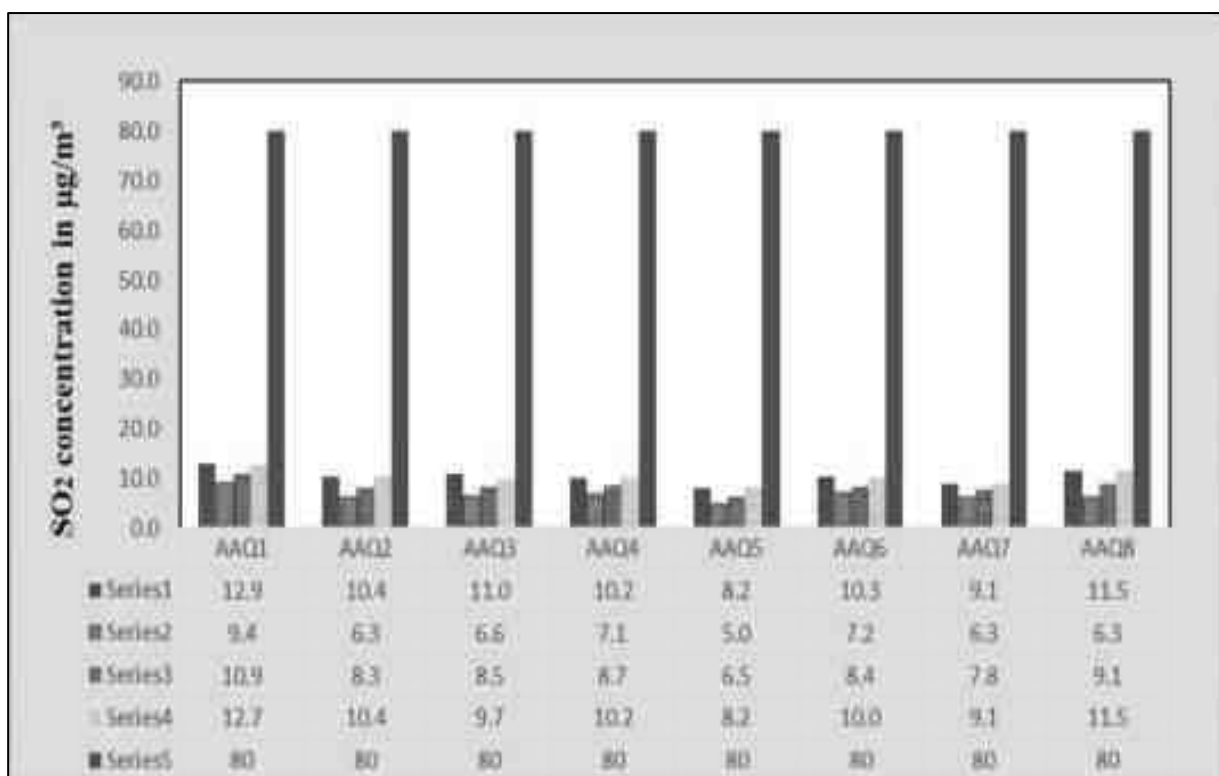


Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 8 Air Quality Monitoring Stations within 5 km Radius

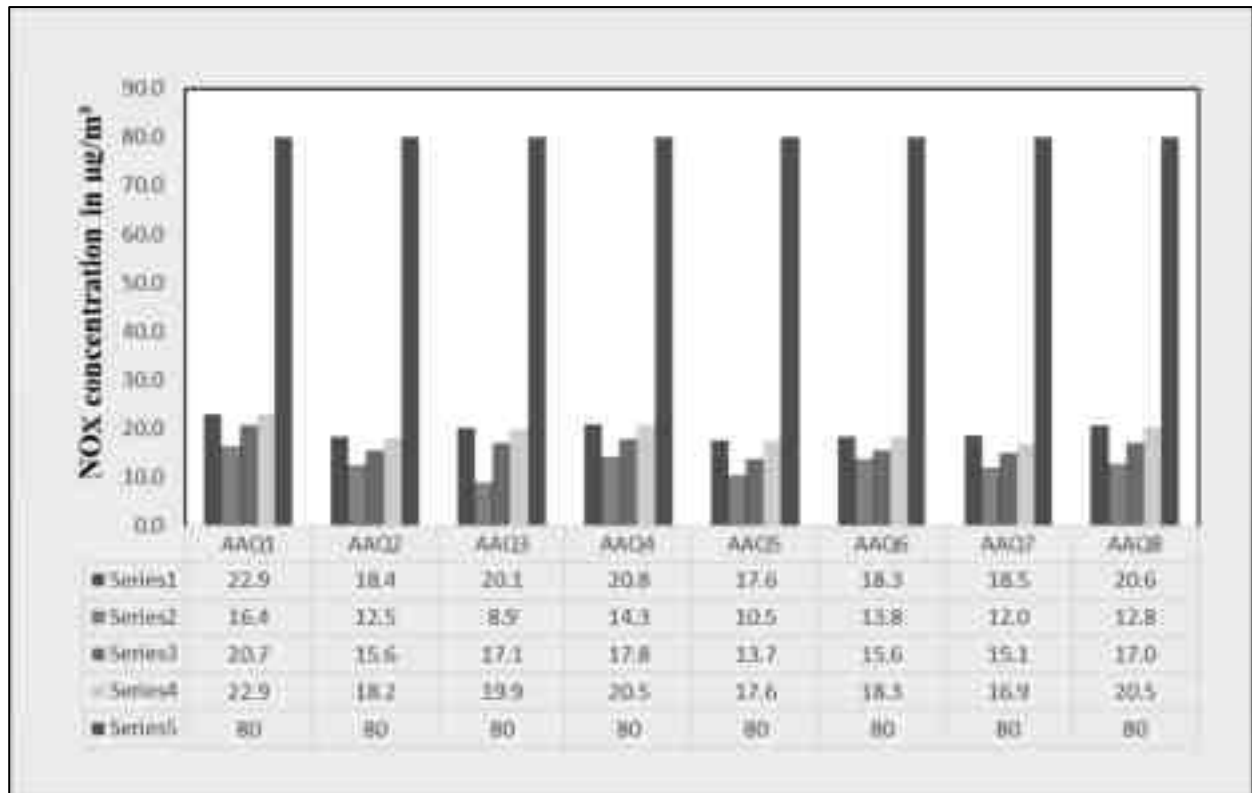


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of No_x Measured from 8 Air Quality Monitoring Stations within 5 km Radius

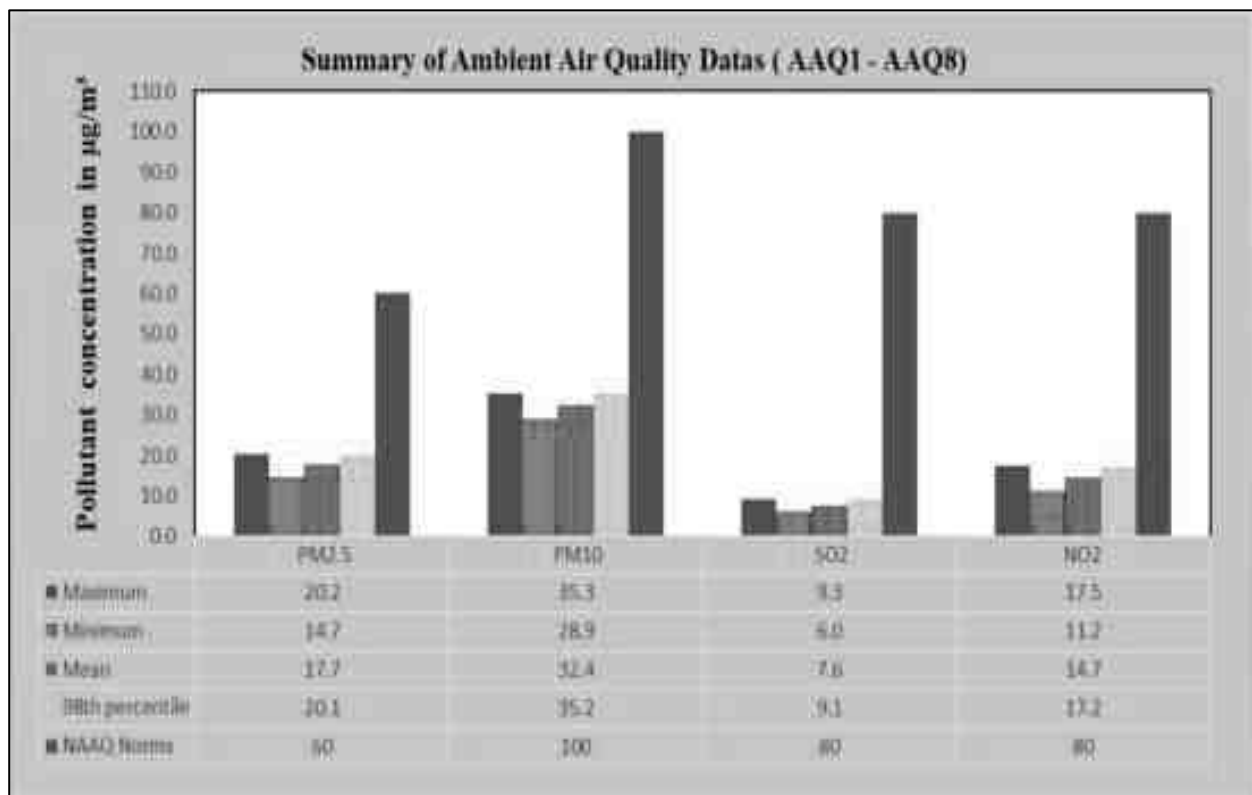


Figure 3.20 Bar Chart Showing Maximum, Minimum, and Average Concentrations of Pollutants in Atmosphere within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at nine (9) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.17 and spatial occurrence of the locations are shown in Figure 3.21.

Table 3.17 Noise Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates
1	N1	Core	0.10	W	12°37'51.57"N, 77°48'40.03"E
2	N2	Gulisandiram	0.80	NNW	12°38'19.96"N, 77°48'35.61"E
3	N3	Kallu Barundur	1.54	W	12°37'47.01"N, 77°47'48.90"E
4	N4	Barandhur	2.89	SW	12°37'21.17"N, 77°47'8.62"E
5	N5	Muduganappalli	3.08	NW	12°38'22.58"N, 77°47'2.88"E
6	N6	Beegisetipalli	4.40	SW	12°36'33.37"N, 77°46'36.25"E
7	N7	Kottur	1.37	SE	12°37'35.79"N, 77°49'28.41"E
8	N8	Kamaiyanur	4.25	NNW	12°35'34.58"N, 77°48'4.47"E
9	N9	Angondapalli	4.65	NE	12°39'42.40"N, 77°50'31.39"E

Source: On-site Monitoring/Sampling by *Enviro Farmers labs & Technologies* in Association with GTMS

Table 3.18 Ambient Noise Quality Result

Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (L_{eq} in dB (A))	
N1	Core	Industrial Area	42.1	36.5	75	70
N2	Gulisandiram	Residential Area	38.9	32.8	55	45
N3	Kallu Barundur		36.9	32.1		
N4	Barandhur		38.7	31.8		
N5	Muduganappalli		40.6	33.9		
N6	Beegisetipalli		36.1	31.4		
N7	Kottur		39.4	32.3		
N8	Kamaiyanur		32.1	28.5		
N9	Angondapalli		39.6	33.0		

Source: On-site Monitoring/Sampling by *Enviro Farmers labs & Technologies* in Association with GTMS

The Table 3.18 shows that noise level in core zone was 42.1 dB (A) Leq during day time and 36.5 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 32.1 to 40.6dB (A) Leq and during night time from 28.5 to 33.9dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.22 and 3.23.

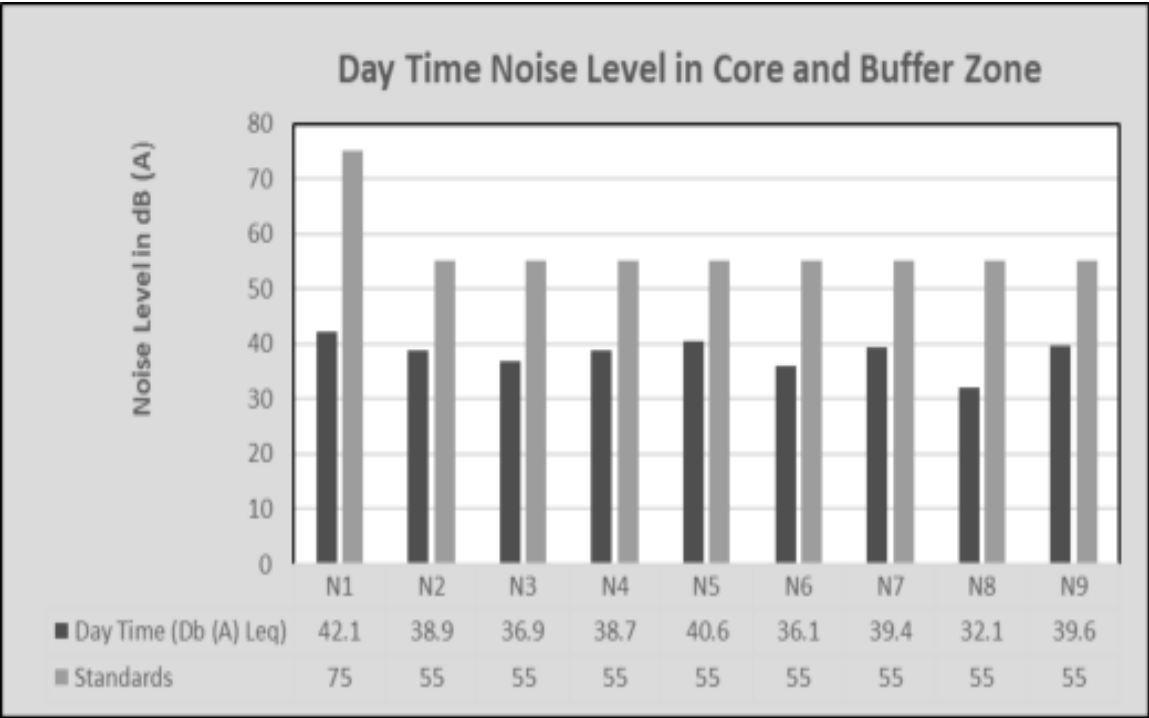


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

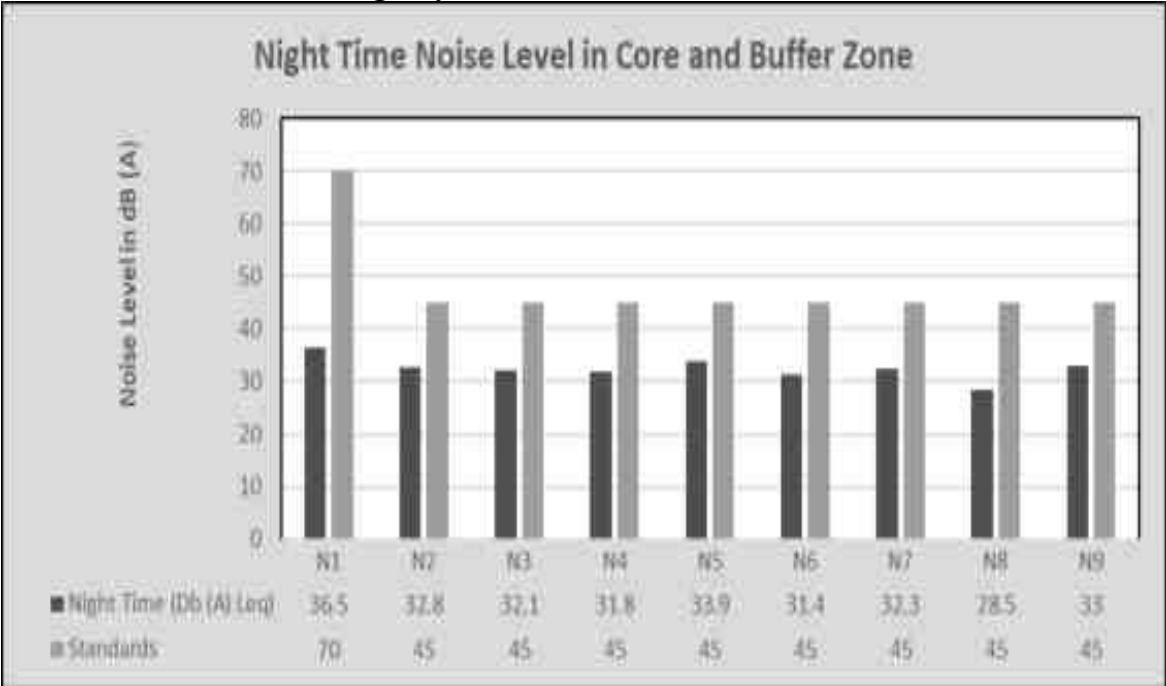


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

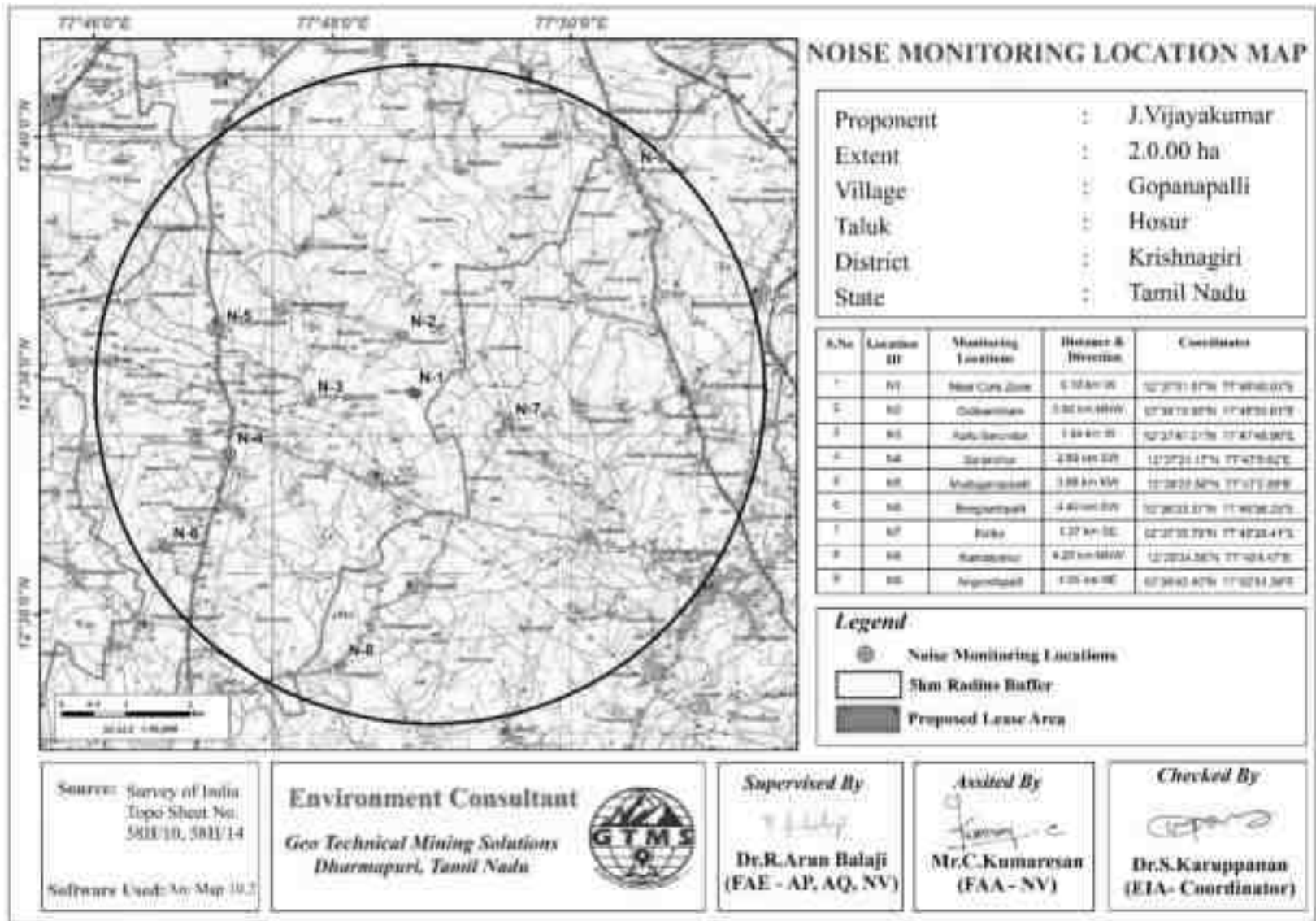


Figure 3.21 Toposheet Showing Noise Level Monitoring Station Locations around 5 km Radius from Proposed Project Site

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

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

Shannon – Wiener Index, Evenness and Richness

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

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

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

3.5.1 Flora

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

Crop Patterns in Denkanikottai Taluk

A variety of fruits and vegetables are cultivated in Krishnagiri. The important crops of this district are Paddy, Maize, Ragi, Banana, Sugarcane, Cotton, Tamarind, Coconut, Mango, Groundnut, Vegetables and Flowers. The land is very fertile and there is significant access to fresh water. Roses are cultivated in large numbers. Hosur is a popular for cultivation of a variety of roses.

Flora in mine lease area (core zone)

Taxonomically 17 species belonging to 16 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were 5 Tree (29.5 %) followed by Herbs & Climbers & Grass 7 (41%), Shrubs 5 (29.5 %). Details of flora with the scientific name were mentioned in Table.3.21.

Flora in 300 m radius buffer zone

Taxonomically 36 species belonging to 25 families have been recorded from the 300 m radius buffer zone. Based on habitat classification of the enumerated plants the majority of species were seven Tree (19.5 %) followed by Herbs & Climbers & Grass 21 (58.5%), Shrubs 8 (22%). Details of flora with the scientific name and species richness index were mentioned in Table.3.21-3.23.

Flora in 10 km radius buffer zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area, because of nearby agriculture land was found to be dominate in all the directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 89 species belonging to 43 families have been recorded from the buffer zone. The floral (89) varieties among them Trees 37 (42%) Shrubs 13 (14%) and Herbs & Climbers & Creeper & Cactus 39 (44%). Details of flora with the scientific name and species richness index were mentioned in Table.3.21-3.23.

Table 3.21 Flora in Mine Lease Area

S.no	Local name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Trees													
1	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	3	3	5	0.6	60.0	1.0	3.6	5.8	9.3	NE
2	Echamaram	<i>Phoenix dactylifera L</i>	Arecaceae	1	1	5	0.2	20.0	1.0	1.2	1.9	3.1	NE
3	Pungam	<i>Millettia pinnata</i>	Fabaceae	3	3	5	0.6	60.0	1.0	3.6	5.8	9.3	NE
4	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	3	5	0.6	60.0	1.0	3.6	5.8	9.3	NE
5	Vetpalai maram	<i>Wrightia tinctoria</i>	Apocynaceae	2	1	5	0.4	20.0	2.0	2.4	1.9	4.3	NE
Shrubs													
6	Avaram chadi	<i>Senna auriculata</i>	Fabaceae	4	3	5	0.8	60.0	1.3	4.8	5.8	10.5	NE
7	Earuku	<i>Calotropis gigantea</i>	Apocynaceae	3	3	5	0.6	60.0	1.0	3.6	5.8	9.3	NE
8	Unichadi	<i>Landana camera</i>	Verbenaceae	5	2	5	1.0	40.0	2.5	6.0	3.8	9.8	NE
9	Verali chadi	<i>Dodonaea viscosa</i>	Sapindaceae	2	1	5	0.4	20.0	2.0	2.4	1.9	4.3	NE
10	Sapathikalli	<i>Cereus pterogonus</i>	Cactus	4	3	5	0.8	60.0	1.3	4.8	5.8	10.5	NE
Herbs/Climber													
11	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	5	4	5	1.0	80.0	1.3	6.0	7.7	13.6	NE
12	Thathapondu	<i>Tridax procumbens</i>	Asteraceae	10	5	5	2.0	100.0	2.0	11.9	9.6	21.5	NE
13	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae	12	5	5	2.4	100.0	2.4	14.3	9.6	23.9	NE
14	Onnakodi	<i>Ipomoea staphylina</i>	Convolvulaceae	4	3	5	0.8	60.0	1.3	4.8	5.8	10.5	NE
15	Korai	<i>Cyperus rotundus</i>	Cyperaceae	8	4	5	1.6	80.0	2.0	9.5	7.7	17.2	NE
16	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales	6	3	5	1.2	60.0	2.0	7.1	5.8	12.9	NE
17	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	9	5	5	1.8	100.0	1.8	10.7	9.6	20.3	NE

Table 3.22 Calculation of Species Diversity mine lease area

S.No	Local name	Scientific name	No. of Species	Pi	In (Pi)	Pi x In (Pi)
Trees						
1	Karuvealan	<i>Prosopis juliflora</i>	3	0.25	-1.39	-0.35
2	Echamaram	<i>Phoenix dactylifera L</i>	1	0.08	-2.48	-0.21
3	Pungam	<i>Millettia pinnata</i>	3	0.25	-1.39	-0.35
4	Unjai maram	<i>Albizia amara</i>	3	0.25	-1.39	-0.35
5	Vetpalai maram	<i>Wrightia tinctoria</i>	2	0.17	-1.79	-0.30
Shrubs						
6	Avaram chadi	<i>Senna auriculata</i>	4	0.22	-1.50	-0.33
7	Earuku	<i>Calotropis gigantea</i>	3	0.17	-1.79	-0.30
8	Unichadi	<i>Landana camera</i>	5	0.28	-1.28	-0.36
9	Verali chadi	<i>Dodonaea viscosa</i>	2	0.11	-2.20	-0.24
10	Sapathikalli	<i>Cereus pterogonus</i>	4	0.22	-1.50	-0.33
Herbs /climber						
11	Perandai	<i>Cissus quadrangularis</i>	5	0.09	-2.38	-0.22
12	Thathapondu	<i>Tridax procumbens</i>	10	0.19	-1.69	-0.31
13	Kolunji chadi	<i>Tephrosia purpurea</i>	12	0.22	-1.50	-0.33
14	Onnakodi	<i>Ipomoea staphylina</i>	4	0.07	-2.60	-0.19
15	Korai	<i>Cyperus rotundus</i>	8	0.15	-1.91	-0.28
16	Nerunji	<i>Tribulus terrestris</i>	6	0.11	-2.20	-0.24
17	Nayuruv	<i>Achyranthes aspera</i>	9	0.17	-1.79	-0.30

Table 3.23 Species Richness (Index) in mine lease area

Details	H	H max	Evenness	Species Richness
Tree	1.55	1.61	0.96	1.61
Shrubs	1.57	1.61	0.97	1.38
Herbs	1.89	1.95	0.97	1.50

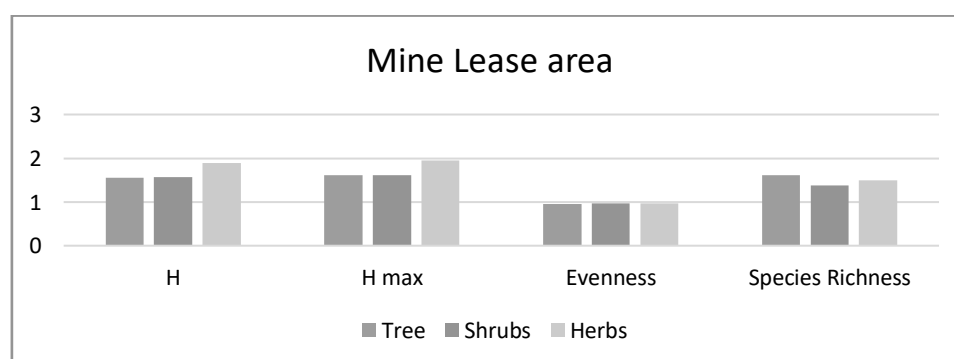


Figure 3.23 Species Richness (Index) in Mine Lease Area

Table 3.21 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
Tree													
1	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	4	3	5	0.8	60.0	1.3	19.0	21.4	40.5	Not Listed
2	Pongam oiltree	<i>Pongamia pin nata</i>	Fabaceae	3	2	5	0.6	40.0	1.5	14.3	14.3	28.6	Not Listed
3	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	2	1	5	0.4	20.0	2.0	9.5	7.1	16.7	Not Listed
4	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	3	2	5	0.6	40.0	1.5	14.3	14.3	28.6	Not Listed
5	Vembu	<i>Azadirachta indica</i>	Meliaceae	4	3	5	0.8	60.0	1.3	19.0	21.4	40.5	Not Listed
6	Echamaram	<i>Phoenix dactylifera L</i>	Arecaceae	2	1	5	0.4	20.0	2.0	9.5	7.1	16.7	Not Listed
7	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	2	5	0.6	40.0	1.5	14.3	14.3	28.6	Not Listed
Shrubs													
1	Unichedi	<i>Lantana camara</i>	Verbenaceae	6	5	10	0.6	50.0	1.2	10.3	10.0	20.3	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	8	7	10	0.8	70.0	1.1	13.8	14.0	27.8	Not Listed
3	Erukku	<i>Calotropis gigantea</i>	apocynaceae	7	6	10	0.7	60.0	1.2	12.1	12.0	24.1	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	15.5	16.0	31.5	Not Listed
5	Sappathikalli	<i>Cereus pterogonus</i>	Cactus	8	7	10	0.8	70.0	1.1	13.8	14.0	27.8	Not Listed
6	Kattamanaku	<i>Jatropha gossypifolia L</i>	Euphorbiaceae	6	5	10	0.6	50.0	1.2	10.3	10.0	20.3	Not Listed
7	Karunochi	<i>Vitex negundo</i>	Lamiaceae	8	7	10	0.8	70.0	1.1	13.8	14.0	27.8	Not Listed
8	Tudambo	<i>Actinidia arguta</i>	Actinidiaceae	6	5	10	0.6	50.0	1.2	10.3	10.0	20.3	Not Listed
Herbs, Climbers & Grass													

1	Thumbai	<i>Leucas aspera</i>	Lamiaceae	9	8	15	0.6	53.3	1.1	5.7	5.8	11.5	Not Listed
2	Katang kathrikai	<i>Solanum virginianum</i>	Solanaceae	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
3	Arugampul	<i>Cynodon dactylon</i>	Poaceae	11	10	15	0.7	66.7	1.1	6.9	7.2	14.2	Not Listed
4	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.8	3.6	7.4	Not Listed
5	Korai	<i>Cyperus rotundus</i>	Cyperaceae	8	7	15	0.5	46.7	1.1	5.0	5.1	10.1	Not Listed
6	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
7	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	8	7	15	0.5	46.7	1.1	5.0	5.1	10.1	Not Listed
8	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	6	5	15	0.4	33.3	1.2	3.8	3.6	7.4	Not Listed
9	Mulli	<i>Solanum violaceum</i> <i>Ortega</i>	Solanaceae	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
10	Kombumul	<i>Acanthospermum</i> <i>hispidum</i>	Asteraceae	8	7	15	0.5	46.7	1.1	5.0	5.1	10.1	Not Listed
11	Ponnangani	<i>Alternanthera pungens</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.8	3.6	7.4	Not Listed
12	wild thulasi	<i>Hyptis suaveolens (L.)</i>	Lamiaceae	9	8	15	0.6	53.3	1.1	5.7	5.8	11.5	Not Listed
13	Gopuram Tangi	<i>Andrographis echioides</i>	Acanthaceae	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
14	Amman Paccharisi	<i>Euphorbia hirta</i>	Euphorbiaceae	9	8	15	0.6	53.3	1.1	5.7	5.8	11.5	Not Listed
15	Paca poondu	<i>Pavonia gallaensis</i>	Malvaceae	8	7	15	0.5	46.7	1.1	5.0	5.1	10.1	Not Listed
16	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	5.7	5.8	11.5	Not Listed
17	Vishnukrandi	<i>Evolvulus alsinoides</i>	Convolvulaceae	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
18	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae	6	5	15	0.4	33.3	1.2	3.8	3.6	7.4	Not Listed
19	Sirupunaikkali	<i>Passiflora foetida</i>	Passifloraceae	8	7	15	0.5	46.7	1.1	5.0	5.1	10.1	Not Listed
20	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	7	6	15	0.5	40.0	1.2	4.4	4.3	8.8	Not Listed
21	Agave	<i>Agave weberi</i>	Asparagaceae	6	5	15	0.4	33.3	1.2	3.8	3.6	7.4	Not Listed

Table 3.22 Calculation of Species Diversity in 300 m Radius

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x In (Pi)
Tree						
1	Velikathan maram	<i>Prosopis juliflora</i>	4	0.19	-1.66	-0.32
2	Pongam oiltree	<i>Pongamia pin nata</i>	3	0.14	-1.95	-0.28
3	Panai maram	<i>Borassus flabellifer</i>	2	0.10	-2.35	-0.22
4	Nuna maram	<i>Morinda citrifolia</i>	3	0.14	-1.95	-0.28
5	Vembu	<i>Azadirachta indica</i>	4	0.19	-1.66	-0.32
6	Echamaram	<i>Phoenix dactylifera L</i>	2	0.10	-2.35	-0.22
7	Unjai maram	<i>Albizia amara</i>	3	0.14	-1.95	-0.28
H (Shannon Diversity Index) =1.91						
Shrubs						
1	Unichedi	<i>Lantana camara</i>	6	0.10	-2.27	-0.23
2	Sundaika	<i>Solanum torvum</i>	8	0.14	-1.98	-0.27
3	Erukku	<i>Calotropis gigantea</i>	7	0.12	-2.11	-0.26
4	Avarai	<i>Senna auriculata</i>	9	0.16	-1.86	-0.29
5	Sappathikalli	<i>Cereus pterogonus</i>	8	0.14	-1.98	-0.27
6	Kattamanaku	<i>Jatropha gossypifolia L</i>	6	0.10	-2.27	-0.23
7	Karunochi	<i>Vitex negundo</i>	8	0.14	-1.98	-0.27
8	Tudambo	<i>Actinidia arguta</i>	6	0.10	-2.27	-0.23
H (Shannon Diversity Index) =2.07						
HERBS						
1	Thumbai	<i>Leucas aspera</i>	9	0.06	-2.87	-0.16
2	Kantang kathrikai	<i>Solanum virginianum</i>	7	0.04	-3.12	-0.14
3	Arugampul	<i>Cynodon dactylon</i>	11	0.07	-2.67	-0.18
4	Poolai poondu	<i>Aerva lanata</i>	6	0.04	-3.28	-0.12
5	Korai	<i>Cyperus rotundus</i>	8	0.05	-2.99	-0.15
6	Nerunji	<i>Tribulus terrestris</i>	7	0.04	-3.12	-0.14
7	Nayuruv	<i>Achyranthes aspera</i>	8	0.05	-2.99	-0.15
8	Thottalchinungi	<i>Mimosa pudica</i>	6	0.04	-3.28	-0.12
9	Mulli	<i>Solanum violaceum Ortega</i>	7	0.04	-3.12	-0.14
10	Kombumul	<i>Acanthospermum hispidum</i>	8	0.05	-2.99	-0.15
11	Ponnangani	<i>Alternanthera pungens</i>	6	0.04	-3.28	-0.12
12	wild thulasi	<i>Hyptis suaveolens (L.)</i>	9	0.06	-2.87	-0.16
13	Gopuram Tangi	<i>Andrographis echioides</i>	7	0.04	-3.12	-0.14
14	Amman Paccharisi	<i>Euphorbia hirta</i>	9	0.06	-2.87	-0.16
15	Paca poondu	<i>Pavonia gallaensis</i>	8	0.05	-2.99	-0.15
16	Perandai	<i>Cissus quadrangularis</i>	9	0.06	-2.87	-0.16
17	Vishnukrandi	<i>Evolvulus alsinoides</i>	7	0.04	-3.12	-0.14
18	Musumusukkai	<i>Mukia maderaspatana</i>	6	0.04	-3.28	-0.12
19	Sirupunaikkali	<i>Passiflora foetida</i>	8	0.05	-2.99	-0.15
20	Nagathali	<i>Opuntia dillenii</i>	7	0.04	-3.12	-0.14
21	Agave	<i>Agave weberi</i>	6	0.04	-3.28	-0.12
H (Shannon Diversity Index) =3.03						

Table 3.23 Species Richness (Index) in 300 m Radius

Details	H	H max	Evenness	Species Richness
Tree	1.91	1.95	0.98	1.97
Shrubs	2.07	2.08	0.99	1.72
Herbs	3.03	3.04	1.00	3.95

Table 3.24 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
Tree													
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed
2	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
3	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
5	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	3	2	10	0.3	20.0	1.5	1.6	1.3	2.8	Not Listed
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
7	Punnai	<i>Calophyllu inophyllum</i>	Calophyllaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed
8	Athi	<i>Ficus recemosa</i>	Moraceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
9	Vazhaimaram	<i>Musa</i>	Musaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
10	Kadukkai	<i>Terminalia chebula</i>	Combretaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed
11	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
12	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
13	Perumungil	<i>Bambusa bambos</i>	Poaceae	3	2	10	0.3	20.0	1.5	1.6	1.3	2.8	Not Listed
14	Karungali	<i>Acacia sundra</i>	Legumes	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
15	Sapota	<i>Manilkara zapota</i>	Sapotaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed

16	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	7	6	10	0.7	60.0	1.2	3.6	3.8	7.5	Not Listed
17	Navalmaram	<i>Sygygium cumini</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
18	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
19	Alamaram	<i>Ficus benghalensis</i>	Moraceae	3	2	10	0.3	20.0	1.5	1.6	1.3	2.8	Not Listed
20	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
21	Manga	<i>Mangifera indica</i>	Anacardiaceae	7	6	10	0.7	60.0	1.2	3.6	3.8	7.5	Not Listed
22	Thekku	<i>Tectona grandis</i>	Verbenaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
23	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
24	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
25	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed
26	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
27	Vadanarayani	<i>Delonix elata</i>	Fabaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
28	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	7	6	10	0.7	60.0	1.2	3.6	3.8	7.5	Not Listed
29	Manja kadambai	<i>Adina cordifolia</i>	Rubiaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
30	Pappali maram	<i>Carica papaya L</i>	Caricaceae	7	6	10	0.7	60.0	1.2	3.6	3.8	7.5	Not Listed
31	Nochi	<i>Vitex negundo</i>	Verbenaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
32	Vilvam	<i>Aegle marmelos</i>	Rutaceae	4	3	10	0.4	30.0	1.3	2.1	1.9	4.0	Not Listed
33	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	5	4	10	0.5	40.0	1.3	2.6	2.6	5.2	Not Listed
34	Koyya	<i>Psidium guajava</i>	Myrtaceae	9	8	10	0.9	80.0	1.1	4.7	5.1	9.8	Not Listed
35	Seethapazham	<i>Annona reticulata</i>	Annonaceae	8	7	10	0.8	70.0	1.1	4.1	4.5	8.6	Not Listed
36	Velipparuthi	<i>Murraya koenigii</i>	Asclepiadaceae	6	5	10	0.6	50.0	1.2	3.1	3.2	6.3	Not Listed
37	Moonghil	<i>Bambusa bambo</i>	Poaceae	7	6	10	0.7	60.0	1.2	3.6	3.8	7.5	Not Listed

Shrubs													
1	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	20	0.5	40.0	1.1	9.0	9.2	18.2	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	8	7	20	0.4	35.0	1.1	8.0	8.0	16.0	Not Listed
3	Arali	<i>Nerium indicum</i>	Apocynaceae	7	6	20	0.4	30.0	1.2	7.0	6.9	13.9	Not Listed
4	Idlipoo	<i>xoracoc cinea</i>	Rubiaceae	9	8	20	0.5	40.0	1.1	9.0	9.2	18.2	Not Listed
5	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	6	5	20	0.3	25.0	1.2	6.0	5.7	11.7	Not Listed
6	Icham	<i>Phoenix pusilla</i>	Arecaceae	7	6	20	0.4	30.0	1.2	7.0	6.9	13.9	Not Listed
7	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	6	5	20	0.3	25.0	1.2	6.0	5.7	11.7	Not Listed
8	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	7	6	20	0.4	30.0	1.2	7.0	6.9	13.9	Not Listed
9	Thuthi	<i>Abutilon indicum</i>	Meliaceae	8	7	20	0.4	35.0	1.1	8.0	8.0	16.0	Not Listed
10	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	9	8	20	0.5	40.0	1.1	9.0	9.2	18.2	Not Listed
11	Kundumani	<i>Abrus precatorius</i>	Fabaceae	7	6	20	0.4	30.0	1.2	7.0	6.9	13.9	Not Listed
12	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	9	8	20	0.5	40.0	1.1	9.0	9.2	18.2	Not Listed
13	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	8	7	20	0.4	35.0	1.1	8.0	8.0	16.0	Not Listed
Herbs, Climber, Creeper, Grass & Cactus													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
2	Vetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
3	Kaattu piral	<i>Hibiscus hispidissimus</i>	Malvaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
4	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	9	8	25	0.4	32.0	1.1	3.1	3.2	6.3	Not Listed
5	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed

6	Korai	<i>Cyperus rotundus</i>	Cyperaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
7	Kumattikkirai	<i>Allmania nodiflora</i>	Amaranthaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
8	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
9	Keelaneeli	<i>Phyllanthus niruri</i>	Phyllanthaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
10	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
11	Thumbai	<i>Leucas aspera</i>	Lamiaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
12	Partiniyam	<i>Parthenium</i>	Asteraceae	5	4	25	0.2	16.0	1.3	1.7	1.6	3.3	Not Listed
13	Thoiya keerai	<i>Digeria muricata</i>	Amaranthaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
14	Pulliyari	<i>Oxalis corniculata</i>	Oxalidaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
15	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
16	Kaduku	<i>Brassica juncea</i>	Brassicaceae	9	8	25	0.4	32.0	1.1	3.1	3.2	6.3	Not Listed
17	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	11	10	25	0.4	40.0	1.1	3.8	4.0	7.8	Not Listed
18	Arugampul	<i>Cynodon dactylon</i>	Poaceae	10	9	25	0.4	36.0	1.1	3.5	3.6	7.1	Not Listed
19	Manjal	<i>Curcuma longa</i>	Zingiberaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
20	Manathakkali	<i>Solanumnigrum</i>	Solanaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
21	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
22	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
23	Koraikkilangu	<i>Cyperus articulatus</i>	Cyperaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
24	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
25	Korai	<i>Cyperus rotundus</i>	Cyperaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
26	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed

27	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
28	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
29	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	25	0.4	32.0	1.1	3.1	3.2	6.3	Not Listed
30	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
31	Sangupoo	<i>Clitoriaternatia</i>	Fabaceae	9	8	25	0.4	32.0	1.1	3.1	3.2	6.3	Not Listed
32	Malli	<i>Jasminum augustifolium</i>	Oleaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
33	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
34	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
35	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	6	5	25	0.2	20.0	1.2	2.1	2.0	4.1	Not Listed
36	mookuthi poondu	<i>Wedelia trilobata</i>	Asteraceae	7	6	25	0.3	24.0	1.2	2.4	2.4	4.8	Not Listed
37	Pullu	<i>Eragrostis ferruginea</i>	Poaceae	10	9	25	0.4	36.0	1.1	3.5	3.6	7.1	Not Listed
38	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	8	7	25	0.3	28.0	1.1	2.8	2.8	5.6	Not Listed
39	Nagathali	<i>Opuntia dillenii</i>	Nagathali	9	8	25	0.4	32.0	1.1	3.1	3.2	6.3	Not Listed

Table 3.25 Calculation of Species Diversity in Buffer Zone

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Tree						
1	Vembu	<i>Azadirachta indica</i>	6	0.03	-3.47	-0.11
2	Pongam oiltree	<i>Pongamia pinnata</i>	5	0.03	-3.65	-0.09
3	Karuvelam	<i>Acacia nilotica</i>	4	0.02	-3.88	-0.08
4	Thennai maram	<i>Cocos nucifera</i>	5	0.03	-3.65	-0.09
5	Arasanmaram	<i>Ficus religiosa</i>	3	0.02	-4.16	-0.06
6	Puliyamaram	<i>Tamarindus indica</i>	4	0.02	-3.88	-0.08
7	Punnai	<i>Calophyllu inophyllum</i>	6	0.03	-3.47	-0.11
8	Athi	<i>Ficus recemosa</i>	4	0.02	-3.88	-0.08
9	Vazhaimaram	<i>Musa</i>	5	0.03	-3.65	-0.09
10	Kadukkai	<i>Terminalia chebula</i>	6	0.03	-3.47	-0.11
11	Nettilinkam	<i>Polylathia longifolia</i>	5	0.03	-3.65	-0.09
12	Amanakku	<i>Ricinus communis</i>	4	0.02	-3.88	-0.08
13	Perumungil	<i>Bambusa bambos</i>	3	0.02	-4.16	-0.06
14	Karungali	<i>Acacia sundra</i>	5	0.03	-3.65	-0.09
15	Sapota	<i>Manilkara zapota</i>	6	0.03	-3.47	-0.11
16	Eucalyptus	<i>Eucalyptus globules</i>	7	0.04	-3.32	-0.12
17	Navalmaram	<i>Sygygium cumini</i>	5	0.03	-3.65	-0.09
18	Ezhumuchaipalam	<i>Citrus lemon</i>	4	0.02	-3.88	-0.08
19	Alamaram	<i>Ficus benghalensis</i>	3	0.02	-4.16	-0.06
20	Panai maram	<i>Borassus flabellifer</i>	4	0.02	-3.88	-0.08
21	Manga	<i>Mangifera indica</i>	7	0.04	-3.32	-0.12
22	Thekku	<i>Tectona grandis</i>	5	0.03	-3.65	-0.09
23	Nelli	<i>Emblica officinalis</i>	4	0.02	-3.88	-0.08
24	Nettilinkam	<i>Polylathia longifolia</i>	5	0.03	-3.65	-0.09
25	Karuvelam maram	<i>Vachellia nilotica</i>	6	0.03	-3.47	-0.11
26	Palamaram	<i>Artocarpus heterophyllus</i>	4	0.02	-3.88	-0.08
27	Vadanarayani	<i>Delonix elata</i>	5	0.03	-3.65	-0.09
28	Marudaani	<i>Lawsonia inermis</i>	7	0.04	-3.32	-0.12
29	Manja kadambai	<i>Adina cordifolia</i>	5	0.03	-3.65	-0.09
30	Pappali maram	<i>Carica papaya L</i>	7	0.04	-3.32	-0.12
31	Nochi	<i>Vitex negundo</i>	5	0.03	-3.65	-0.09

32	Vilvam	<i>Aegle marmelos</i>	4	0.02	-3.88	-0.08
33	Nuna maram	<i>Morinda citrifolia</i>	5	0.03	-3.65	-0.09
34	Koyya	<i>Psidium guajava</i>	9	0.05	-3.07	-0.14
35	Seethapazham	<i>Annona reticulata</i>	8	0.04	-3.18	-0.13
36	Velipparuthi	<i>Murraya koenigii</i>	6	0.03	-3.47	-0.11
37	Moonghil	<i>Bambusa bambo</i>	7	0.04	-3.32	-0.12
H (Shannon Diversity Index) =3.58						
Shrubs						
1	Avarai	<i>Senna auriculata</i>	9	0.09	-2.41	-0.22
2	Sundaika	<i>Solanum torvum</i>	8	0.08	-2.53	-0.20
3	Arali	<i>Nerium indicum</i>	7	0.07	-2.66	-0.19
4	Idlipoo	<i>xoracoc cinea</i>	9	0.09	-2.41	-0.22
5	Neermulli	<i>Hydrophila auriculata</i>	6	0.06	-2.81	-0.17
6	Icham	<i>Phoenix pusilla</i>	7	0.07	-2.66	-0.19
7	Chaturakalli	<i>Euphorbia antiquorum</i>	6	0.06	-2.81	-0.17
8	Kattamanakku	<i>Jatropha curcas</i>	7	0.07	-2.66	-0.19
9	Thuthi	<i>Abutilon indicum</i>	8	0.08	-2.53	-0.20
10	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	9	0.09	-2.41	-0.22
11	Kundumani	<i>Abrus precatorius</i>	7	0.07	-2.66	-0.19
12	Erukku	<i>Calotropis gigantea</i>	9	0.09	-2.41	-0.22
13	Thottalchinungi	<i>Mimosa pudica</i>	8	0.08	-2.53	-0.20
H (Shannon Diversity Index) =2.56						
Herbs, Climber, Creeper, Grass & Cactus						
1	Nayuruv	<i>Achyranthes aspera</i>	8	0.03	-3.59	-0.10
2	Veetukaayapoond	<i>Tridax procumbens</i>	6	0.02	-3.87	-0.08
3	Kaattu piral	<i>Hibiscus hispidissimus</i>	7	0.02	-3.72	-0.09
4	Kuppaimeni	<i>Acalypha indica</i>	9	0.03	-3.47	-0.11
5	Karisilanganni	<i>Eclipta prostata</i>	7	0.02	-3.72	-0.09
6	Korai	<i>Cyperus rotundus</i>	6	0.02	-3.87	-0.08
7	Kumattikkirai	<i>Allmania nodiflora</i>	7	0.02	-3.72	-0.09
8	Kunnakora	<i>Cyperus compressus</i>	6	0.02	-3.87	-0.08
9	Keelaneeli	<i>Phyllanthus niruri</i>	8	0.03	-3.59	-0.10
10	Kanamvazha	<i>Commelina benghalensis</i>	7	0.02	-3.72	-0.09
11	Thumbai	<i>Leucas aspera</i>	6	0.02	-3.87	-0.08
12	Partiniyam	<i>Parthenium</i>	5	0.02	-4.06	-0.07

13	Thoiya keerai	<i>Digeria muricata</i>	7	0.02	-3.72	-0.09
14	Pulliyari	<i>Oxalis corniculata</i>	8	0.03	-3.59	-0.10
15	Mukurattai	<i>Boerhavia diffusa</i>	6	0.02	-3.87	-0.08
16	Kaduku	<i>Brassica juncea</i>	9	0.03	-3.47	-0.11
17	Thulasi	<i>Ocimum tenuiflorum</i>	11	0.04	-3.27	-0.12
18	Arugampul	<i>Cynodon dactylon</i>	10	0.03	-3.36	-0.12
19	Manjal	<i>Curcuma longa</i>	7	0.02	-3.72	-0.09
20	Manathakkali	<i>Solanumnigrum</i>	8	0.03	-3.59	-0.10
21	Kanamvazha	<i>Commelina benghalensis</i>	6	0.02	-3.87	-0.08
22	Nai kadugu	<i>Celome viscosa</i>	7	0.02	-3.72	-0.09
23	Koraikkilangu	<i>Cyperus articulates</i>	8	0.03	-3.59	-0.10
24	Karisilanganni	<i>Eclipta prostata</i>	7	0.02	-3.72	-0.09
25	Korai	<i>Cyperus rotundus</i>	6	0.02	-3.87	-0.08
26	Kunnakora	<i>Cyperus compressus</i>	7	0.02	-3.72	-0.09
27	Mukurattai	<i>Boerhavia diffusa</i>	8	0.03	-3.59	-0.10
28	Kovai	<i>Coccinia grandis</i>	6	0.02	-3.87	-0.08
29	Perandai	<i>Cissus quadrangularis</i>	9	0.03	-3.47	-0.11
30	Mudakkotan	<i>Cardiospermum helicacabum</i>	7	0.02	-3.72	-0.09
31	Sangupoo	<i>Clitoriaternatia</i>	9	0.03	-3.47	-0.11
32	Malli	<i>Jasminum augustifolium</i>	6	0.02	-3.87	-0.08
33	Vallikeerai	<i>Ipomoea aquatica</i>	7	0.02	-3.72	-0.09
34	Siru puladi	<i>Desmodium triflorum</i>	8	0.03	-3.59	-0.10
35	Sithrapaalavi	<i>Euphorbia prostrata</i>	6	0.02	-3.87	-0.08
36	mookuthi poondu	<i>Wedelia trilobata</i>	7	0.02	-3.72	-0.09
37	Pullu	<i>Eragrostis ferruginea</i>	10	0.03	-3.36	-0.12
38	Chevvarakupul	<i>Chloris barbata</i>	8	0.03	-3.59	-0.10
39	Nagathali	<i>Opuntia dillenii</i>	9	0.03	-3.47	-0.11
H (Shannon Diversity Index) =3.65						

Table 3.26 Species Richness (Index) in Buffer Zone

Details	H	H max	Evenness	Species Richness
Tree	3.58	3.61	0.99	6.84
Shrubs	2.56	2.56	1.00	2.61
Herbs	3.65	3.66	1.00	6.71

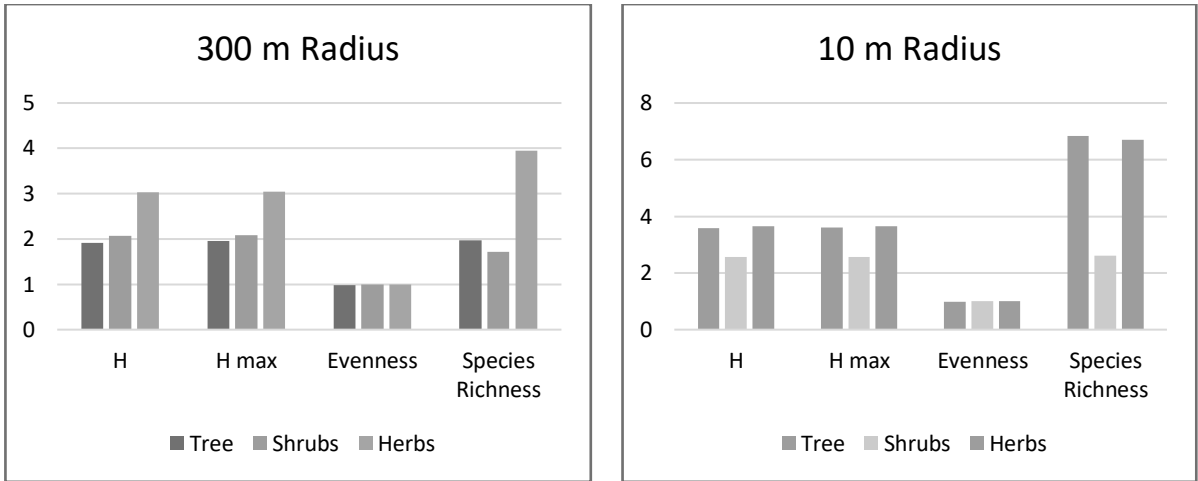


Figure 3.23 Species Richness (Index) in Buffer Zone of 300 m Radius and 10 km Radius



Mimosa pudica



Ocimum tenuiflorum



Coccinia



Agave weberi



Millettia pinnata



Lantana camera



Opuntia dillenii



Dodonaea viscosa



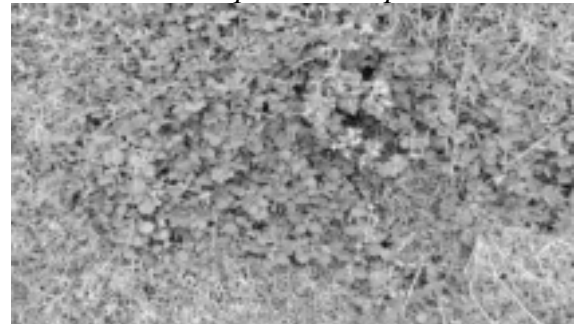
Solanum violaceum ortega



Acanthospermum hispidum



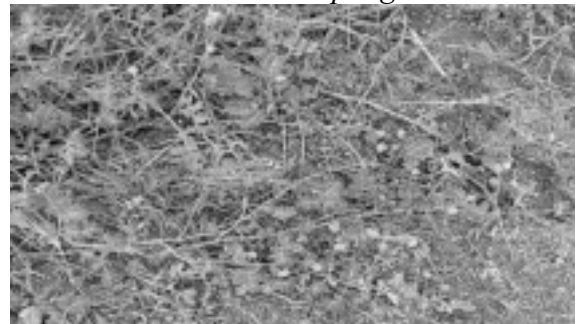
Abutilon indicum



Alternanthera pungens



Chloris verticillata



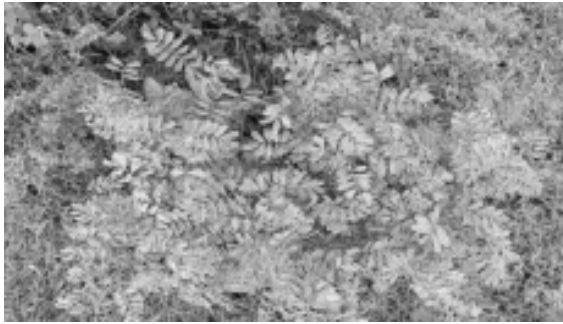
Tribulus cistoides L



Hyptis suaveolens (L.)



Senna auriculata



Tephrosia noctiflora



Phellodendron amurense



Argemone mexicana L



Ipomoea staphylina



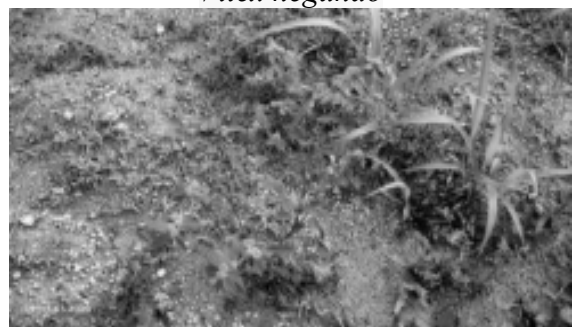
Melinis repens



Vitex negundo



Paspalum notatum



Euphorbia hirta



Pterolobium hexapetalum



Euphorbia canariensis L



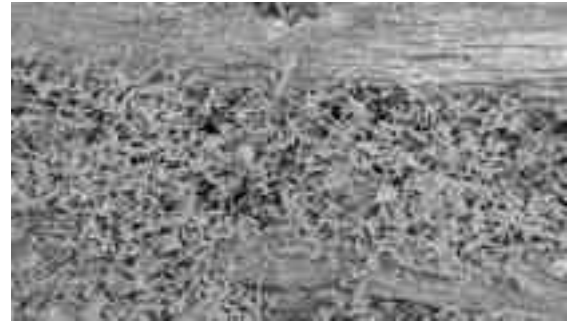
Wrightia tinctoria



Canthium coromandelicum



Senna siamea



Commelina forskaolii Vahl



Zizyphus oenoplia



Pavonia gallaensis



Calotropis gigantea



Aerva lanata



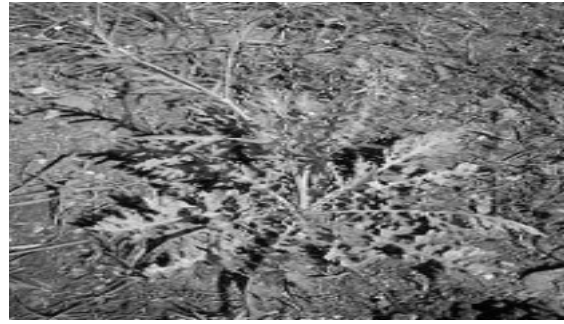
Prosopis juliflora



Croton bonplandianus



Borassus flabellifer



Parthenium hysterophorus



Mundulea sericea



Jatropha gossypifolia L



Ruellia nudiflora



Andrographis echinoides

Figure 3.24 Flora in Core and Buffer Area

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 3.27

Table 3.27 Aquatic Vegetation

Sl. No	Scientific name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1	<i>Eichornia crassipes</i>	Water hyacinth	Agayatamarai	NA
2	<i>Nymphaea nouchali</i>	Blue waterlily	Nellambal	LC
3	<i>Carex cruciata</i>	Cross Grass	Koraipullu	NA
4	<i>Cynodon dactylon</i>	Scutch grass	Arugampullu	LC

*LC- Least Concern, NA-Not yet assessed

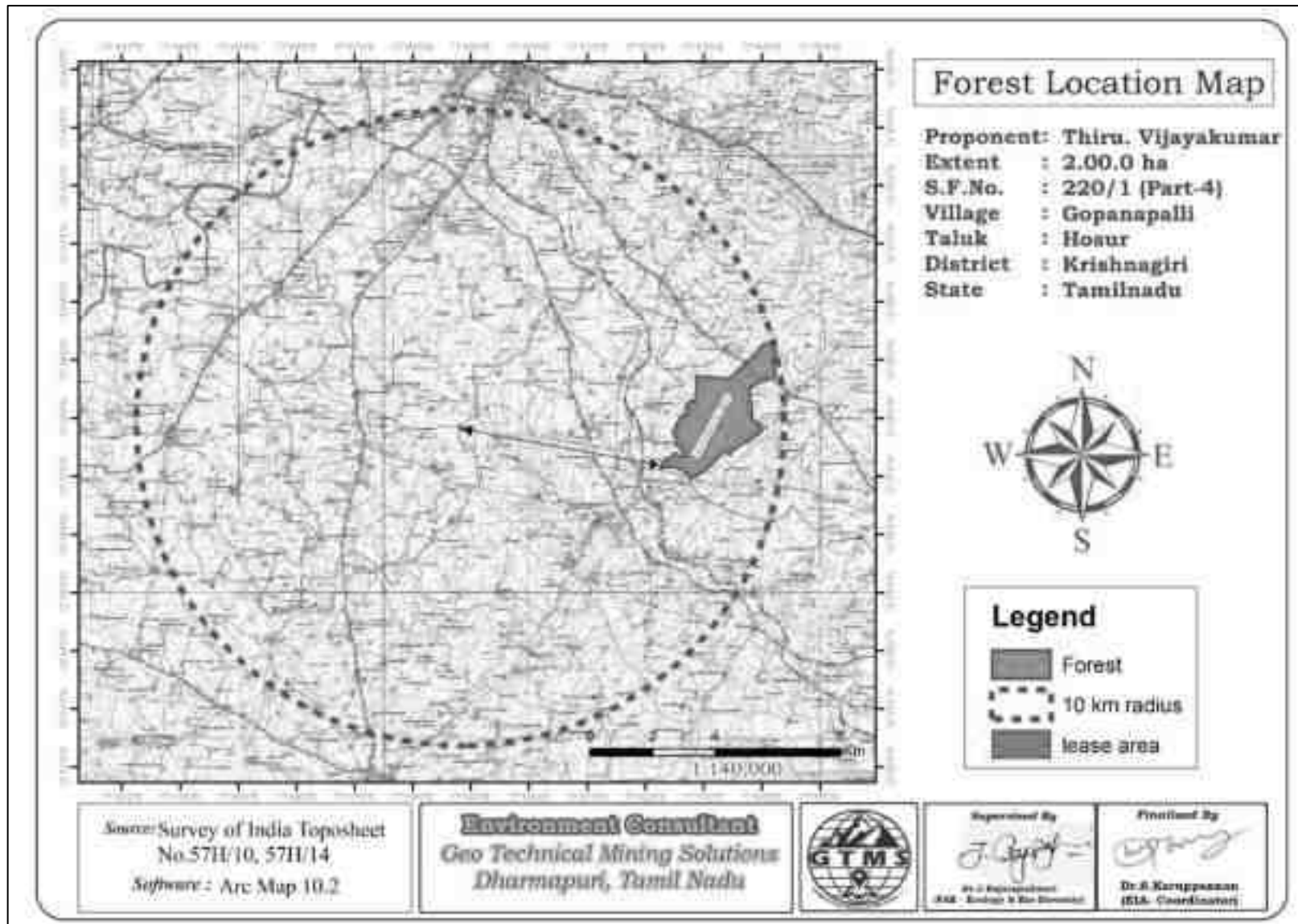


Figure 3.25 Forest and Sampling Location Map of 10 km Radius

Aquatic Vegetation

Forest Vegetation

There Are No Biosphere Reserves or Wildlife Sanctuary or National Parks or Important Bird Areas (Ibas), Sanamavu R.F. Located On 6.30 Km SE. The *Azadirachta Indica*, *Vachellia Leucophloea*, *Albizia Amara*, *Zizyphus Oenoplia*, *Pterolobium Hexapetalum*, *Lannea Coromandelica*, *Melia Azedarach*, *Mundulea Sericea*, *Petalium Murex*, *Pergularia Daemia*, *Barleria Prionitis*, *Lantana Camara*, *Agave Weberi*. These Types of Plants Are Abundant in The Reserve Forest. From The Study, It Is Confirmed That the Area Under Study (Mine Lease Area and the 10 Km Buffer Zone) Is Not Ecologically Sensitive. Forest Location Map Showing in Figure 3.25.

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 Mine lease area.

Survey Methodology

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

Survey and Monitoring of Mammals

Intensive survey has been done by line transect methods (Walking and in vehicle) for all major habitats for surveying of mammals by direct and indirect evidence. Indirect methods such as faecal matter (i.e., scat) and pug mark by establishing 10 × 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 minutes. This observation is repeated in another point at least 30 m from the first point. We have enumerated 20-point counts in each quartile, which constitute a total of 80-point counts (20 x 4) within 10 km radius area. Opportunistic bird sightings: while traveling in study area, many bird species will be detected in survey time. Such species are 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 26 varieties of species were observed in the Core zone (Table.3.28). Among them are 8 Insects (31%), 5 Reptiles (19%), 4 Mammals (15%) and 9 Avian (35%). A total of 26 species belonging to 20 families were recorded from the core area. The study shows that number of species decreases towards the mining area. This might be due the lack of vegetation. None of these species in the core zone are threatened or endemic. The survey was conducted to identify species listed in IUCN Red List. According to the field data, any species are not of Schedule I and nine species are of schedule IV. 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 3.28.

Table 3.28 Fauna in Core Zone

S. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife protection act 1972	IUCN Red List data
Insects					
1	Plain Tiger	Nymphalidae	<i>Dananuschrysippus</i>	NL	NE
2	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
3	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NE	LC
4	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
5	Termite	Blattodea	<i>Hamitermes silvestri</i>	NE	LC
6	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
7	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus vicinus</i>	NL	NL
Reptiles					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NE	NE
2	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NE	NE
3	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
4	Common krait	Elapid snakes	<i>Bungarus caeruleus</i>	Schedule IV	LC
5	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
Mammals					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
2	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule II	LC
3	Rat	Murids	<i>Rattusrattus</i>	Schedule IV	LC
4	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
Avian					
1	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NE	LC
2	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	NE	LC

3	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	Schedule IV	LC
4	Common cuckoo	Cuculidae	<i>Cuculus canorus</i>	NE	LC
5	House crow	Corvidae	<i>Corvus splendens</i>	NE	LC
6	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	Schedule IV	LC
7	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	Schedule IV	LC
8	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
9	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NE	LC

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

Fauna in Buffer Zone

A total of 50 species belonging to 36 families have been recorded from the buffer zone area (Table.3.28). Based on habitat classification the majority of species were Birds 15 (30%), followed by Insects 14 (28%), Reptiles 13 (26%), Mammals 5 (10%) and Amphibians 3 (6%). There are 7 Schedule II species and 27 species are under schedule IV according to Indian wild life Act 1972. A total fifteen species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable and endemic species were observed.

Table 3.29 Fauna in Buffer Zone

S. No	Common name/ English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
Insects					
1	Honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
2	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
3	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
4	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
7	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC

8	Ant	Formicidae	<i>Camponotus vicinus</i>	NL	NL
9	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
10	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
11	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
12	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
13	Lesser grass blue	Lycaenidae	<i>Zizina otis indica</i>	Schedule IV	LC
14	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
Reptiles					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
2	Chameleon	Chamaeleonidae	<i>Chameleon zeylanicus</i>	Schedule II	LC
3	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
4	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
5	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
6	Olive keel back water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
7	Whip Snake	Elapidae	<i>Dryphis nasutus</i>	Sch II (Part II)	LC
8	Common krait	Elapid snakes	<i>Bungarus caeruleus</i>	Schedule IV	LC
9	Indian wall lizard	Gekkonidae	<i>Hemidactylus flaviviridis</i>	Schedule IV	NL
10	Saw scaled viper	Elapidae	<i>Echis carinatus</i>	Sch II (Part II)	LC
11	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
12	Russell's viper	Viperidae	<i>Vipera russeli</i>	Sch II (Part II)	LC
13	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
Mammals					
1	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
2	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
3	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC

4	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
5	Brown rat	Muridae	<i>Rattus norvegicus</i>	Schedule IV	LC
Aves					
1	Koel	Cuculidae	<i>Eudynamis</i>	Schedule IV	LC
2	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
3	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
4	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
5	Asian green bee-eater	Meropidae	<i>Merops orientalis</i>	NL	LC
6	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	Schedule IV	LC
7	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	Schedule IV	LC
8	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
9	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
10	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
11	Two-tailed Sparrow	Dicruridae	<i>Passer domesticus</i>	Schedule IV	LC
12	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
13	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
14	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
15	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
Amphibians					
1	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
2	Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
3	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 according to IUCN Red List. 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 & Analysis

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

Gopanapalli is a village situated in Hosur taluk of Krishnagiri district in Tamil Nadu. As per the population census 2011, there are a total of 342 families residing in the village Gopanapalli. The total population of Gopanapalli is 1,388 out of which 716 are males and 672 are females thus the average sex ratio of Gopanapalli is 939. The population of children aged 0-6 years in Gopanapalli village is 148 which is 11% of the total population. There are 79 male children and 69 female children between the age 0-6 years. Thus, as per the census 2011 the child sex ratio of Gopanapalli is 873 which is less than average sex ratio (939) of Gopanapalli village. As per the Census 2011, the literacy rate of Gopanapalli is 67.4%. Thus, Gopanapalli village has a higher literacy rate compared to 63.2% of Krishnagiri district. The male literacy rate is 75.04% and the female literacy rate is 59.37% in Gopanapalli village.

3.6.6 Presentation of Details

The collected data were presented in a suitable, concise form for further analysis. The collected data are presented in graphic form, as shown in Figures 3.27 & 3.28. Infrastructures available in the study area are provided in Tables 3.31-3.32.

Table 3.31 Gopanapalli Village Population Facts

Number of Households	342
Population	1388
Male Population	716
Female Population	672
Children Population	148
Sex-ratio	873
Literacy	67.42%
Male Literacy	75.04%
Female Literacy	59.37%
Scheduled Tribes (ST) %	2
Scheduled Caste (SC) %	276
Total Workers	806
Main Worker	748
Marginal Worker	58

Source: <https://www.census2011.co.in/data/village/643819-gopanapalli-tamil-nadu.html>

Table 3.32 Population and Literacy Data of Study Area

Village Name	Total Population Person	Total Population Male	Total Population Female	Population in the age group 0-6 Male	Population in the age group 0-6 Female	Scheduled Castes population Person	Scheduled Tribes population Person	Literates Population Person	Illiterate Persons
Poonapalli	3061	1542	1519	170	149	544	9	2000	1061
Achettipalli	3066	1562	1504	172	196	910	0	1861	1205
Nagondapalli	2929	1513	1416	157	158	1096	0	1918	1011
Muthuganapalli	3460	1738	1722	138	142	850	0	2197	1263
Gopanapalli	1388	716	672	79	69	276	2	836	552
Mugalur	2593	1352	1241	151	122	1023	0	1471	1122
Panchakshipuram	1882	973	909	113	70	477	0	1166	716
Jagirkarupalli	1905	1004	901	119	112	132	0	1046	859
Nagappan Agraharam	0	0	0	0	0	0	0	0	0
Hosappuram	3561	1830	1731	211	181	773	0	2048	1513
Kundumaranapalli	3867	1972	1895	199	237	1157	0	2243	1624
Bairamangalam	4932	2569	2363	258	262	1213	11	3376	1556
Anekollu	2858	1471	1387	179	157	136	1	1482	1376
Belagundapalli	4092	2073	2019	247	223	686	0	2824	1268
Thandarai	2664	1349	1315	163	142	363	4	1389	1275

Table 3.33 Educational Facilities & Water & Drainage Facilities Data of Study Area

Village Name	Tractors	Carts Driven by Animals	Black Topped (pucca) Road	ATM	Commercial Bank	Cooperative Bank	Agricultural Credit Societies	Public Distribution System	Mandis/Regular Market	Weekly Haat	Power Supply for Agriculture Use	Power Supply for Commercial Use	Agricultural Commodities (First)	Manufacturers Commodities (First)	Handicrafts Commodities (First)	Forest Area (in Hectares)	Net Area Sown (in Hectares)
Poonapalli	2	2	1	2	2	2	2	1	2	2	1	1	FLOWERS	ELECTRONIC MATERIALS		0	311.82
Mugalur	2	2	1	2	2	2	2	1	2	2	1	2	RAGI			0	587.49
Panchakshipuram	2	2	1	2	2	2	2	1	2	2	1	2	RAGI			0	367.85
Belagundapalli	2	2	1	2	2	1	2	1	2	2	1	1				0	341.15
Thandarai	2	2	1	2	2	2	2	1	2	2	1	1	RAGI			0	310.19
Jagirkarupalli	2	2	1	2	2	2	2	1	2	2	1	2	PADDY	BRICKS AND GRAVEL		0	371.36
Nagappan Agraharam																0	44.38
Hosappuram	2	2	1	2	2	2	2	1	2	2	1	1	RAGI			0	482.28
Kundumaranapalli	2	2	1	2	2	1	2	1	2	2	1	1	RAGI			0	744.85
Bairamangalam	2	2	1	2	2	1	2	1	2	2	1	1	RAGI			0	519.84
Anekollu	2	2	1	2	2	2	2	1	2	2	1	1	RAGI			0	265.38

Table 3.34 Other Facilities in the Study Area

Village Name	Govt Primary School	Govt Vocational Training School/ITI	Primary Health Sub Centre (Numbers)	Tap Water Untreated	Is the Area Covered under Total Sanitation Campaign (TSC)?	Telephone (landlines)	Public Bus Service	Gravel (kuchha) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Nutritional Centres- Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Poonapalli	1	2	1	1	1	1	1	1	2	2	1	1	1	1
Mugalur	1	2	0	1	2	1	1	1	2	2	1	1	2	1
Panchakshipuram	1	2	0	1	1	1	2	1	2	2	1	1	2	1
Belagundapalli	1	2	1	1	2	1	1	1	2	2	1	1	2	1
Thandarai	1	2	0	2	2	2	1	1	2	2	1	1	1	1
Jagirkarupalli	1	2	1	1	1	2	2	1	2	2	1	1	1	1
Nagappan Agraharam	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hosappuram	1	2	1	1	2	2	1	1	2	2	1	1	1	1
Kundumaranapalli	1	2	1	1	1	2	1	1	2	2	1	1	1	1
Bairamangalam	1	2	1	1	1	1	2	1	2	2	1	1	1	1
Anekollu	1	2	0	1	1	1	1	1	2	2	1	1	1	1

3.6.7 Recommendation and Suggestion

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

3.6.8 Summary & Conclusion

The socio-economic study in the study area gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from a lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn, the social standards will improve.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Rough Stone and gravel is proposed to be transported mainly through Village Road and Hosur – Denkanikottai (SH-17A) and Rayakottai- Hosur (SH-85) as shown in Table 3.43 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 3.35 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	1.9 km-SSE	Village Road
TS2	Hosur – Denkanikottai (SH-17A)	3.01 km-SW	Hosur – Denkanikottai (SH-17A)
TS3	Rayakottai- Hosur (SH-85)	5.6 km-SE	Rayakottai- Hosur (SH-85)

Source: On-site monitoring by GTMS FAE & TM

Table 3.36 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	60	180	48	48	78	39	267
TS2	95	285	52	52	94	47	384
TS3	105	315	55	55	105	53	423

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 3.37 Rough Stone Transportation Requirement

Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	41	123

Source: Approved Mining Plan

Table 3.38 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	267	123	390	1200
Hosur – Denkanikottai (SH-17A)	384	123	507	1200
Rayakottai- Hosur (SH-85)	423	123	546	1500

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

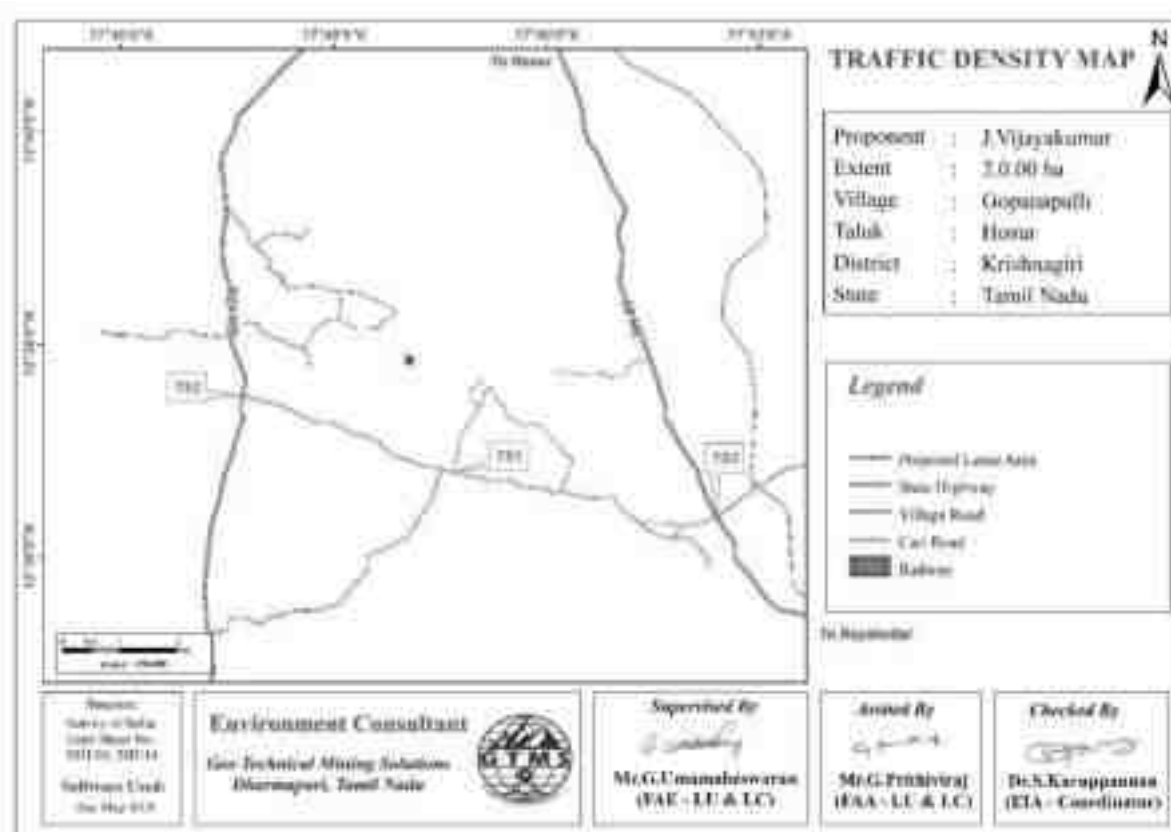


Figure 3.26 Traffic Density Map

- 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 and National Park within 10 km radius. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environmentally sensitive areas around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.39.

Table 3.39 Details of Environmentally Sensitive Ecological Features in the Study Area

S. No.	Sensitive Ecological Features	Name	Areal Distance in km
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
		None	Nil within 10 km radius
2	Reserve Forest	Sanamavu Reserve Forest	6.30 km NE
3	Lakes/Reservoirs/	Ponnaiyar River	9.71 km NE

	Dams/Streams/Rivers	Chinar River	5.65 km SSW
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Critically Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Centrally Protected Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet









Figure 3.27 Field Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post-operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development. In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction. 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 257243 m³ of rough stone and 29960 m³ 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 does not result in any impact on the soil of the project site, as topsoil is neither removed from the project site nor preserved in the safety margin area. However, 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 2.10 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, SO₂, and NO_x emission estimation have been given in Table 4.1.

Table 4.1 Empirical Formula for Emission Rate from Overall Mine

	Pollutant	Source Type	Empirical Equation	Parameters
Overall Mine	SPM	Area	$E = \{u \cdot 0.4a \cdot 0.2 \{9.7 + 0.01p + b / (4 + 0.3b)\}\}$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).
Overall Mine	SO ₂	Area	$E = a \cdot 0.14 \{u / (1.83 + 0.93u)\} \{ [p / (0.48 + 0.57p)] + [b / (14.37 + 1.15b)] \}$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).
Overall Mine	NO _x	Area	$E = a \cdot 0.25 \{u / (4.3 + 32.5u)\} [1.5p + \{b / (0.06 + 0.08b)\}]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. As the SPM emission calculation for overall mine is not considering pollution control measures, one-third of the SPM value is taken for derivation of PM₁₀ keeping in mind that proper control measures are followed. It is important to note that PM₁₀ emission rate is derived from the SPM estimation in the background that PM₁₀ constitutes 52% of SPM emission. The PM_{2.5}, PM₁₀, SO₂ and NO_x emission results have been given in Table 4.2.

Table 4.2 Estimated Emission Rate

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m ²	Calculated Value (g/s/m ²)
Overall Mine	PM _{2.5}	0.05056544	20000	2.52827E-06
Overall Mine	PM ₁₀	0.07054555	20000	3.52728E-06
Overall Mine	SO ₂	0.03070985	20000	1.53549E-06
Overall Mine	NO _x	0.038548654	20000	1.92743E-06

4.4.1.2 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_{2.5}, PM₁₀, SO₂ and NO_x close to the proposed project site due to low to moderate wind speeds.

4.4.1.3 Modelling of Incremental Concentration

The air borne particulate matter such as PM₁₀ and PM_{2.5} generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions of oxides of

sulphur (SO₂) and oxides of nitrogen (NO_x) due to excavation and loading equipment 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 is predicted by AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.6.

4.4.1.4 Model Results

The post project resultant concentrations of PM_{2.5}, PM₁₀, SO₂ & NO_x were given in Tables 4.3-4.6.

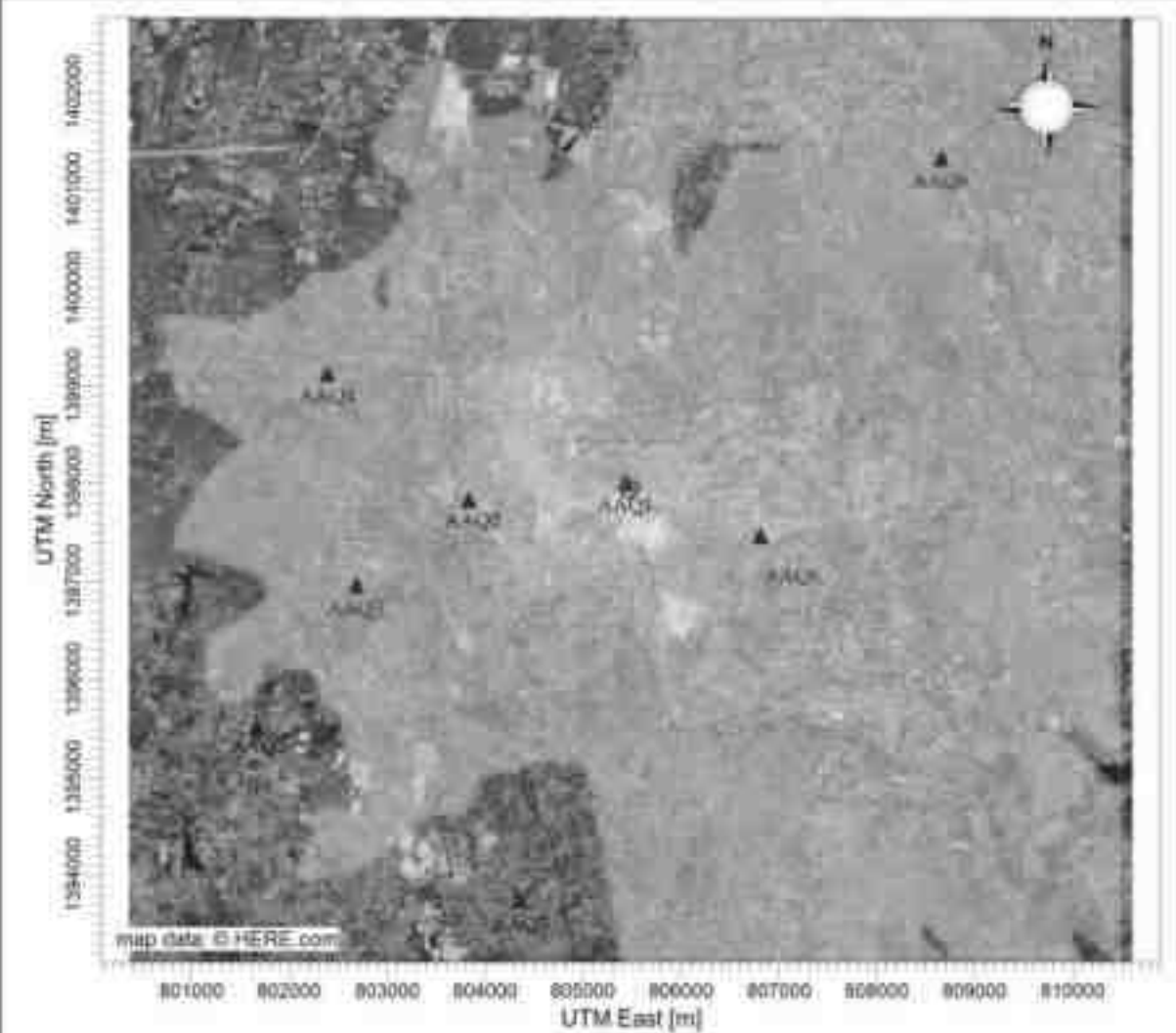
Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	Direction	PM _{2.5} Concentrations(µg/m ³)			Comparison against air quality standard (60 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	24.0	5.23	29.23	Below Standard	21.79	Not Significant
AAQ2	1.80	W	18.9	1	19.9		5.29	
AAQ3	3.06	SW	21.6	0.5	22.1		2.31	
AAQ4	3.38	NW	22.0	0.5	22.5		2.27	
AAQ5	4.60	SW	16.5	0	16.5		0.00	
AAQ6	1.17	E	15.6	1	16.6		6.41	
AAQ7	4.30	S	20.4	0.5	20.9		2.45	
AAQ8	4.40	NE	19.9	0.5	20.4		2.51	

Table 4.4 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area (km)	Direction	PM ₁₀ Concentrations (µg/m ³)			Comparison against air quality standard (100 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	44.3	7.92	52.22	Below Standard	17.88	Not Significant
AAQ2	1.80	W	33.4	1	34.4		2.99	
AAQ3	3.06	SW	37.3	0.5	37.8		1.34	
AAQ4	3.38	NW	37.7	0.5	38.2		1.33	
AAQ5	4.60	SW	33.2	0	33.2		0.00	
AAQ6	1.17	E	33.5	1	34.5		2.99	
AAQ7	4.30	S	36.0	0	36		0.00	
AAQ8	4.40	NE	36.4	0.5	36.9		1.37	

PROJECT TITLE
J.VIJAYAKUMAR ROUGHSTONE QUARRY PROJECT_PM2.5



Max: 5.23 (ug/m³) at (805435.55 1388018.77) ug/m³



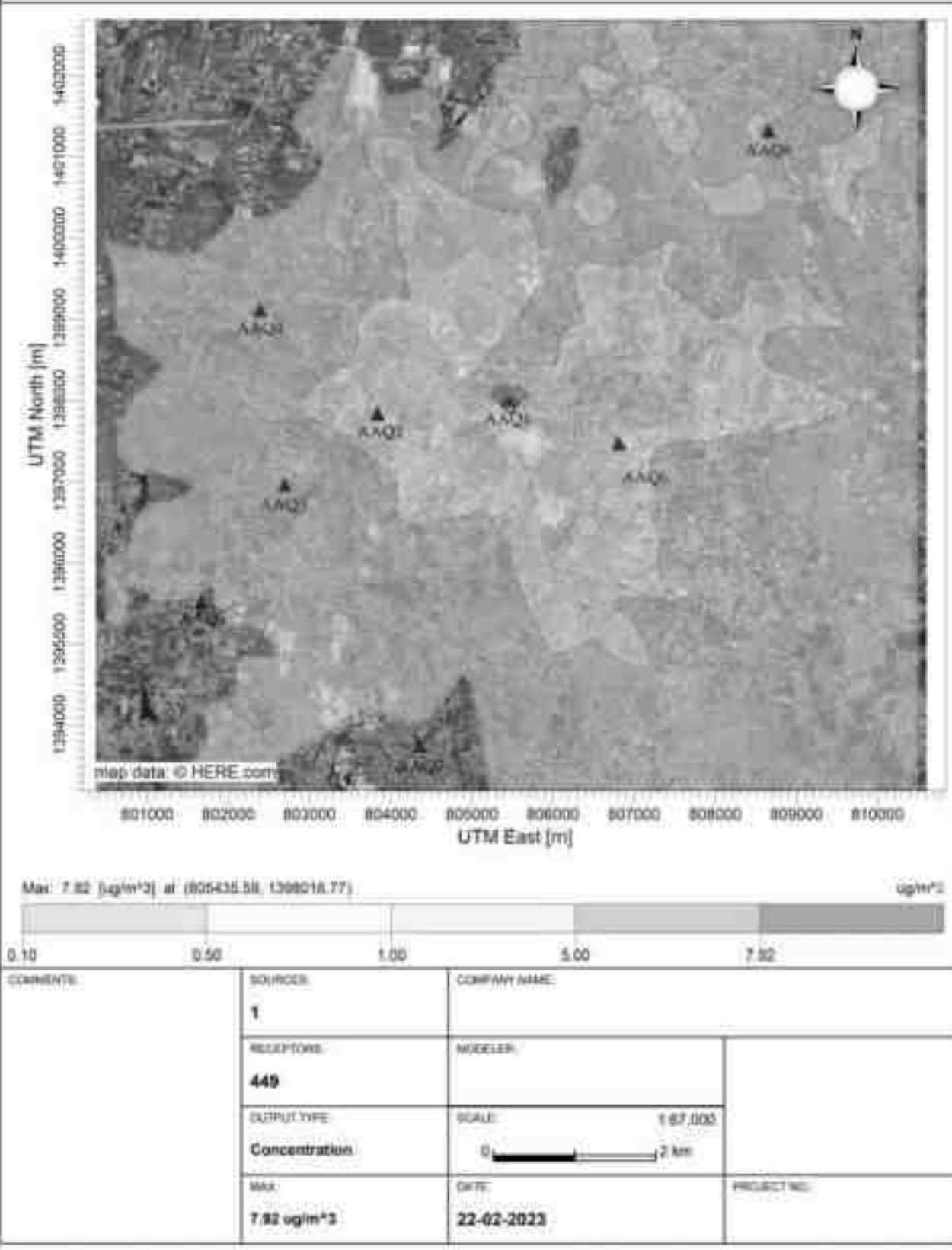
COMMENTS	SOURCE	COMPANY NAME	
	RECEPTOR	MODELLER	
	OUTPUT TYPE	SCALE	1:100,000
	MAX	DATE	PROJECT NO.
	449		
	Concentration	0 2 km	
	5.23 ug/m ³	22-02-2023	

AERMOD View - Layer Elements Software

C:\Users\PRADHANA\Documents\VIJAYAKUMAR_PROJECTS\pm2.5\

Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

PROJECT TITLE:
J.VIJAYAKUMAR ROUGHSTONE QUARRY PROJECT_PM10



AZ2800 View - Lark Environmental Software

C:\env\PP DRAGON\YD\Map\VIJAYAKUMAR_APSK00\PM10\PM10.m

Figure 4.2 Predicted Incremental Concentration of PM₁₀

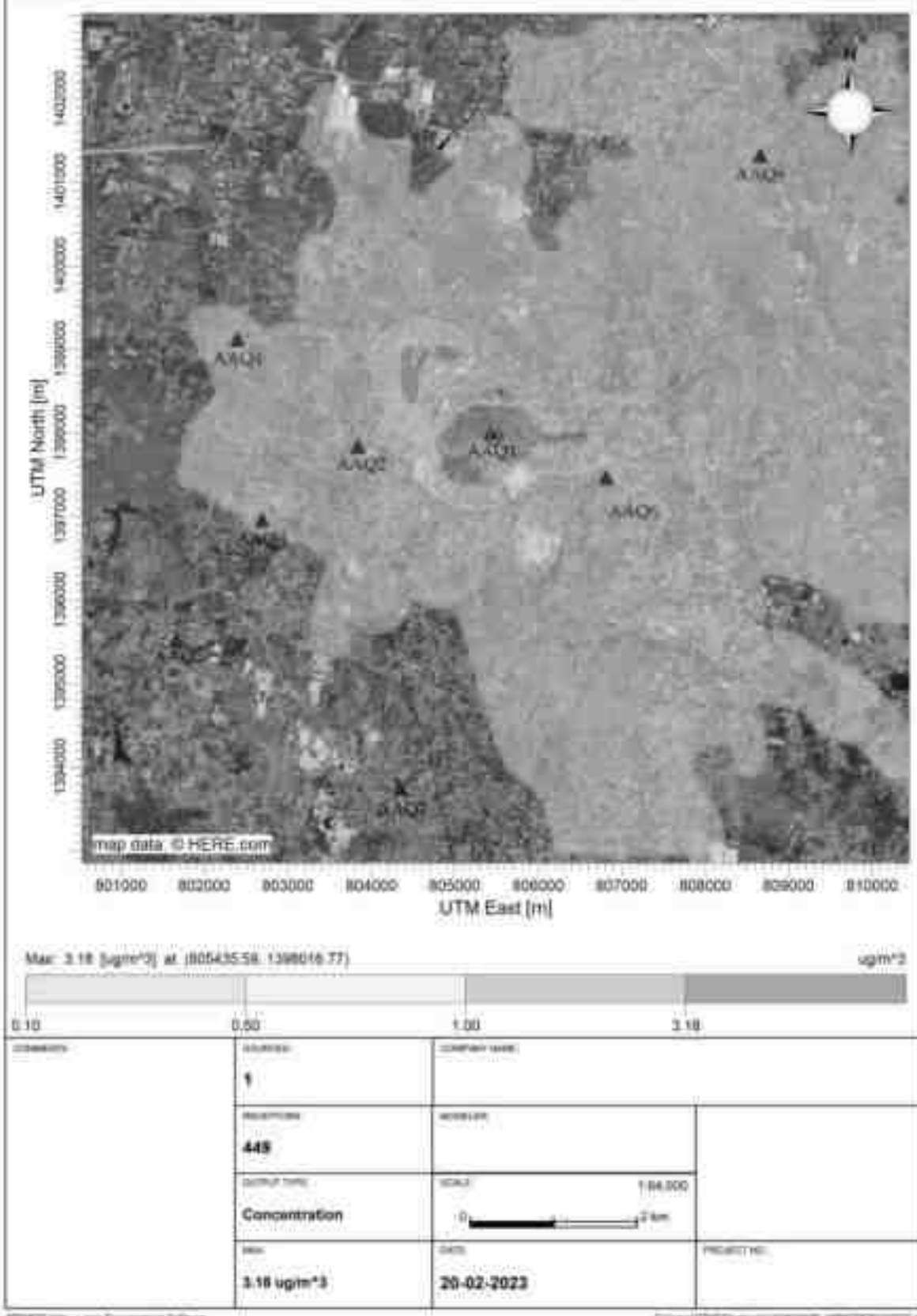
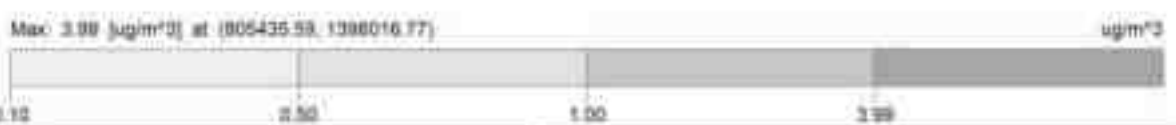
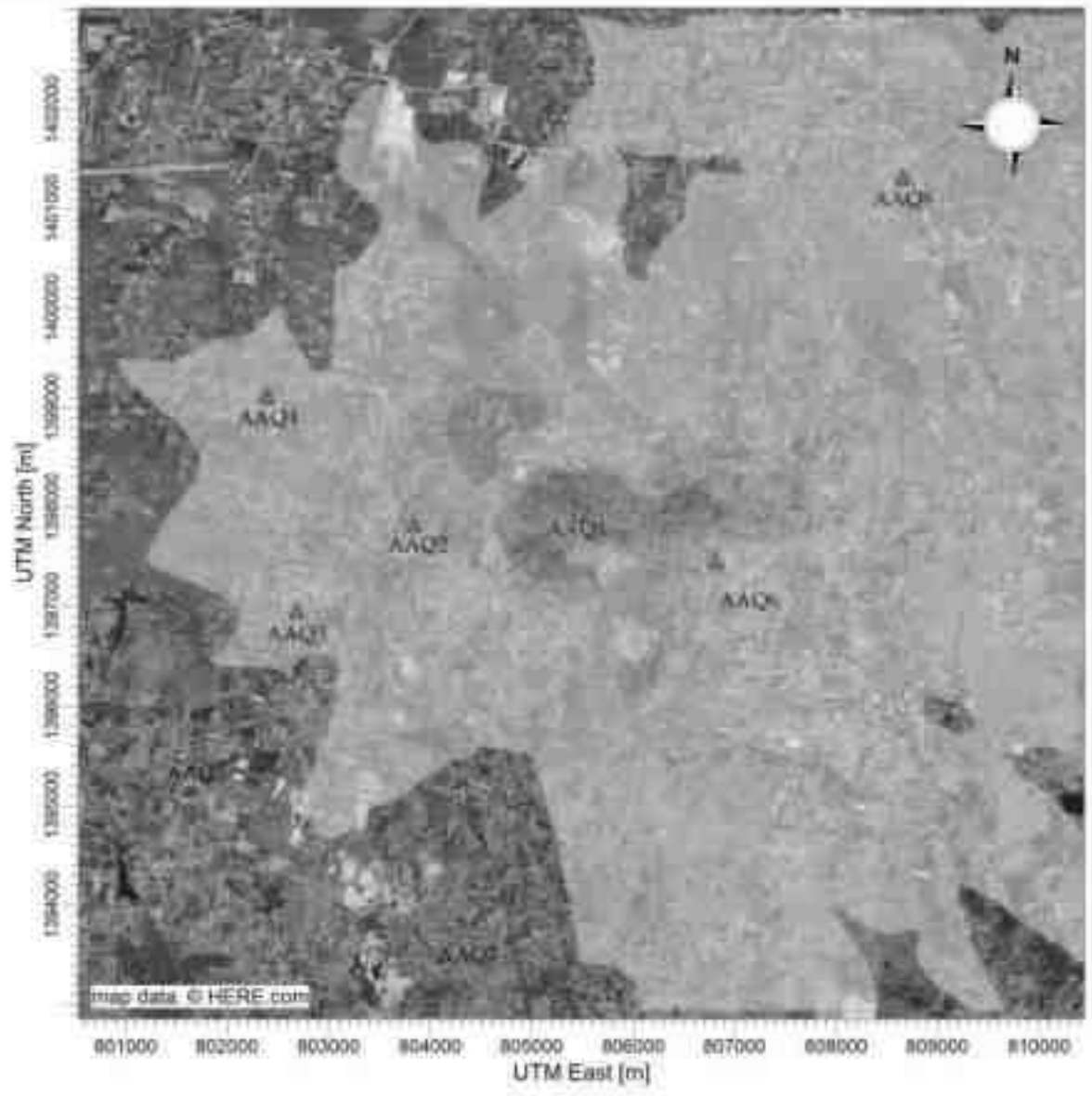


Figure 4.3 Predicted Incremental Concentration of SO₂

PROJECT TITLE:
J.VIJAYAKUMAR ROUGHSTONE QUARRY PROJECT_NOx



COMMENTS: 	NOISE ID:	DISPERSION MODEL	
	NOISE ID:	1	
	RECEPTOR:	RECEPTOR:	
	RECEPTOR NAME:	CONCENTRATION:	1.84,000
	MAX:	DATE:	PROJECT NO.:
	3.99 ug/m ³	20-02-2023	

Figure 4.4 Predicted Incremental Concentration of NO_x

Table 4.5 Incremental & Resultant GLC of SO₂

Station ID	Distance to core area (km)	Direction	SO ₂ concentrations (µg/m ³)			Comparison against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	10.9	3.18	14.08	Below Standard	29.17	Not Significant
AAQ2	1.80	W	8.2	0.5	8.7		6.10	
AAQ3	3.06	SW	8.4	0.5	8.9		5.95	
AAQ4	3.38	NW	8.7	0.5	9.2		5.75	
AAQ5	4.60	SW	6.4	0	6.4		0.00	
AAQ6	1.17	E	8.3	0.5	8.8		6.02	
AAQ7	4.30	S	7.8	0	7.8		0.00	
AAQ8	4.40	NE	9.1	0.5	9.6		5.49	

Table 4.6 Incremental & Resultant GLC of NO_x

Station ID	Distance to core area (km)	Direction	NO _x Concentrations(µg/m ³)			Comparison against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	20.7	3.99	24.69	Below Standard	19.28	Not Significant
AAQ2	1.80	W	15.6	1	16.6		6.41	
AAQ3	3.06	SW	17.1	0.5	17.6		2.92	
AAQ4	3.38	NW	17.8	0.5	18.3		2.81	
AAQ5	4.60	SW	13.7	0	13.7		0.00	
AAQ6	1.17	E	15.6	0.5	16.1		3.21	
AAQ7	4.30	S	15.1	0	15.1		0.00	
AAQ8	4.40	NE	17.0	0.5	17.5		2.94	

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

4.4.2 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.

Haul Road and Transportation

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

Green Belt

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

Occupational Health

- ❖ Dust mask will be provided to the workers and their use will be strictly monitored.
- ❖ Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers and tipper drivers.
- ❖ Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed.

4.5 NOISE ENVIRONMENT

Noise pollution is mainly due to operation like drilling and playing of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering 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
Total			95.8

*50 feet from source = 15.24 meters

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

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

Table 4.8 Predicted Noise Incremental Values

Noise Monitoring Location	Distance From Project Site(m)	Baseline Noise Level (dBA)m During Day Time	Predicted Noise Level (dBA)	Total (dBA)
Core	100	42.1	57.16	57.29
Gulisandiram	880	38.9	38.27	41.61
Kallu Barundur	1760	36.9	32.25	38.18
Barandhur	3080	38.7	27.39	39.01
Muduganappalli	3250	40.6	26.92	40.78
Beegisettipalli	4570	36.1	23.96	36.36
Kottur	1210	39.4	35.50	40.89
Kamaiyanur	4310	32.1	24.47	32.79
Angondapalli	4520	39.6	24.06	39.72
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 57.16 dB (A) in core zone and ranges between 23.96 and 38.27 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 kutchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements. Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to

the structures. Nearest habitation from the proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation. The empirical equation for assessment of peak particle velocity (PPV) is given below:

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

Where,

V = Peak Particle Velocity (mm/s)

K = Site and rock factor constant (500)

Q = Maximum instantaneous charge (kg)

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

R = Distance from charge (m)

Table 4.9 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	48	880	0.21	23	0.10	134

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	48	100	6.98	23	1.36	157
		200	2.30		0.59	149
		300	1.20		0.37	145
		400	0.75		0.26	147
		500	0.53		0.20	140

The peak particle velocity produced by the charge of 48 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 48 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, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed
- ❖ A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public
- ❖ Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire
- ❖ The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- ❖ The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects
- ❖ Appropriate blasting techniques shall be adopted in such a way that the predicted peak particle velocity shall not exceed 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

- ❖ The proposed mining activities include removal of some scattered bushes and other thorny species.

- ❖ A total of 17 species belonging to 13 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were herbs & climbers & grass 7 (41.5%), shrubs 5 (29%) followed by tree 5 (29.5%). Details of flora with the scientific name were mentioned in Chapter -III Table.3.21. 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 2249 kg per day, 607323 kg per year and 3036613 kg over five years, as provided in Table 4.11.

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	156	42158	210788
Fuel consumption of compressor	48	12960	64800
Fuel consumption of tipper	635	171495	857477
Total fuel consumption in liters	839	226613	1133064
CO ₂ emission in kg	2249	607323	3036613

4.6.2 Mitigation Measures

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.
- ❖ None of the plants in the lease area will be cut during operational phase of the mine. we recommend uprooting and planting of the 10 trees along the 7.5 m safety zone to prevent environmental pollution during quarrying. As the survival rate due to uprooting was only 30%, 100 seedlings will be procured at the rate of 10 seedlings per tree and planted in 7.5 m safety zone. Details of seedlings proposed to be planted in the safety margin of the lease area are given in Table 4.13.

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 4.14), about 1000 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 89 kg of the total carbon, as provided in Table 4.12.

Table 4.12 CO₂ Sequestration

CO ₂ sequestration in kg	89	23976	119880
Remaining CO ₂ not sequestered in kg	2161	583347	2916733
Trees required for environmental compensation	24306		
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 4.14-4.15. For greenbelt development, species are recommended, as shown in Table 4.13 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	Vembu	Tree	Well distinct thick at both the layer Well distinct in Palisade & Spongy parenchyma. Spongy parenchyma is present at lower epidermis Many vascular bundles arranged almost parallel series
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	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 ²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	400	320	3600
	Number of plants outside the mine lease area		
	600	480	4320
Total	1000	800	7920

Table 4.15 Budget for Greenbelt Development Plan

Activity	Plantation in the construction phase(3Months)	Cost	Capital Cost (Rs.)	Recurring Cost-per annum
Plantation inside the mine lease area (in safety margins)	400	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))"	80000	12000
Plantation outside the area	600	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	180000	18000
Total			2,60,000	30,000

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.
- ❖ Wild life is not commonly found in the project area and its immediate environs because of lack of vegetal cover and surface water.

4.6.4 Mitigation Measures

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 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 detail of impact and assessments was mentioned in Table 4.16.

Table 4.16 Ecological Impact Assessments

SI. 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	Sanamavu Reserve Forest is located in 6.19 km southeast south side. 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

S. No	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence - Probability Description / Justification	Significance	Mitigation Measures
Pre-Mining Phase					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity (Direct impact)	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 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.		

Mining Phase					
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 ₂ , NO ₂ , 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

- ❖ 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

- ❖ 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.
- ❖ Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide.
- ❖ Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level.
- ❖ Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse 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, Spirometry 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 and in the area. The proposed mining lease areas have following advantages:

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

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

CHAPTER VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

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

- ❖ Seeking expert's advice when needed.

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

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

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

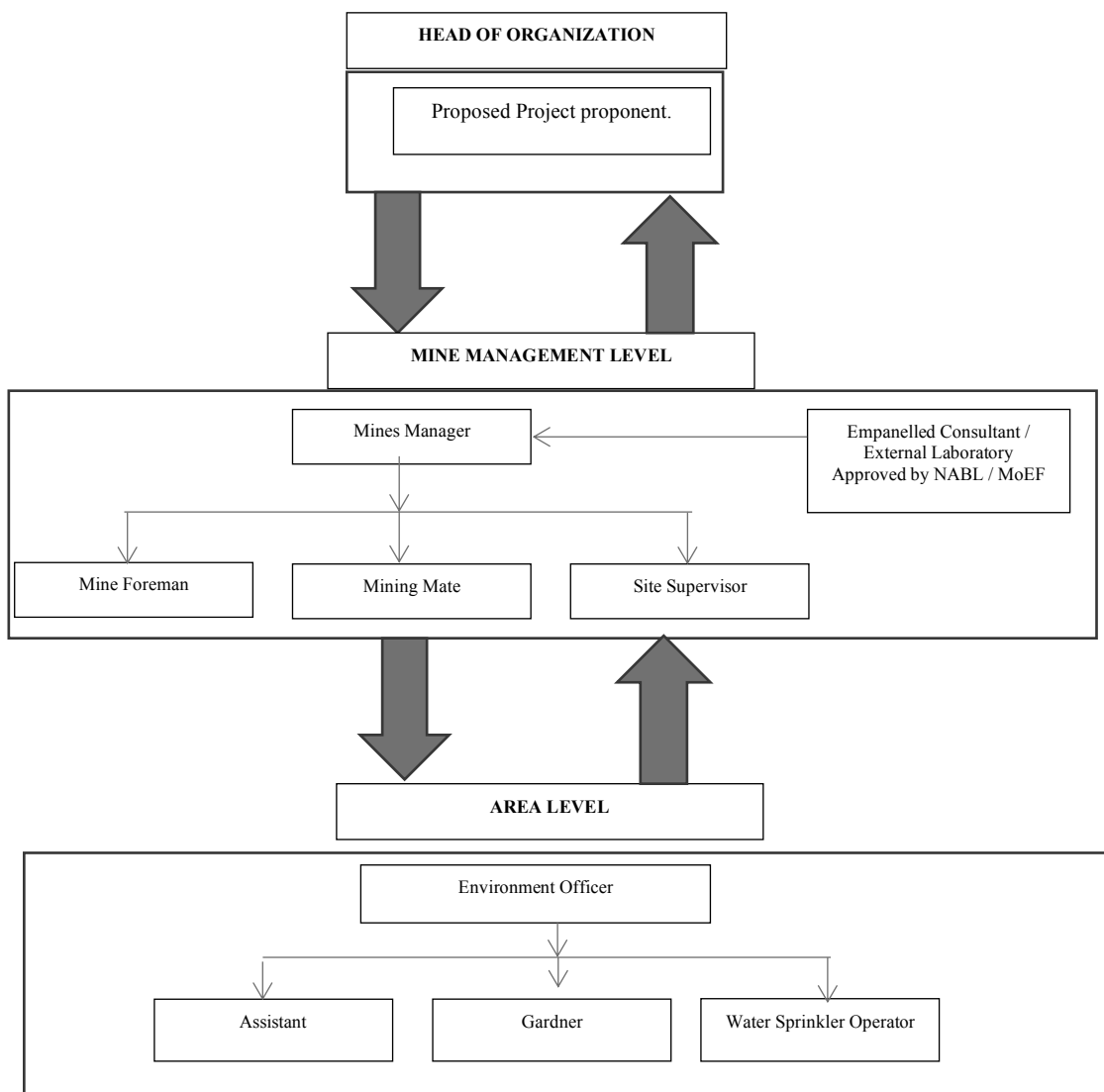


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

Table 6.1 Implementation Schedule for Proposed Project

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

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

- ❖ Soil quality and
- ❖ Greenbelt development

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

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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

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

6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF. The proposed recurring cost for Environmental Monitoring Programme is Rs 2,95,000 /- per annum for the proposed project site.

Table 6.3 Environment Monitoring Budget

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

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ 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 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project.

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

Table 7.1 Risk Assessment & Control Measures for Proposed Project

S. No.	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries.	Improper handling and unsafe working practice	<ul style="list-style-type: none"> ✓ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations. ✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited. ✓ Fire-fighting and first-aid provisions in the mine office complex and mining area. ✓ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ✓ Working of quarry, as per approved plans and regularly updating the mine plans. ✓ Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut. ✓ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager. ✓ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	Improper and unsafe practices; Due to high pressure of compressed air, hoses may burst; Drill Rod may break;	<ul style="list-style-type: none"> ✓ Safe operating procedure established for drilling (SOP) will be strictly followed. ✓ Only trained operators will be deployed. ✓ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ✓ Drilling shall not be carried on simultaneously on the benches at places directly one above the other.

			<ul style="list-style-type: none"> ✓ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ✓ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. ✓ Operator shall regularly use all the personal protective equipment.
3	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<ul style="list-style-type: none"> ✓ Before commencing work, drivers personally check the truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. ✓ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. ✓ Concave mirrors should be kept at all corners ✓ All vehicles should be fitted with reverse horn with one spotter at every tipping point ✓ Loading according to the vehicle capacity ✓ Periodical maintenance of vehicles as per operator manual
4	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> ✓ Escape Routes will be provided to prevent inundation of storm water ✓ Fire Extinguishers & Sand buckets
5	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> ✓ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m.

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

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

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

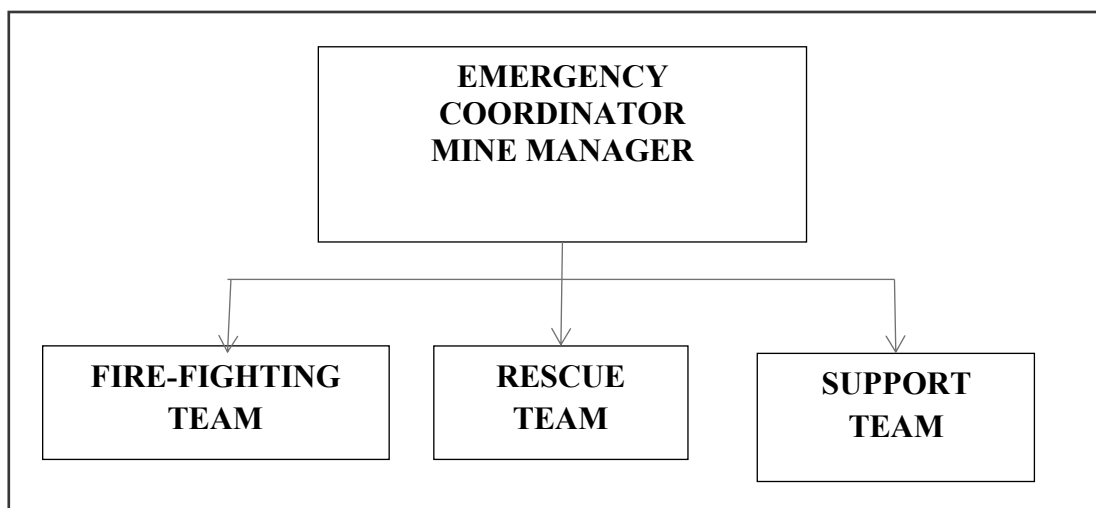


Figure 7.1 Disaster management team layout for proposed project

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

Table 7.2 Proposed Teams for Emergency

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

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

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 carry out 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 ₂ type, foam type, dry chemical powder type
Fuel Storage Area	CO ₂ type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

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.
- ❖ 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.
- ❖ 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 & blasting and excavation and transportation activities in all the quarries within the cluster and major impact anticipated is on air & noise environment and ground vibrations due to blasting. For this cumulative study, 6 proposed projects, known as P1, P2, P3, P4, P5 and P6 are taken into consideration. The details of P1 have been given in Table 1.2 and the details of P2 to P6 given in Table 7.4 - 7.8.

Table 7.4 Salient Features of Proposed Project Site “P2”

Name of the Quarry	Thiru.S.Raghu	
Type of Land	Government poramboke Land	
Extent	1.30.00 ha	
S.F. No.	381(Part-1)	
Toposheet No.	57- H/14	
Maximum Elevation	850 m AMSL	
Latitude	12°38'05.49''N to 12°38'03.12"N	
Longitude	77°48'43.41"E to 77°48'37.72"E	
Ultimate Depth of Mining	43 m BGL	
Geological Resources	Rough stone (m ³)	Topsoil (m ³)
	616028	25676
Mineable Reserves	231238	17316
Proposed production for 1-5 years	164437	17316
Method of Mining	Open cast Semi-mechanized method.	
Topography	Hilly Terrain	
Machinery proposed	Jack hammer	4
	Compressor	1
	Hydraulic Excavator	1
	Tipper	1
Blasting Method	The massive formation shall be broken into pieces of portable size by drilling and proposed control blasting using jack hammers and shot hole blasting.	
Proposed Manpower Deployment	18 persons	
Project Cost	Rs.1,65,40,000/-	
CER Cost	Rs.5,00,000/-	

Source: Approved Mining Plan

Table 7.5 Salient Features of Proposed Project Site “P3”

Name of the Quarry	M/s. Natural Stone Industry	
Type of Land	Government Poramboke land	
Extent	3.00.0 ha	
S.F. No.	220/1(Part-1)	
Toposheet No.	57-H/14	
Highest Elevation	870 m AMSL	
Latitude	12°37'59.2819"N to 12°37'56.7500"N	
Longitude	77°48'41.4624"E to 77°48'33.7498"E	
Ultimate Depth of Mining	66 m BGL	
Geological Resources	Rough stone (m ³)	Topsoil (m ³)
	1880592	92442
Mineable Reserves as per ToR	904638	75438
Proposed production for 5 years as per ToR	602588	75438
Method of Mining	Open cast Mechanized method.	
Topography	Hilly Terrain	
Machinery proposed	Jack hammer	6
	Compressor	1
	Hydraulic Excavator	2
	Tipper	2
Blasting Method	Quarrying operation will be carried out by splitting of rock mass of considerable volume from the parent rock mass by jackhammer, drilling and blasting. Hydraulic excavator is used for loading.	
Proposed Manpower Deployment	18 persons	
Project Cost	Rs.4,46,40,000/-	
CER Cost @ 2% of Project Cost	Rs.5,00,000/-	
Proposed Water Requirement	1.8 KLD	

Source: Approved Mining Plan

Table 7.6 Salient Features of Proposed Project Site “P4”

Name of the Quarry	Thiru.C.Nithin Reddy	
Type of Land	Government Poramboke Land	
Extent	3.00.0 ha	
S.F. No.	220/1(Part-2)	
Toposheet No.	57-H/14	
Maximum Elevation	882 m AMSL	
Latitude	12°37'54.3668"N to 12°37'53.1120"N	
Longitude	77°48'40.8039"E to 77°48'32.8686"E	
Ultimate Depth of Mining	54 m BGL	
Geological Resources	Rough stone (m ³)	Topsoil (m ³)
	1644538	89847
Mineable Reserves	780843	71190
Proposed production for 5 years	575386	71190
Method of Mining	Open Cast Semi Mechanized Mining	
Topography	Undulated Terrain	
Machinery proposed	Jack hammer	6
	Compressor	1
	Excavator	2
	Tipper	2
Blasting Method	The massive formation shall be broken into pieces of portable size by drilling and proposed control blasting using jack hammers and shot hole blasting.	
Proposed Manpower Deployment	18 persons	
Project Cost	Rs.4,97,40,000/-	

Source: Approved Mining Plan

Table 7.7 Salient Features of Proposed Project Site “P5”

Name of the Quarry	Thiru.Sri Krish	
Type of Land	Government Poramboke Land	
Extent	3.00.0 ha	
S.F. No.	220/1(Part-3)	
Toposheet No.	57-H/14	
Maximum Elevation	858 m AMSL	

Latitude	12°37'56.0941"N to 12°37'54.3668"N	
Longitude	77°48'49.1130"E to 77°48'40.8039"E	
Ultimate Depth of Mining	66 m BGL	
Geological Resources	Rough stone (m ³)	Topsoil (m ³)
	1715980	88620
Mineable Reserves	725186	68760
Proposed production for 5 years	512190	68760
Method of Mining	Open Cast Semi Mechanized Mining	
Topography	Hilly Terrain	
Machinery proposed	Jack hammer	6
	Compressor	1
	Excavator	2
	Tipper	2
Blasting Method	Quarrying operation is carried out by splitting of rock mass of considerable volume from the parent rock mass by jackhammer, drilling and blasting.	
Proposed Manpower Deployment	18 persons	
Project Cost	Rs.4,46,40,000/-	
Proposed Water Requirement	1.8 KLD	

Source: Approved Mining Plan

Table 7.8 Salient Features of Proposed Project Site "P6"

Name of the Quarry	Thiru.C.Dhivakar	
Type of Land	Government Poramboke Land	
Extent	1.50.00 ha	
S.F. No.	381 (Part-2)	
Toposheet No.	57-H/14	
Maximum Elevation	882 m AMSL	
Latitude	12°38'02.0522"N to 12°38'00.5003"N	
Longitude	77°48'43.9104"E to 77°48'37.4099"E	
Ultimate Depth of Mining	48 m BGL	
Geological Resources	Rough stone (m ³)	Topsoil (m ³)
	801857	29920
Mineable Reserves	305319	21576

Proposed production for 5 years	222355	21576
Method of Mining	Open Cast Semi Mechanized Mining	
Topography	Undulated Terrain	
Machinery proposed	Jack hammer	6
	Compressor	1
	Excavator	2
	Tipper	2
Blasting Method	The massive formation shall be broken into pieces of portable size by drilling and proposed control blasting using jack hammers and shot hole blasting.	
Proposed Manpower Deployment	18 persons	
Project Cost	Rs.1,90,90,000/-	

Source: Approved Mining Plan

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 6 proposed projects have been given in Tables 7.9.

Table 7.9 Cumulative Production Load of Rough Stone

Proposed Production Details				
Quarry	5 Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day
P1	257243	51449	191	32
P2	164437	32887	122	20
P3	602588	120518	446	74
P4	575386	115077	426	71
P5	512190	102438	379	63
P6	222355	44471	165	28
Grand Total	2334199	466840	1729	288

The cumulative study shows that the overall production of rough stone from the 6 quarries is 1729 m³ per day with a capacity of 288 trips of rough stone per day for 5 years.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the 6 proposed projects on air environment of the cluster have been provided in Table 7.10. The cumulative values resulting from the 6 projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.10 Cumulative Impact of Air Pollutants from the 6 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	P3	P4	P5	P6	
PM _{2.5}	24	5.23	3.34	7.25	7.7	7.41	3.52	58.45
PM ₁₀	44.3	7.92	5.06	11.55	10.71	9.77	5.85	95.16
SO ₂	10.9	3.18	2.03	5.45	5.11	5.33	2.75	34.75
NO _x	20.7	3.99	2.55	5.35	4.92	5.94	3.45	46.9

7.4.2 Noise Environment

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

Table.7.11 Cumulative Impact of Noise from 6 Proposed Quarries on Gulisandiram 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	800	NNW	38.9	39.0	42.0	55
Habitation Near P2	400	NNW		45.1	46.0	
Habitation Near P3	600	NNW		41.6	43.4	
Habitation Near P4	720	NNW		40.0	42.5	
Habitation Near P5	660	NNW		40.7	42.9	
Habitation Near P6	550	NNW		42.3	43.9	
Cumulative Noise (dB (A))					49.8	

Source: Lab Monitoring Data

Cumulative analysis of noise due to 6 proposed projects shows that habitation of Gulisandiram will receive about 49.8 dB (A) respectively. The cumulative results for all the villages in consideration do not exceed the limit set by CPCB for residential areas for day time.

Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the all the 8 mines have been shown in Table 7.12

Table 7.12 Cumulative Effect of Ground Vibrations Resulting from 8 Mines on Habitation of Gulisandiram

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	48	800	0.25
P2	31	400	0.54
P3	112	600	0.78
P4	107	720	0.56
P5	95	660	0.59
P6	41	550	0.40
E1	40	1380	0.09
E2	48	1400	0.10
Total			3.31

Results from the above tables 7.12-7.13 indicate that the cumulative PPV value of each habitation is well below the peak particle velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

7.4.3 Socio Economic Environment

Socio Economic benefits of the 6 proposed projects were calculated and the results have been shown in Table 7.13 the 6 projects together will contribute Rs.30,00,000 towards CER fund.

Table 7.13 Socio Economic Benefits from 6 Mines

Location ID	Project Cost	CER Cost
P1	24570000	Rs. 5,00,000
P2	16540000	Rs. 5,00,000
P3	44640000	Rs. 5,00,000
P4	49740000	Rs. 5,00,000
P5	44640000	Rs. 5,00,000
P6	19090000	Rs. 5,00,000
Grand Total	199220000	Rs. 30,00,000

Table 7.14 Employment Benefits from 6 Mines

Location ID	Employment
P1	18
P2	18
P3	18
P4	18
P5	18
P6	18
Grand Total	108

A total of 108 people will get direct employment due to 6 proposed mines in cluster

7.4.4 Ecological Environment

Table 7.15 Greenbelt Development Benefits From 6 Mines

Code	Number of Trees proposed	Area to be covered (m²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	1000	9000	800	<i>Azadirachta indica, Albizia lebbeck, Delonix regia, Tectona grandis, etc.,</i>
P2	650	5850	520	
P3	1500	13500	1200	
P4	1500	13500	1200	
P5	1500	13500	1200	
P6	750	6750	600	
Total	6900	62100	5520	

Cumulative studies show that the 6 proposed projects will plant about 6900 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Tectona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 5520 trees will survive in this green belt development program.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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

7.5.1 Objective

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

A detailed action plan to manage plastic waste has been provided in Table 7.16.

Table 7.16 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 O₂ < 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 **Gopanapalli Village** aims to produce **257243 m³** of rough stone and **29960 m³** of top soil 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 18 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

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

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

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

8.5 OTHER TANGIBLE BENEFITS

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

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

8.6 CORPORATE SOCIAL RESPONSIBILITY

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

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

- ❖ Health Services
- ❖ Social Development
- ❖ Infrastructure Development
- ❖ Education & Sports
- ❖ Self-Employment
- ❖ CSR Cost Estimation
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Gopanapalli 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

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

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

CHAPTER IX

ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER X

ENVIRONMENTAL MANAGEMENT PLAN

10.0 GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of environmental management plan will ensure to keep all the environmental parameters of the project in respect of ambient air quality, water quality, socio economic improvement standards. Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 ENVIRONMENTAL POLICY

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

The Proponent, **Thiru. J. Vijayakumar** will:

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

10.1.1 Description of the Administration and Technical Setup

The environment monitoring cell discussed under chapter VI will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through mine management level of each proposed quarry. The said team will be responsible for:

- ❖ Monitoring of the water/ waste water quality, air quality and solid waste generated.
- ❖ Analysis of the water and air samples collected through external laboratory.

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

10.2 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

Control	Responsibility
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Refueling to be undertaken in a safe location away from vehicle movement pathways & 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 Harvesting. Remaining area will be converted into greenbelt area.	Mines Manager
No external dumping i.e., outside the project area.	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

Source: Proposed by 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

Control	Responsibility
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 30 m. The water table in the area is at 65 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

Control	Responsibility
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations	Mines Manager
Ensure there is no process effluent generation or discharge from the project area into water bodies	Mines Foreman
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Foreman
Monthly or after rainfall, inspection for performance of water management structures and systems	Mines Manager
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by 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 is provided in Table 10.4.

Table 10.4 Proposed Controls for Air Environment

Control	Responsibility
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient air quality Monitoring carried out in the project area and in surrounding villages to 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

Control	Responsibility
Development of thick greenbelt all along the buffer zone (7.5 meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager

Provision of earmuff/ ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to 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

Control	Responsibility
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines

Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by 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 and 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

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 is 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(m²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	400	320	3600
	Number of plants outside the mine lease area		
	600	480	5400
Total	1000	800	9000

Source: Proposed by FAEs & EIA Coordinator

About 1000 saplings will be planted in and around the lease area with the survival rate of 80%. A well-planned green belt of trees with long canopy leaves shall be developed with dense plantations around the boundary and along the 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 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups: Work force will be divided into three targeted groups age wise as follows:						
Age Group		PME as per Mines Rules 1955		Special Examination		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

10.9.2 Proposed Occupational Health and Safety Measures

- ❖ The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- ❖ Lightweight and loose-fitting clothes having light 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

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	<ul style="list-style-type: none"> ✓ Employee rights, ✓ Supervisor responsibilities ✓ Self-rescue ✓ Respiratory devices ✓ Transportation controls ✓ Communication systems ✓ Escape and emergency evacuation ✓ Ground control hazards ✓ Occupational health hazards ✓ Electrical hazards and First aid Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability,	Employees assigned to new work tasks	Before new Assignments	Variable	<ul style="list-style-type: none"> ✓ Task-specific health & safety procedures and SOP for various mining activity

Dewatering, Haul Road maintenance.				<ul style="list-style-type: none"> ✓ Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	<ul style="list-style-type: none"> ✓ Required health and safety standards ✓ Transportation controls ✓ Communication 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	<ul style="list-style-type: none"> ✓ 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 measures.

Table 10.10 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost (Rs.)	Recurring Cost/annum (Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	20000	20000
	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 of 20 km/hr within ML area	Installation of speed Governors @ Rs. 5000/- per tipper/dumper deployed	10000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of exhaust fumes	0	2500
	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
Noise Environment	Source of noise will be transportation vehicles, and HEMM. For this, proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done.	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0

	Safety tools and implementations that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for portable blaster shed	Installation of portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 tons of blasted material	0	694556
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	20000	10000
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0

Implementation of EC, Mining Plan & DGMS Condition Occupational Health and Safety	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)	72000	18000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	18000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	8000
	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	400000	20000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	100000	20000

	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
Development of Green Belt	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring))"	80000	12000
		Avenue plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	180000	18000
Mine Closure Activity	Closure includes Greenbelt development, wire fencing, drains	Provision made in closure cost	0	0
Total EMP Budget			1962000	1823056

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

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year	Total
3785056	1914209	2009919	2110415	2215936	12035536

In order to implement the environmental protection measures, an amount of **Rs. 1962000** as capital cost and recurring cost as **Rs. 1823056** 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. 12035536** 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.9593/SEAC/ToR-1334/2022 dated 10.02.2023 by considering 6 proposed and 2 existing quarries in a cluster with the total extent of 19.50.0 hectares in Gopanapalli Village, Hosur Taluk, Krishnagiri District and Tamil Nadu State. Cluster area was calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016. Baseline Monitoring studies were carried out during the period of December-2022 to February-2023.

11.1 PROJECT DESCRIPTION

The proposed project deals with excavation of rough stone 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 12°37'51.83"N to 12°37'49.10"N and from longitudes from 77°48'45.92"E to 77°48'40.11"E in Gopanapalli Village, Hosur Taluk, Krishnagiri District. The project site is a Government Poramboke Land with the extent of 2.00.0 ha owned by the project proponent. The proponent had applied for quarry lease on 19.04.2022 to extract rough stone and obtained the precise area communication letter issued by Department of Geology and Mining Krishnagiri vide (Rc.No.538/Mines/2022 Dated 26.04.2022. 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, Krishnagiri (Rc.No.538/Mines/2022, Dated 04.07.2022). According to the approved mining plan, about 257243 m³ of rough stone and about 29960 m³ of soil will be mined up to the depth of 30 m BGL in the first five years. To achieve the estimated production, 4 jack hammers, 1 compressor, 1 excavator with bucket/rock breaker, and 2 tippers will be deployed. To operate the machineries and to break the rough stone to preferred dimension, about 18 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 140 m*107 m*47 m and about 2.00.0 ha of land would have been quarried; about 2.00.0 ha of land is designated as unutilized area. Whereas, at the end of the mine life, about 1.51.0 ha of land would have been quarried; about 0.01.0 ha of land would have been used for establishing infrastructures; about 0.01.0 ha of land would have been used for road development; about 0.47.0 ha of land would have been used for green belt development. The final mine closure

plan shows that about **Rs. 680000** with the annual recurring cost of Rs.60000 will be spent towards mine closure.

11.2 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring studies were carried out during December, 2022 through February, 2003 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, 8 LULCs were mapped. Of the total area, mining area covers only 55 ha accounting for 0.72 %, of which lease area of 2.00.0 ha contributes only about 0.026 %. 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 6.93 to 8.22 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 2.93 to 3.65 dsm⁻¹. Bulk density ranges between 0.79 and 0.92 g/cm³.

Chemical Characteristics

Nitrogen ranges between 1.27 and 1.63 %. Phosphate ranges between 0.88 and 2.22 %. Potassium ranges between 2.23 and 4.27 %. Boron ranges between 13.58 and 19.81 mg/kg. Zinc content ranges between 13.58 and 19.81 mg/kg soil.

11.2.3 Water Environment

Surface Water

Lakes near Mugalur and near Gopanapalli are the prominent surface water resources present in the study area. The proposed project area is located 0.57 km W of the lake near Mugalur and 3.12 km NNW of the lake near Gopanapalli, as shown in Table 3.5 and Figure 3.4. Totally, two surface water samples, known as SW1 and SW2 were collected from the lakes

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.

Ground Water Resources

Five groundwater samples, known as GW1, GW2, GW3, GW4 and GW5 were 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. 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 December, 2022 varied from 14.15⁰ C to 27.32⁰ C with the average of 20.64⁰ C; in January, 2023 from 9.90 to 27.83⁰ C with the average of 19.18⁰ C; and in February, 2023 from 13.27 to 33.82⁰ C with the average of 23.16⁰ C. In December, 2022, relative humidity ranged from 45.44 to 100 % with the average of 85.58%; in January, 2023, from 35.94 to 100 % with the average of 78.25 %; and in February, 2023, from 10.69 to 100 % with the average of 62.98 %. The wind speed in December, 2022 varied from 0.72 to 6.52 m/s with the average of 2.98 m/s; in January, 2023 from 0.49 to 5.68 m/s with the average of 2.82 m/s; and in February, 2023 from 0.43 to 6.50 m/s with the average of 2.89 m/s. In December, 2022, wind direction varied from 2.80 to 353.95⁰ with the average of 99.77⁰; in January, 2023, from 31.12 to 140.32⁰ with the average of 87.68⁰; and in February, 2023, from 1.56 to 356.45⁰ with the average of 111.38⁰. In December, 2022, surface pressure varied from 92.42 to 99.43 kPa with the average of 93.46 kPa; in January, 2023, from 92.78 to 93.78 kPa with the average of 93.27 kPa; and in February, 2023, from 92.43 to 93.65 kPa with the average of 93.09 kPa.

Ambient Air Quality Results

As per the monitoring data, PM_{2.5} ranges from 14.7 µg/m³ to 20.2 µg/m³; PM₁₀ from 28.9 µg/m³ to 35.3 µg/m³; SO₂ from 6.0 µg/m³ to 9.3 µg/m³; NO₂ from 11.2 µg/m³ to 17.5g/m³.

The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

11.4 NOISE ENVIRONMENT

The Table 3.18 shows that noise level in core zone was 42.1 dB (A) Leq during day time and 36.5 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 32.1 to 40.6dB (A) Leq and during night time from 28.5 to 33.9dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.5 BIOLOGICAL ENVIRONMENT

Taxonomically a total of 17 species belonging to 13 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were tree 5 (29.5%) followed by herbs & climbers & grass 7 (41%), shrubs 5 (29.5%). Taxonomically 36 species belonging to 24 families have been recorded from the 300 m radius buffer zone. Based on habitat classification of the enumerated plants the majority of species were tree 7 (19%) followed by herbs & climbers & grass 21 (58%), shrubs 8 (22%). 89 species belonging to 43 families have been recorded from the buffer zone. The floral (89) varieties among them Trees 37 (42%) shrubs 13 (14%) and herbs & climbers & creeper & cactus 39 (44%). From the study of biological environment, it is concluded that there was no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species were found in vulnerable, endangered or threatened category as per IUCN and that there is no endangered red list species found in the study area.

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
Land Environment	
<ul style="list-style-type: none"> ❖ Destruction of natural landscapes ❖ Changes in soil characteristics ❖ Soil erosion and slope instability 	<ul style="list-style-type: none"> ❖ Mining will be carried out as per approved mine plan in scientific and systematic way ❖ Safety Zone or Buffer area will be maintained and will not be mined and instead plantation will be carried out in the safety zone ❖ Barbed wire fencing will be provided all along the proposed mine boundary ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir ❖ Construction of garland ❖ 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
Water Environment	
<ul style="list-style-type: none"> ❖ Decrease in aquifer recharge and increase in surface runoff; ❖ Disturbance to land drainage, overload and erosion of watercourses; ❖ Changes to the surface over which water flows; ❖ Changes to surface and groundwater resources quantity and quality due to stream blockage and 	<ul style="list-style-type: none"> ❖ 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 ❖ 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 ❖ Domestic sewage from site office & urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system.

<p>contamination by particulate matter or waste;</p> <ul style="list-style-type: none"> ❖ Contamination of aquifers due to removal of the natural filter medium. 	<ul style="list-style-type: none"> ❖ Tippers & 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 & grease trap, only clear water will be reused for greenbelt development.
Air Environment	
<ul style="list-style-type: none"> ❖ Generation of Fugitive Dust ❖ Dust will be generated mainly during excavation, loading & unloading activities. ❖ Gaseous pollutants will be generated mostly by the traffic. ❖ Reduction in visibility due to dust plumes. ❖ Coating of surfaces leading to annoyance and loss of amenity. ❖ Physical and/or chemical contamination and corrosion. ❖ Increase in the concentration of suspended particles in runoff water. ❖ Coating of vegetation leading to reduced photosynthesis, ❖ Inhibited growth, destroying of foliage, degradation of crops; 	<ul style="list-style-type: none"> ❖ Haul roads will be well maintained by sprinkling water twice a day ❖ The access road will be cleaned and brushed to ensure that mud and dust deposits do not accumulate. ❖ 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 ❖ Speed restrictions will be imposed to avoid spillage of loaded materials upon the road and to reduce wear and tear of the road. ❖ 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. ❖ 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. ❖ Personal Protective Equipment's will be provided to all workers ❖ All drilling rods used will have dust suppression systems fitted which injects water into the hole. ❖ Wet gunny bags will be used as a cover while drilling. ❖ The blast zone will be kept damp by the application of water from the rain gun fitted to the water tanker prior

<ul style="list-style-type: none"> ❖ Increase in health hazards due to inhalation of dust. 	<p>to each blast to control any fugitive dust emissions that could arise from the surface during detonation.</p> <ul style="list-style-type: none"> ❖ 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. ❖ A site speed limit of 20 km/h will be set to minimise the potential for dust generation ❖ Weekly maintenance programme to identify machinery due for maintenance, based on the number of hours it has been in operation. ❖ Air filters are renewed after every 10⁰ hours of use, unless otherwise indicated by an on-board computer system. ❖ All site machineries & 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.
Noise & Vibration	
<ul style="list-style-type: none"> ❖ Annoyance and deterioration of the quality of life; ❖ Propelling of rocks fragments by blasting. ❖ Shaking of buildings and people due to blasting; 	<ul style="list-style-type: none"> ❖ Usage of sharp drill bits while drilling which will help in reducing noise; ❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders; ❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained; ❖ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;

	<ul style="list-style-type: none"> ❖ 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.
Biological Environment	
<ul style="list-style-type: none"> ❖ Direct impacts include land clearance and excavation causing destruction of flora and fauna and loss of habitats; ❖ Indirect impacts include habitat degradation due to noise, dust, and human activity. 	<ul style="list-style-type: none"> ❖ Only some common herbs, shrubs and grass will be cleared. So, there will be no impact on the biodiversity. ❖ Green belt development with suitable species will enhance the biodiversity of the project area. ❖ The core zone or buffer zone does not encompass any threatened flora or fauna species.
Socio-Economic Environment	
<ul style="list-style-type: none"> ❖ Health and safety of workers and the general public; ❖ Increase in traffic volumes and sizes of road vehicles; 	<ul style="list-style-type: none"> ❖ The mining activity puts negligible change in the socio-economic profile. ❖ Around 88 local workers will get employment opportunities along with periodical training to generate local skills. ❖ New patterns of indirect employment/ income will generate.

<ul style="list-style-type: none"> ❖ Economic issues, including the increase in employment opportunities; 	<ul style="list-style-type: none"> ❖ Regular health check-up camp. ❖ Assistance to schools and scholarship to children will be provided.
Occupational Health & Safety	
<ul style="list-style-type: none"> ❖ Exposure to Dust ❖ Noise and Vibration Exposure ❖ Physical Hazards ❖ Respiratory hazards due to Dust exposure 	<ul style="list-style-type: none"> ❖ Provision of rest shelters for mine workers with amenities like drinking water etc. ❖ All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc. ❖ Training of employees for use of safety appliances and first aid in vocational training centre. ❖ Weekly maintenance and testing of all equipment as per manufacturers' guidelines. ❖ Pre placement and Yearly Medical Examination of all workers by a medical Officer ❖ First Aid facility will be provided at the mine site. ❖ 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. ❖ Working of mine as per approved mining plan and environmental plans

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 be 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

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 31st 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 six 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 six proposed and two existing project is well below the permissible limit of Peak Particle Velocity of 8 mm/s.
- ❖ The six proposed projects will allocate Rs. 30,00,000/- towards CER as recommended by SEAC.
- ❖ The six proposed projects will directly provide jobs to about 108 local people.
- ❖ The six proposed projects will plant about 6900 saplings in and around the lease area.
- ❖ The six proposed projects will add 864 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 18 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 Gopanapalli 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. 1962000** as capital cost and recurring cost as **Rs. 1823056** 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. 12035536.**

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, **Thiru. J. Vijayakumar** has engaged **Geo Technical Mining Solutions**, a NABET accredited consultancy for carrying out the EIA study as per the ToR issued.

Address of the consultancy:

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

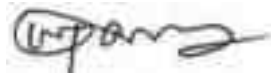
The accredited experts and associated members who were engaged in this EIA study are given below:

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

17.	V. Malavika	FAA	1(a)(i)	NV, SHW	B
Team Members					
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
Abbreviations					
EC	EIA Coordinator	NV	Noise and Vibration		
FAE	Functional Area Expert	SE	Socio Economics		
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation		
TM	Team Member	SC	Soil conservation		
GEO	Geology	RH	Risk assessment and hazard management		
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes		
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes		
LU	Land Use	ISW	Industrial Solid Wastes		
AQ	Meteorology, air quality modelling, and prediction	HW	Hazardous Wastes		
EB	Ecology and bio-diversity	GIS	Geographical Information System		

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

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

Signature : 

Date : 04.03.2023

Name : **Dr. S. Karuppannan**

Designation : EIA Coordinator



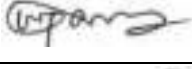

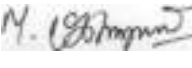




Name of the EIA Consultant Organization : Geo Technical Mining Solutions


Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for Thiru. J. Vijayakumar rough stone quarry project with the extent of 2.00.0 ha situated in the cluster with the extent of 19.50.0 ha in Gopanapalli Village, Hosur Taluk, Krishmagiri District of Tamil Nadu is true and correct to the best of our knowledge.



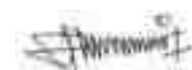
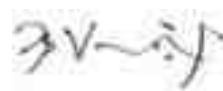


List of Functional Area Experts Engaged in this Project

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"> ○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development. 	Dr.J. Rajarajeshwari	
7	RH	<ul style="list-style-type: none"> ○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety. 	J.N. Manikandan	
8	LU	<ul style="list-style-type: none"> ○ Construction of Land use Map ○ Impact of project on surrounding land use ○ Suggesting post closure sustainable land use and mitigative measures. 	Dr.S. Karuppannan	
			G.Uma Maheswaran	
			Dr.M. Vijay Prabhu	
9	NV	<ul style="list-style-type: none"> ○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP. 	Dr.R. Arun Balaji	
10	AQ	<ul style="list-style-type: none"> ○ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ○ Recommending mitigations measures for EMP 	Dr.R. Arun Balaji	
11	SC	<ul style="list-style-type: none"> ○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr.J. Rajarajeshwari	
			Dr. D.Kalaimurugan	

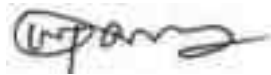
12	SHW	<ul style="list-style-type: none"> ○ Identify source of generation of non-hazardous solid waste and hazardous waste. ○ Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	J.N. Manikandan	
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List of 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"> ○ Site visit with FAE ○ Provide inputs & Assisting FAE for LU and HG 	
2	C. Kumaresan	NV	<ul style="list-style-type: none"> ○ Assistance to FAE in both primary and secondary data collection ○ Assistance in noise prediction modelling 	
3	P. Vellaiyan	HG & GEO	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	
4	S.Vasugi	AQ	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	
5	P. Dhatchayini	AQ	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Assistance to FAE in collection of both primary and secondary data 	
6	V. Malavika	NV, SHW	<ul style="list-style-type: none"> ○ Site visit along with FAE ○ Assistance in report preparation 	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT
ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for **Thiru. J. VijayaKumar** rough stone quarry project with the extent of 2.00.0 ha located within the cluster of 19.50.0 ha in Gopanapalli Village, Hosur Taluk, Krishmagiri District of Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date : 04.03.2023

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No & Issue Date : NABET/EIA/2023/IA0067 & March 30, 2021

Validity : Till 29.12.2023



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,
No.1, Jeevis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr.No.SEIAA-TN/F.No.9593/SEAC/ToR-1334/2022 Dated:10.02.2023

To

Thiru.J.Vijayakumar,
S/o. Jayaram,
D.No.1/41, T. Shoolagunda,
Madakkal Village,
Denkanikottai Taluk,
Krishnagiri District- 635 118.


Sir / Mailam,

Sub: SEIAA, Tamil Nadu – Terms of Reference (ToR) with Public Hearing for the Proposed Rough Stone Quarry lease over an extent of 2.00.0Ha S.F.No.220/1(Part-4), Gopanapalli Village, Hosur Taluk, Krishnagiri District by Thiru.J.Vijayakumar, - 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/406217/2022 dated 12.11.2022.
2. Your application submitted for Terms of Reference dated: 29.11.2022.
3. Minutes of the 346th meeting of SEAC held on 12.01.2023.
4. Minutes of the 591st SEIAA meeting held on 10.02.2023.

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

The proponent, Thiru.J.Vijayakumar has submitted application for Terms of Reference (ToR) on 29.11.2022, in Form-I, Pre- Feasibility report for the Proposed Rough Stone Quarry lease over an


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extent of 2.00.0Ha S.F.No.220/1(Part-4). Gopanapalli Village, Hosur Taluk, Krishnagiri District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone Quarry lease over an extent 2.00.0 Ha (Govt. – Land) at S.F.No.200/1(Part-4) Gopanapalli Village, Hosur Taluk, Krishnagiri District, Tamil Nadu by Thiru.J.Vijayakumar - For Terms of Reference (SLA/TN/MIN/406217/2022 dated 26.09.2022)

The proposal was placed in the 345th SEAC Meeting held on 10.01.2023. The details of the minutes are available in the website (parivesh. nje. in).

The SEAC noted the following:

1. The project proponent, Thiru.J.Vijayakumar has applied for Terms of Reference for the proposed Rough Stone Quarry lease over an extent 2.00.0 Ha (Govt. – Land) at S.F.No.200/1(Part-4) Gopanapalli Village, Hosur Taluk, Krishnagiri 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.
3. As per the precise area communication the lease period is for 10 years. The mining plan is for 5 years. The production for 5 years not to exceed 257243 cu.m of rough stone with an ultimate depth of 58m below ground level (2m Topsoil + 56m Rough stone).

Based on the presentation and details furnished by the project proponent, **SEAC decided to grant 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 structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.
2. The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.
3. The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.
4. The proponent shall furnish a revised EMP budget for entire life/lease of proposed mining.
5. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare

- and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.
6. The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.
 7. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/1 Class mines manager appointed by the proponent.
 8. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
 9. 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.
 10. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD mines.
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.
 - g. If EC and CTO already obtained, the copy of the same shall be submitted.
 - h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
 11. 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).
 12. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,

13. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
21. 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.
22. 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.
 23. 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.
 24. 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.
 25. Impact on local transport infrastructure due to the Project should be indicated.
 26. 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.
 27. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
 28. 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.
 29. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
 30. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.


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32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-1** 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.
33. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall remark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.
34. A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project-specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the

EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.

42. 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.

Discussion by SEIAA and the Remarks:-

The proposal was placed in the 391st Authority meeting held on 10.02.2023. The authority noted that this proposal was placed for appraisal in the 346th meeting of SEAC held on 12.01.2023. 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 conditions in 'Annexure B' of this minute.

1. Details of fencing & plantation for the proposed project site.
2. Details of approved layout/Structures/buildings, reservoir, Canal, High ways, Railway lines, Water Bodies, Reserve Forest, Village Road, Cart track, Stream Courses within /outside the radius of 50m, 100m, 150m,200m, 250m, & 300m of the proposed mining area.0

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The list of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk 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.

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6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers-staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical and chemical features.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.
14. Impact on soil flora & vegetation around the project site.
15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and, if so, transplantation of such vegetations all along the boundary of the proposed mining area shall be committed mentioned in EMP.

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

Forests

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

Water Environment

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

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28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

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

Climate Change

32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

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

EMP

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment

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

Disaster Management Plan


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

Others

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

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


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

- Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
 - 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
 - 15) The vegetation in the RE / 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-] 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

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features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

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

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

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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) Exocutive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing

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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.

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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.
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(1) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take



further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 28th August, 2017.


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Copy to:

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

From
Dr. S.Vediappan, M.Sc.,Ph.d.,
Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

To
Thiru.J.VijayaKumar,
S/o. Jayaram,
D.No.1/41, T.Shoolagunda,
Denkanikottai Taluk,
Krishnagiri District - 635118.

Roc.No.538/2022/Mines Dated:04.07.2022

Sir,

Sub: Mines and Minerals - Rough stone - Krishnagiri District - Hosur Taluk - Gopanapalli Village- Government Paramboke land in S.F.No. 220/1(Part-4) Over an extent of 2.00.0 Hects - Tender Cum Auction conducted - Thiru.J.VijayaKumar declared as highest bidder - Mining Plan approved - Other quarry situated in 500 mtrs radial distance - Details furnished - reg.

Ref:

1. Krishnagiri District, Extraordinary Gazette notification No. 15 & 20, dated 14.03.2022 & 28.03.2022.
2. This Office Letter No.538/2022/Mines dated: 26.04.2022.
3. Draft Mining plan submitted by Thiru.J.VijayaKumar, dated: 27.06.2022
4. This Office Letter No.538/2022/Mines dated: .07.2022

Kind attention is invited to the references cited above.

2. Tender Cum Auction has been conducted on 05.04.2022 for the grant of quarry lease to quarry rough stone in government lands situated in Krishnagiri district including S.F.No. 220/1(Part-4) over an extent of 2.00.0 Hects of Gopanapalli Village, Hosur Taluk.

3. Thiru.J.VijayaKumar has quoted highest lease amount and hence he has been declared as highest bidder for the grant of quarry lease for quarrying Rough stone over an extent of 2.00.0 Hects of government lands in S.F.No. 220/1(Part-4) in Gopanapalli Village, Hosur Taluk, Krishnagiri District for a period of 10 year under the provisions of Rule 8 of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, precise area communication has been issued to the applicant vide letter dated: 26.04.2022 with a direction to submit approved mining plan and Environment Clearance.

4. Accordingly, Thiru.J.VijayaKumar had submitted 03 copies of draft Mining Plan vide letter dated: 28.06.2022 and the same has been approved vide this office letter dated: 04.07.2022. In addition to that the details of other quarries situated within 500 mts radial distance from the subject quarry is furnished as follows.

I. Details of Existing quarries.

Sl No	Name of the lessee	Village & Taluk	Mineral	S.F No.	Extent in Het	GO No.& Date	Lease period.
1.	P.Nagarajareddy, S/o. Pappireddy, D.No. 2/32, Balageri Village, Mudhuganapalli post, Hosur, Krishnagiri.	Hosapuram Village, Denkanikottai Taluk	Rough Stone	457 (Part-1)	2.00.0	Rc.No 111/2016/ Mines Dated: 08.08.2016	17.08.2016 to 16.08.2026.
2.	P.Venkata reddy,S/o. Pedha Obui Reddy, 3/213, Periya Kodipalli Village, Kempat, Muttur Post, Denkanikottai, Krishnagiri.	Hosapuram Village, Denkanikottai Taluk	Rough Stone	457 (Part-2)	3.70.0	Rc.No. 112/2016/ Mines Dated: 26.02.2020	26.02.2020 to 25.02.2030.


II. Details of abandoned/Old quarries.

Sl. No.	Name of the lessee	Village	S.F No.	Extent in Het	GO No. & Date	Lease period.
Nil						

III. Details of Proposed quarries

Sl No	Name of the lessee	Village & Taluk	Mineral	S.F No.	Extent in Het	GO No.& Date	Lease period.
1.	Thiru.Vijaya Kumar	Gopanapalli Village, Hosur Taluk	Rough Stone	220/1 (part -4)	2.00.0	Rc.No. 538/2022/ Mines Dated: 26.04.2022	Instant Proposal
2.	Thiru.S.Raghu	Gopanapalli Village, Hosur Taluk	Rough Stone	381 (Part-1)	1.30.0	Rc.No. 539/2022/ Mines dated: 04.05.2022	Precise area given

3.	M/s. Natural Stone	Gopanapalli Village, Hosur Taluk	Rough Stone	220/1 (part -1)	3.00.0	Rc.No. 535/2022/ Mines Dated: 21.04.2022	Precise area given
4.	Thiru.Nithin Reddy	Gopanapalli Village, Hosur Taluk	Rough Stone	220/1 (part -2)	3.00.0	Rc.No. 536/2022/ Mines Dated: 05.05.2022	Precise area given
5.	Thiru. Sri Krish	Gopanapalli Village, Hosur Taluk	Rough Stone	220/1 (part -3)	3.00.0	Rc.No. 537/2022/ Mines Dated: 21.04.2022	Precise area given
6.	Thiru. Dhivakar	Gopanapalli Village, Hosur Taluk	Rough Stone	381/1(part -2)	1.50.0	Rc.No. 540/2022/ Mines Dated: 22.04.2022	Precise area given


Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

Copy to :-


The Chairman,
Tamil Nadu State Environment
Impact Assessment Authority,
3rd Floor, Panakal Maligai,
No. 1 Jeenes Road, Saidapet, Chennai -15.


04/04/22

MINING PLAN



FOR

GRANT OF ROUGH STONE QUARRY LEASE IN
GOVERNMENT PORAMBOKE LAND

TOTAL LEASE GRANTED PERIOD 10 YEARS

PERIOD OF MINING 10 YEARS

(Prepared Under Rule 8(6)(b) Tamil Nadu Minor Mineral Concession Rules, 1959 & As
Per Amendment Under Rule 41 & 42)

LOCATION OF THE APPLIED AREA

EXTENT : 2.00.00 HA.
S. F. No. : 220/1(PART-4).
VILLAGE : GOPANAPALLI.
TALUK : HOSUR.
DISTRICT : KRISHNAGIRI.
STATE : TAMIL NADU.

APPLICANT

THIRU. J. VIJAYAKUMAR,
S/O. JAYARAM,
D.No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

PREPARED BY

S.MATHAN PRAKASH,M.SC.,M.PHIL.,
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OTTAPIDARAM TALUK,
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ANNEXURES

Sl. No.	Description	Annexure No.
1.	Precise Area Communication letter	I
2.	Copy of Krishnagiri District Gazette	II
3.	Copy of DFO letter	- III
4.	Copy of FMB & Combined Sketch	IV- A & B
5.	Copy of Adangal & 'A' Register	V
6.	Copy of Applicant ID Proof	VI
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LIST OF PLATES

Sl. No.	Description	Plate No.	Scale
1.	Location Plan	I	Not to Scale
2.	Route Map	IA	Not to Scale
3.	Topo Sheet Map of The lease area	IB	1:50,000
4.	Satellite Image (500m Radius)	IC	1:5000
5.	Mine Lease Plan	II	1:1000
6.	Surface & Geological Plan	III	1:1000
7.	Geological Sections	III-A	1:1000
8.	Year Wise Development and Production Plan and Sections (1 st Five (I-V)Years)	IV-A & A1	1:1000
9.	Year Wise Development and Production Plan and Sections(2 nd Five (VI-X)Years)	IV- B & B1	1:1000
10.	Mine Layout, Land Use Pattern and Afforestation Plan	V	1:1000
11.	Environment Plan	VI	1:5000
12.	Conceptual/Final Mine Closure Plan	VII	1:1000
13.	Conceptual/Final Mine Closure Sections	VII- A	1:1000
14.	Conceptual Plan Common Boundary	VIII	1:1000
15.	Conceptual Sections Common Boundary	VIII- A	1:1000
16.	Progressive Mine Closure Plan	IX	1:1000

J. Vijayakumar,
S/o. Jayaram
D.No.1/41, T.Shoolagunda,
Madakkal Village,
Denkanikottai Taluk,
Krishnagiri District - 635 118.



CONSENT LETTER FROM THE APPLICANT

I hereby give my consent for preparing the Mining Plan in respect of **Rough Stone** quarry over an extent of **2.00.00 Hectares** of **Government Poramboke Land** in **S.F.No.220/1(Part-4)** of **Gopanapalli Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State** has been prepared by **Shri. S. Mathan Prakash, M.Sc., M.Phil.,** Recognized Qualified Person.

I request the Deputy Director, Department of Geology and Mining, KRISHNAGIRI District to make further correspondence regarding the Mining Plan with the said Recognized Qualified Person on this following address.

S.MATHAN PRAKASH, M.Sc., M.Phil.,

RQP/CNN/270/2016/A

No.2/274, East Street,

Kulasekaranallur Post,

Ottapidaram Taluk,

Thoothukudi District - 628 401.

E-Mail: geomathanprakash@gmail.com

Cell: 86680-20217

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

Place: KRISHNAGIRI

Date:


(J.VIJAYAKUMAR)
Signature of the Applicant

J. Vijayakumar,

S/o. Jayaram

D.No.1/41, T.Shoolagunda,

Madakkal Village,

Denkanikottai Taluk,

Krishnagiri District - 635 118.



DECLARATION

I hereby declare that the Mining Plan in respect of **Rough Stone** quarry over an extent of **2.00.00 Hectares** of **Government Poramboke Land** in **S.F.No.220/1(Part-4)** of **Gopanapalli Village, Hosur Taluk, Krishnagiri District,** and Tamil Nadu State has been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.


(J.VIJAYAKUMAR)
Signature of the Applicant

Place: KRISHNAGIRI

Date:

S.MATHAN PRAKASH, M.Sc.,M.Phil.,
RQP/CNN/270/2016/A

No.2/274
Street,
Kulasekaranpur Post
Ottapidaram Taluk
Thoothukudi - 628
Cell: 86680



CERTIFICATE

This is to certify that, the provisions of Minor Minerals Conservation and Development Rules, 2010 (MMCDR) have been observed in the Mining Plan for the grant of **Rough Stone** quarry lease over an extent of **2.00.00 Hectares** of **Government Poramboke Land** in **S.F.No.220/1(Part-4)** of **Gopanapalli Village, Hosur Taluk, Krishnagiri District** District, Tamil Nadu State obtained by **Thiru. J. Vijayakumar**, for applied quarry lease.

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.

Certified

Signature of Recognized Qualified Person.

S. MATHAN PRAKASH, M.Sc., M.Phil.,
RQP/CNN/270/2016/A

Place: Thoothukudi

Date:

S.MATHAN PRAKASH, M.Sc.,M.Phil.,
RQP/CNN/270/2016/A

No.2/274, East Street,
Kulasekaranapuram Post,
Ottapidaram Taluk,
Thoothukudi - 628 401.
Cell: 86680-20216



CERTIFICATE

This is to certify that during preparation of Mining Plan for **Rough Stone** quarry over an extent **2.00.00 Hectares of Government Poramboke Land** in **S.F.No.220/1(Part-4)** of **Gopanapalli Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State** for **Thiru. J. Vijayakumar**, covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Certified

Signature of Recognized Qualified Person.

S. MATHAN PRAKASH, M.Sc., M.Phil.,
RQP/CNN/270/2016/A

Place: Thoothukudi

Date:

MINING PLAN FOR MINOR MINERALS ✓
ROUGH STONE QUARRY
TOTAL LEASE GRANTED PERIOD 10 YEARS
PROPOSED PERIOD OF MINING 10 YEARS



Over an extent of 2.00.00 Hectares of Government Poramboke Land
S.F.No.220/1(Part-4) of Gopanapalli Village, Hosur Taluk, Krishnagiri District,
Tamilnadu State.

(Prepared Under Rule 8(6)(b) Tamil Nadu Minor Mineral Concession Rules, 1959 &
As Per Amendment Under Rule 41 & 42)

1.0 INTRODUCTION AND EXECUTIVE SUMMARY:

1. **Thiru. J. Vijayakumar**, S/o. Jayaram, residing at D.No.1/41, T.Shoolagunda, Madakkal Village, Denkanikottai Taluk, Krishnagiri- 635 118 has applied for the grant of quarry lease to quarry **Rough Stone** over an extent of **2.00.00 Hectares** of **Government Poramboke Land** in **S.F.No.220/1(Part-4)** of **Gopanapalli Village, Hosur Taluk, Krishnagiri District** of Tamil Nadu State for a period of Ten Years Under tender cum Auction.
2. The Applicant has been the Successful **HIGHEST BIDDER** for an **Amount Rs.2,10,00,000/-** in a tender cum Auction conducted by the Government of Tamilnadu notified vide Gazette No.15 dated 14.03.2022 and Precise area had been given for the proposed grant of Rough Stone quarry lease to **Thiru. J. Vijayakumar** over an extent of 2.00.00 hectares in Government Poramboke land in S.F.No.220/1(Part-4) of Gopanapalli Village, Hosur Taluk, Krishnagiri District of Tamil Nadu State for a period of **Ten Years** Vide Letter **Re. No.538/2022/Mines dated 26.04.2022** and directed to submit the approved Mining Plan and Environmental Clearance certificate from the State Environment Impact Assessment Authority (SEIAA) for the grant of quarry lease for the applied area.
3. Accordingly, Mining Plan is prepared under Rule 8(6)(b) Tamil Nadu Minor Mineral Concession Rules, 1959 & As per Amendment under Rule 41 & 42 by incorporating the conditions imposed in the precise area communication letter and by incorporating all the details proposed in the letter to obtain Environmental clearance from State Environment Impact Assessment Authority.
4. In the above circumstances the mining plan has been prepared for the Applicant **Thiru. J. VIJAYAKUMAR** for approval and subsequent submission of Form-I and pre Feasibility report to obtain environmental clearance from the SEIAA of Tamil Nadu.

5. This Mining Plan is prepared for the applied Rough Stone Quarry for the period of Ten years by considering the TNMMCR 1959 and as per the EIA Notification 2006 and subsequent amendments and judgements.

6. The Geological Reserves is estimated as $1009267M^3$ and Mineable Reserves is estimated as $396263M^3$ of **Rough Stone** after leaving necessary distance from the lease boundary as indicated in the precise area communication letter and relevant mining laws in force.

7. The proposed production scheduled for the Ten years is estimated as $396263M^3$ (for the First five (I-V) years- $257243M^3$ & for the Next five (VI-X) years- $139020M^3$) of **Rough Stone**.

Proposed average annual production of Rough stone $39626M^3$.

8. Estimated Life of the Quarry

Total Mineable ROM	= $396263 M^3$
Recoverable Reserves @ 100%	= $396263 M^3$
Average production per year	= $39626 M^3$
Estimated Life of the Quarry	= $396263 / 39626 = 10.0$ years

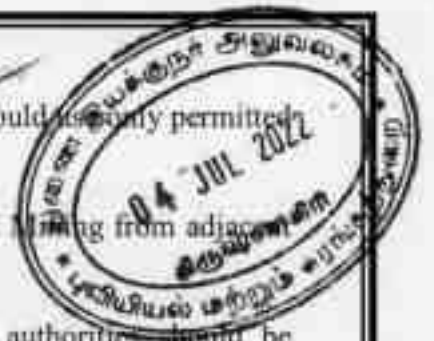
Life = 10.0 years

The Life of mine may change depend upon the prospecting results, rate of production and the extent of mechanization done by the applicant in near future.

9. Environmental measures to be adopted shall be,

- i) Dust Control at source while drilling and Proposed Control Blasting.
- ii) Dust suppression at loading point and transport haul roads.
- iii) Noise Control in Proposed Control Blasting, control of fly rock missiles and vibration by doing peak particle velocity within standard as prescribed by the DGMS and MoEF.
- iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
- vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.
- vii) Emission test of vehicles should be in stack to maintain minimum emission level of flue gases.

- viii) Noise level should not exceed 80db and the vehicles should be only permitted to use Air Horn while on road near residential areas.
- ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhered to.
- x) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.



2.0 EXECUTIVE SUMMARY:

a.	Name of the Village	: Gopaanapalli
b.	Name of the Panchayat / Union	: Gopanapalli / Hosur
c.	The proposed total Mineable Reserves	: 396263M³
d.	The proposed quantity of reserves (level of production) for Ten Years to be mined is (Recoverable reserves)	: 396263M³ (for the First five (I-V)years- 257243M³ & for the Next five (VI-X)years- 139020M³ .)
e.	Total extent of the area	: 2.00,00 Ha.
f.	Proposed Period of mining	: Ten years
g.	Proposed Depth of mining	: Mining Reserves calculated upto 58m - Top Soil 2m + Rough stone 56m . (Surface Ground Level Above height is 11m and Surface Ground Level Below Depth is 47m).
h.	Existing Pit Dimension	Nil
i.	Average production per year	: 39626M³
j.	Method of mining / level of mechanization	: Opencast, Semi-mechanized Mining with a bench height of 7m and bench width of 5m is proposed.
k.	Types of Machineries used in the quarry	: i) Compressor with jack hammer, ii) Excavator of 0.90Cbm bucket Capacity.
l.	Cost of the Project	
	a. Fixed Cost	: Rs.2,12,20,000/-
	b. Operational Cost	: Rs.30,00,000/-
	c. EMP Cost	: Rs.3,50,000/-
m.	The area applied for lease is bounded by four corners and the coordinates are	: Toposheet No. 57 – H/14

Latitude	: 12° 37' 51.83"N to 12° 37' 49.10"N
Longitude	: 77° 48' 45.92"E to 77° 48' 40.11"E
North East	: 12° 37' 51.83° N 77° 48' 45.92"E
South East	: 12° 37' 47.55° N 77° 48' 42.64"E
North West	: 12° 37' 54.26° N 77° 48' 40.80"E
South West	: 12° 37' 49.10° N 77° 48' 40.11"E



3.0 GENERAL INFORMATION:

3.1	a.	Name of the Applicant	: Thiru. J. Vijayakumar,
	b.	Address of the Applicant with phone No and e-mail id if any	: Thiru. J. Vijayakumar, S/o. Jayaram D.No.1/41, T.Shoolagunda, Madakkal Village, Denkanikottai Taluk, Krishnagiri District - 635 118.
	c.	Status of the Applicant	: Individual
3.2	a.	Mineral Which the applicant intends to mine	: Rough Stone
	b.	Precise area communication letter No.	: Re. No.538/2022/Mines dated 26.04.2022
	c.	Period of permission	: 10 Years
	d.	Name and Address of the Recognized Qualified Person preparing the Mining Plan	: S.Mathan Prakash, M.Sc., M.Phil., RQP/CNN/270/2016/A No.2/274, East Street, Kulasekaranallur Post, Ottapidaram Taluk, Thoothukudi District - 628 401. Email: geomathanraj@gmail.com
	e.	RQP Regn. No.	: RQP/CNN/270/2016/A Valid up to 09.02.2026.

4.0 LOCATION:

a. Details of the Area:

State	District	Panchayat / Union	Taluk	Village	S.F.No.	Extent in Ha.
Tamilnadu	Krishnagiri	Gopanapalli/ /Hosur	Hosur	Gopanapalli	230/1 (Part-4)	2.00.0
TOTAL =						2.00.0

b.	Classification of the Area (Ryotwari / poramboke / others)	:	It is a Government Poramboke Land, which is not fit for vegetation/cultivation.
c.	Ownership / Occupancy of the Applied Lease area (Surface: rights)	:	It is a Government Poramboke land. The applicant had been given precise area for the proposed grant of Rough Stone Quarry Lease.
d.	Toposheet No. with Latitude and Longitude	:	Toposheet No. 57 – H/14 : 12° 37' 51.83"N to 12° 37' 49.10"N : 77° 48' 45.92"E to 77° 48' 40.11"E
e.	Existence of Public Road / Railway line if any nearby the area and approximate distance	:	Krishnagiri - Shoolagiri = 28.0 Kms Shoolagiri - Kelamangalam = 18.0 Kms Quarry site is located in Northwestern side at a distance of 5.5 km. from Kelamangalam village.

PART - A

5.0 GEOLOGY AND MINERAL RESERVES

5.1	a.	Topography: 1. The area applied for quarry lease is almost hilly terrain area sloping towards Eastern side covered with Rough Stone which does not sustain any type of vegetation. The altitude of the area is Maximum 866m and Minimum 850m above MSL. 2. No major river is found nearby the lease area. 3. Water table is noticed at a depth of 88m from the below surface in the adjacent open wells and bore wells of the area. 4. Temperature of the area is reported to be 18°C to a maximum of 38°C during summer. 5. Rainfall of this area is about 800mm to 900 mm during the monsoons in a year.
	b.	Infrastructures nearby the applied Lease area. 1. Post Office : Mugalur – 1.7 Kms 2. Police Station : Kelamangalam – 6.7 Kms 3. G.H : Hosur – 15.0 Kms 4. Fire service : Hosur – 22.0 Kms 5. Railway Station : Hosur – 14.0 Kms



6. School	:	Nagondapalli	- 4.0 Kms
7. Airport	:	Bangalore	- 88.0 Kms
8. Seaport	:	Chennai	- 316.0 Kms

c. Regional Geology : **KRISHNAGIRI** District is underlined by the whole range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the District are Archaean rocks like Gneisses, Granites, Charnockite basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite. The generalized stratigraphic succession of the geological formations met within this District is as follows.

	Age	Rock Formation
1.	Recent to Sub recent	Soil, Alluvium
2.	Archaean	Granites, basic granulites, Peninsular Gneiss, Calc Gneiss and Charnockites

d. Geology of the Lease Area

1. The area is mainly composed of Archaean crystalline metamorphic complex.
2. The rock type noticed in the area for lease is **Granite Gneiss** which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Granite Gneiss is part of peninsular Gneisses, a high grade metamorphic rock.
3. The general trend of formation is N25°W - S25°E and dip towards NE-70°.

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

	Age	Rock Formation
1.	Recent to Sub recent	Soil, Alluvium
2.	Archaean	Charnockites
3.	Archaean	Peninsular Gneiss, and Calc Gneiss

5.2 Details of Exploration already carried out if any

Since the **Rough Stone** is seen from the Surface, further exploration is needed. However, the area was personally examined by the Geologist who prepared the Mining Plan.



5.3 a. Already excavated pit dimensions

Nil

b. **GEOLOGICAL RESERVES:**
Top Soil (Gravel):
 The Thickness of Top soil in this area is 2.0m and the total volume of topsoil (gravel) will be 39878m³.
Rough Stone :
 The Geological Reserve is estimated as 1009267m³ respectively, at the rate of 100% Recovery upto the permissible depth. The Geological reserve of Rough stone and Top soil(Gravel) is calculated upto a depth of 58m(2m top soil + 56m Rough Stone). Surface Ground Level Above height is 11m and Surface Ground Level Below depth is 47m.

GEOLOGICAL RESERVES							
Section	Bench	L (m)	W (m)	D (m)	Volume in (Cu.m.)	Recoverable Reserve in Cu.m(100%)	Topsoil (Gravel) in Cu.m.
XY-AB	I	157	127	2			39878
	II	72	64	7	32256	32256	
	III	157	127	7	139573	139573	
	IV	157	127	7	139573	139573	
	V	157	127	7	139573	139573	
	VI	157	127	7	139573	139573	
	VII	157	127	7	139573	139573	
	VIII	157	127	7	139573	139573	
	IX	157	127	7	139573	139573	
Total=					1009267	1009267	39878



c. **MINEABLE RESERVES:**

The Mineable reserves are calculated by deducting 7.5m & 1.0m safety bench and Bench Loss. In this regard, since the adjacent area also to be under new lease area necessary action will be taken to get permission from DGMS in future to comply regulation under (111)3 of MMR.1961.

Top Soil (Gravel):

The Thickness of Top soil in this area is 2.0m and the total volume of topsoil(gravel) will be 29960m³.

Rough Stone :

The mineable reserves and the recoverable reserves are 396263m³ respectively, at the rate of 100% Recovery upto the permissible depth. The Mineable reserve of Rough stone and Top soil(Gravel) is calculated upto a depth of 58m(2m top soil + 56m Rough Stone). Surface Ground Level Above is 11m and Surface Ground Level Below is 47m.

MINEABLE RESERVES							
Section	Bench	L (m)	W (m)	D (m)	Volume in (Cu.m.)	Recoverable Reserve in Cu.m(100%)	Topsoil (Gravel) in Cu.m.
XY-AB	I	140	107	2			29960
	II	63	53	7	23373	23373	
	III	133	100	7	93100	93100	
	IV	123	90	7	77490	77490	
	V	113	80	7	63280	63280	
	VI	103	70	7	50470	50470	
	VII	93	60	7	39060	39060	
	VIII	83	50	7	29050	29050	
	IX	73	40	7	20440	20440	
Total=					396263	396263	29960

6.0 MINING:

6.1	Method of Mining	:	<ol style="list-style-type: none"> Opencast method of semi mechanized mining is adopted to extract Rough Stone. Machineries like Tractor mounted compressor attached with Jack hammers is being used to drilling and Proposed Control Blasting. Excavators are operated for quarrying of Rough Stone and Tippers / Lorries are used for transportation of Rough Stone to the destination.
6.2	Mode of Working	:	It is a semi mechanized quarrying operation using shot hole drilling with the help of compressor and jack hammers, smooth blasting. Rough Stone are removed using Hydraulic excavator and loaded directly to the tippers and transported to the nearby end users.



6.3	Proposed bench height & Width	: Bench height = 7mts. Bench width = 5mts.
6.4	Details of Overburden / Mineral Production proposed for Ten year	: Top Soil(Gravel)/ Overburden production details follows: The entire lease area is covered 2.0m of Top Soil(Gravel) and the estimated quantity of Top soil(Gravel) is 29960m ³ . Top Soil(Gravel) formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government.

Year wise reserves calculations :

Rough stone production First Five Years details as follows:

The proposed rate of production of **Rough Stone** is estimated as 257243m³ for First Five (I-V) years. The average proposed rate of production of **Rough Stone** is about 51449m³ per year at the rate of 100% recovery upto the permissible depth. Reserves Calculated upto 30m (2m top soil (Gravel) + 28m Rough Stone). Surface Ground Level Above Height is 11m and Surface Ground Level Below Depth is 19m. (Refer Drawing Plate No.IV-A1-Year wise Sections).

Proposed Production of Ten Years.

YEARWISE DEVELOPMENT AND PRODUCTION (First Five(I-V)Years)								
YEAR	Section	Bench	L (m)	W (m)	D (m)	Volume in (m ³)	Recoverable Reserve in m ³ (100%)	Top Soil in m ³
I-YEAR	XY-AB	I	64	107	2			13696
		II	63	53	7	23373	23373	
		III	58	100	7	40600	40600	
TOTAL						63973	63973	13696
II-YEAR	XY-AB	I	76	107	2			16264
		III	75	100	7	52500	52500	
TOTAL						52500	52500	16264
III-YEAR	XY-AB	IV	58	90	7	36540	36540	
TOTAL						36540	36540	
IV-YEAR	XY-AB	IV	65	90	7	40950	40950	
TOTAL						40950	40950	
V-YEAR	XY-AB	V	113	80	7	63280	63280	
TOTAL						63280	63280	
Total (I-5 years) =						257243	257243	29960

Rough stone production Second Five Years details as follows:

The proposed rate of production of **Rough Stone** is estimated as **139020m³** for Second Five (VI-X) years. The average proposed rate of production of **Rough Stone** is about **27804m³** per year at the rate of 100% recovery upto the permissible **leath. Reserves** Calculated upto **28m** Rough Stone). (Refer Drawing Plate No.IV-B1-Year wise Sections).

YEARWISE DEVELOPMENT AND PRODUCTION (Second Five (VI-X) Years)							
YEAR	Section	Bench	L (m)	W (m)	D (m)	Volume in (m ³)	Recoverable Reserve in m ³ (100%)
VI-YEAR	XY-AB	VI	51	70	7	24990	24990
VII-YEAR		VI	52	70	7	25480	25480
VIII-YEAR		VII	93	60	7	39060	39060
IX-YEAR		VIII	83	50	7	29050	29050
X-YEAR		IX	73	40	7	20440	20440
TOTAL						139020	139020
Total (VI-X years)						= 139020	139020
Grand Total (I-X Years)						= 396263	396263

6.5	a.	Mining	:	Drilling of shot holes will be carried out using compressor and jack hammer. Depth of holes shall be 1 to 2m bench height and spacing shall be 0.75m and burden shall be 0.60m from the preface. Details of drilling equipments are given below.														
				<table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Dia of hole</th> <th>Size / Capacity</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Jack Hammer</td> <td>4</td> <td>25.5 mm</td> <td>Hand held</td> <td>Atlas copco</td> <td>Diesel</td> <td>60</td> </tr> </tbody> </table>	Type	Nos	Dia of hole	Size / Capacity	Make	Motive power	H.P.	Jack Hammer	4	25.5 mm	Hand held	Atlas copco	Diesel	60
Type	Nos	Dia of hole	Size / Capacity	Make	Motive power	H.P.												
Jack Hammer	4	25.5 mm	Hand held	Atlas copco	Diesel	60												
	b.	Loading	:	Loading of waste and rough stone shall be carried out by 10 tonne capacity tippers from the working place periodically. Details of loading equipment are given as under.														
				<table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Bucket Capacity (MT)</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Hydraulic excavator</td> <td>1</td> <td>1.2 M³</td> <td>L&T or Ex200</td> <td>Diesel</td> <td>120</td> </tr> </tbody> </table>	Type	Nos	Bucket Capacity (MT)	Make	Motive power	H.P.	Hydraulic excavator	1	1.2 M ³	L&T or Ex200	Diesel	120		
Type	Nos	Bucket Capacity (MT)	Make	Motive power	H.P.													
Hydraulic excavator	1	1.2 M ³	L&T or Ex200	Diesel	120													
	c.	Transportation	:	Transport of raw materials and waste shall be done by Tipper of 10 M.T. capacity														
				<table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Size / Capacity</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Tipper</td> <td>2</td> <td>10 M.T.</td> <td>Ashok Leyland</td> <td>Diesel</td> <td>110</td> </tr> </tbody> </table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	2	10 M.T.	Ashok Leyland	Diesel	110		
Type	Nos	Size / Capacity	Make	Motive power	H.P.													
Tipper	2	10 M.T.	Ashok Leyland	Diesel	110													



d.	<p>Energy:</p> <p>Electricity for mines and lights only at nights (working is restricted on days between 9Am to 5Pm). Diesel (HSD) will be used for quarrying. 321998 litres of HSD will be used for the entire project life. Diesel will be brought from nearby diesel pumps. No power is required for the project. Lightings on the night will be taken from nearby electric poles after obtaining permission from concerned authorities.</p> <p>For Top soil(Gravel):</p> <p>Per hour excavator will consume = 10 litres / hour Per hour excavator will excavate = 60m³ of Top soil For 29960m³ = 29960/60 = 499 hours Diesel consumption-499 working hours: = 499 x 10 litres Total diesel consumption = 4990 litres of HSD will be utilized for Top Soil(Gravel)</p> <p>For Rough stone:</p> <p>Per hour excavator will consume = 16 litres / hour Per hour excavator will excavate = 20m³ of rough stone For 396263m³ = 396263/20 = 19813 hours Diesel consume 19813 working hours = 19813 hours x 16 litres Total diesel consumption = 317008 litres of HSD will be utilized for Rough Stone.</p> <p>Total diesel consumption is around (Top soil (Gravel) 4990 Litres + Rough Stone 317008 Litres) = 321998 litres of HSD for the entire period of life.</p>
6.6	<p>Disposal of Overburden : The estimated quantity of Top soil(Gravel) is 29960m³. Top Soil(Gravel) formation will be removed and transported to the needy end user, only after obtaining permission and paying necessary seigniorage fees to the Government.</p>
6.7	<p>Brief Note on Conceptual Mining Plan for the entire lease period : Conceptual Mining Plan is prepared with an object of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, etc., Average Ultimate Pit dimension is given as Under,</p>

ULTIMATE PIT DIMENSIONS

140.0m(L) X 107.0m(W) X 10.0m(D)

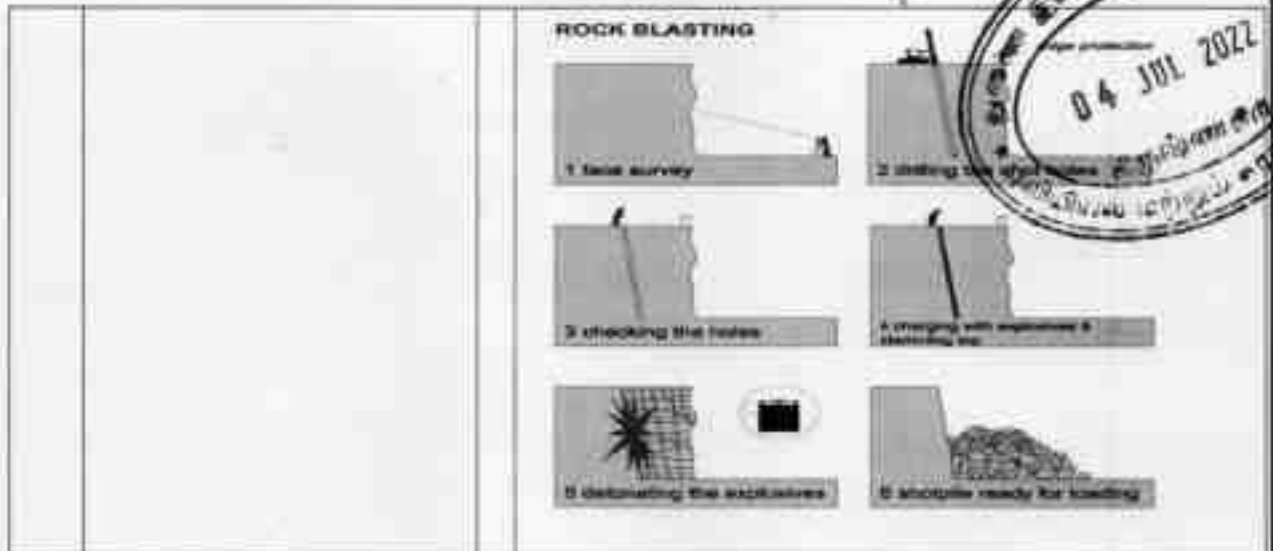


Ultimate pit size is designed based on various practical factors such as the environmental impact, mining, safety zones, permissible areas etc.

Afforestation has been proposed on the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.

7.0 BLASTING:

7.1	Proposed Control Blasting Pattern	<p>The massive formation shall be broken into pieces of portable size by drilling and Proposed Control Blasting using jack hammers and shot hole Blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 tonnes per K.g of explosives.</p> <p>Proposed Control Blasting parameters are as follows.</p> <table border="1"> <tr> <td>Diameter of the hole</td> <td>: 32-36 mm</td> </tr> <tr> <td>Spacing</td> <td>: 60 Cms</td> </tr> <tr> <td>Depth</td> <td>: 1 to 1.5m</td> </tr> <tr> <td>Charge / Hole</td> <td>: D.Cord with water or 70 gms of gun powder or Gelatine.</td> </tr> <tr> <td>Pattern of hole</td> <td>: Zig Zag</td> </tr> <tr> <td>Inclination of hole</td> <td>: 70° from the horizontal.</td> </tr> <tr> <td>Quantity of rock broken</td> <td>: 0.45 MT x 2.6 = 1.17 MT</td> </tr> <tr> <td>Control Blasting efficiency @ 90%</td> <td>: 1.17 x 90% = 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>: 132.08M³.</td> </tr> </table>	Diameter of the hole	: 32-36 mm	Spacing	: 60 Cms	Depth	: 1 to 1.5m	Charge / Hole	: D.Cord with water or 70 gms of gun powder or Gelatine.	Pattern of hole	: Zig Zag	Inclination of hole	: 70° from the horizontal.	Quantity of rock broken	: 0.45 MT x 2.6 = 1.17 MT	Control Blasting efficiency @ 90%	: 1.17 x 90% = 1.05MT / hole	Charge per hole	: 140 gms of 25mm dia cartridge	Quantity of rock broken per day	: 132.08M ³ .
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7.2 Types of Explosives : Following explosives are recommended for efficient Proposed Control Blasting with safe practice.

S. No	Description	Class / Division	Type	Size
1.	Slurry	Class - 3	Nitro Compound	25 x 200
2.	Detonators	Class - 3	Ordinary and elec (OD & ED)	6.5 x 32
3.	Safety fuse	Class - 6	Blue sump fuse coils of 10mts each	

7.3 Measures proposed to minimize ground vibration due to Proposed Control Blasting

The following steps shall be adopted to control ground vibration due to Proposed Control Blasting.

1. The minimum recommended delay time of 8ms was introduced to minimize ground vibration to avoid constructive interference of blast vibration waves and hence its impact or amplitude.
2. In case of electronic detonators, which are inherently much more accurate delays (+/- 0.2 milliseconds delay) to minimize the ground vibration.
3. Use of Ammonium nitrate fuel oil mixture for shot holes may be avoided because which cause for high fly of rocks in view critical diameter problem. Only high strength explosives like slurry will be used in the form of cartridge.



		<p>4. Charge per hole should not exceed the powder factor designed for each hole. Based on the quantum of Proposed Control Blasting, strength of rocks, fracture pattern etc.</p>
7.4	<p>Storage of Explosives and safety measures to be taken while Proposed Control Blasting.</p>	<ol style="list-style-type: none"> 1. The Applicant stores the explosives as per the Indian Explosives Act, 1958. 2. The explosives to be used in mines being a small quantity, the District collector may be approached to keep the stocks not exceeding 5kgs at time or any other quantity permitted by the concerned authorities in a portable magazine of S & B types. 3. An authorized explosive agency is engaged to carry out blasting. 4. The blasting time in a day is between 5 PM to 6 PM. 5. First Aid Box is kept ready at all the time. 6. Necessary precautionary announcement is being carried out before the blasting operation.

8.0 MINE DRAINAGE:

8.1	<p>Depth of Water table</p>	<p>The ground water table is reported as 88m below ground level in nearby open wells and bore wells of this area. Mining reserves calculated taken upto 58m (Surface Ground Level Above Height -11m & Surface Ground Level Below Depth -47m). Now, proposed quarry depth is above the water table. Hence, quarrying may not affect the ground water.</p>
8.2	<p>Arrangement and Places where the mine water is finally proposed to be discharged</p>	<p>The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 lpm and it shall be pumped out periodically by a stand by diesel</p>

	powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any dangerous things.
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9.0 OTHER PERMANENT STRUCTURES:

9.1	Habitations / Village	:	There are no villages within a radius of 500m. The nearest habitations with the population is given as under																				
			<table border="1"> <thead> <tr> <th>Direction</th> <th>Village</th> <th>Distance in Kms</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Goolisandram</td> <td>1.0kms</td> <td>185</td> </tr> <tr> <td>East</td> <td>Pothasandhira</td> <td>2.5kms</td> <td>250</td> </tr> <tr> <td>South</td> <td>Nagappan Agraharam</td> <td>1.5kms</td> <td>370</td> </tr> <tr> <td>West</td> <td>Agraharam</td> <td>3.0kms</td> <td>310</td> </tr> </tbody> </table>	Direction	Village	Distance in Kms	Population	North	Goolisandram	1.0kms	185	East	Pothasandhira	2.5kms	250	South	Nagappan Agraharam	1.5kms	370	West	Agraharam	3.0kms	310
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9.2	Power lines (HT/LT)	:	No power line is located in the lease area.																				
9.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	:	There is No Water bodies (River, Pond, Lake, Odai, Channel etc) located within a radius of 500m.																				
9.4	Archeological / Historical Monuments	:	There are no Archeological / Historical Monuments within a radius of 500m.																				
9.5	Road (NH, SH, Village Road etc)	:	Krishnagiri - Shoolagiri = 28.0 Kms Shoolagiri - Kelamangalam = 18.0 Kms Quarry site is located in Northwestern side at a distance of 5.5 km. from Kelamangalam village.																				
9.6	Places of Worship	:	There are no Places of Worship within a radius of 500m.																				
9.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	:	Distance between Reserve Forest Sanamavu and the applied area = 6.3kms Distance from Cauvery North Wild life Sanctuary, Udedurgam = 12.7kms.																				

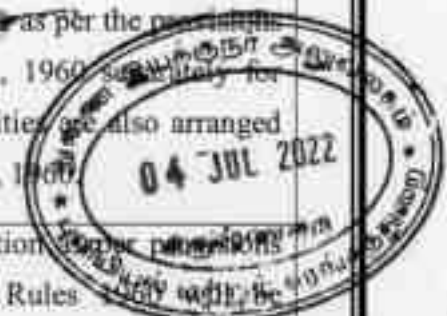
9.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	:	Cauvery North Wild life Sanctuary, Udedurgam located within the distance of about 12.7 kms from the site
9.9	Any Other Structures	:	Nil



10.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES:

10.1	Employment Potential (Management & Supervisory personal)	:	<p>1. As per Mines safety under the provisions of MMR, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the workers directly under his control and supervision.</p> <p>2. The following man power is proposed for quarrying Rough Stone during the Ten years period to achieve the proposed production to the provisions of the Government norms.</p> <table border="1"> <tr> <td>1.</td> <td>Skilled</td> <td>Operator</td> <td>2 No.</td> </tr> <tr> <td></td> <td></td> <td>Mechanic</td> <td>1 No.</td> </tr> <tr> <td></td> <td></td> <td>Blaster/Mat</td> <td>1 No.</td> </tr> <tr> <td>2.</td> <td>Semi - skilled</td> <td>Driver</td> <td>2 Nos</td> </tr> <tr> <td>3.</td> <td>Unskilled</td> <td>Musdoor / Labours</td> <td>5 Nos</td> </tr> <tr> <td></td> <td></td> <td>Cleaners</td> <td>3Nos</td> </tr> <tr> <td></td> <td></td> <td>Office Boy</td> <td>1No</td> </tr> <tr> <td>4.</td> <td>Management & Supervisory staff</td> <td></td> <td>3No.</td> </tr> <tr> <td></td> <td>Total =</td> <td></td> <td>18Nos</td> </tr> </table>	1.	Skilled	Operator	2 No.			Mechanic	1 No.			Blaster/Mat	1 No.	2.	Semi - skilled	Driver	2 Nos	3.	Unskilled	Musdoor / Labours	5 Nos			Cleaners	3Nos			Office Boy	1No	4.	Management & Supervisory staff		3No.		Total =		18Nos
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10.2	Welfare Measures	:																																					
	a. Drinking Water	:	Drinking water at the rate of 2Ltrs per person shall be provided as per the Mines Rules, 1960. It is proposed to make a borehole for providing uninterrupted supply of drinking water and other utilities.																																				

b.	Sanitary facilities	:	Semi permanent latrines & urinals shall be maintained at convenient places for use of labour as per the provisions of Rule (33) of the Mines Rules, 1960. Washing facilities for males and females. Washing facilities are also arranged as per rule (36) of the Mines Rules, 1960.
c.	First Aid Facility	:	Being a small mine First Aid station under Rule (44) of the Mines Rules provided with facilities as per the third schedule as prescribed. Qualified First Aid personnel should be appointed or nominated to attend emergency first aid treatment.
d.	Labour Health	:	As per Mines Rule, Periodic medical examination has been arranged for occupational health once in a year in addition to attending medical treatment of occupational injuries under the Rule 45 (A), MR, 1960.
e.	Precautionary safety measures to the Laborers	:	Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have been provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a semi-mechanized operation. Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and system at quarrying operation.



PART - B

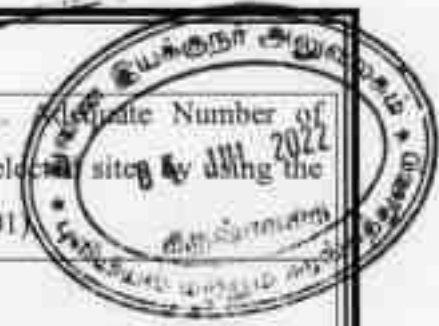
11.0 ENVIRONMENTAL MANAGEMENT PLAN:

11.1	Existing Land Use Pattern	:	The existing land use pattern is given as under.																												
			<table border="1"> <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 quarrying</td> <td>Nil</td> <td>1.51.0</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>Nil</td> <td>0.01.0</td> </tr> <tr> <td>4.</td> <td>Green Belt</td> <td>Nil</td> <td>0.47.0</td> </tr> <tr> <td>5.</td> <td>Unutilized Area</td> <td>2.00.0</td> <td>Nil</td> </tr> <tr> <td></td> <td>Total =</td> <td>2.00.0Ha</td> <td>2.00.0Ha</td> </tr> </tbody> </table>	Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)	1.	Area under quarrying	Nil	1.51.0	2.	Infrastructure	Nil	0.01.0	3.	Roads	Nil	0.01.0	4.	Green Belt	Nil	0.47.0	5.	Unutilized Area	2.00.0	Nil		Total =	2.00.0Ha	2.00.0Ha
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11.2	Water Regime	: Water table in this area is noticed at a depth of 88m below the surface ground level and presently the quarrying of Rough Stone is proposed up to 58m (Surface Height 11m & Surface Ground Level Below Depth 3m). It will not affect the ground water depletion of this area.																				
11.3	Flora and Fauna	: Except acacia bushes, no other valuable trees are noticed in the applied lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																				
11.4	Climatic conditions	: Generally sub tropical climatic condition prevails throughout the year and this District receives rain both in South west and North east monsoon. The average rainfall is about 800mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 38°C during the summer.																				
11.5	Human Settlement	: The nearest habitations with the population is given. <table border="1"> <thead> <tr> <th>Direction</th> <th>Village</th> <th>Distance in Kms</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Goolisandram</td> <td>1.0kms</td> <td>185</td> </tr> <tr> <td>East</td> <td>Pothasandhira</td> <td>2.5kms</td> <td>250</td> </tr> <tr> <td>South</td> <td>Nagappan Agraharam</td> <td>1.5kms</td> <td>370</td> </tr> <tr> <td>West</td> <td>Agraharam</td> <td>3.0kms</td> <td>310</td> </tr> </tbody> </table>	Direction	Village	Distance in Kms	Population	North	Goolisandram	1.0kms	185	East	Pothasandhira	2.5kms	250	South	Nagappan Agraharam	1.5kms	370	West	Agraharam	3.0kms	310
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11.6	Plan for Air, Dust Suppression	: 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. For the sampling of air, high volume air sampler (Model VFC-PM10) was used (10 meter above and 5 meter away from road) and the particulates were collected on what man GFA glass fiber filters dried in a hot air oven at 105°C for 1hr and weighed. The average flow rate was about 1.1 cubic meters.																				
11.7	Plan for Noise Control	: Quarrying of Rough Stone will be carried out by drilling and Proposed Control Blasting by using low power explosives, and hence, noise will be very Minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. In order to assess the extent of noise pollution due to vehicular traffic different zones viz., Silence zone, Residential Zone, Commercial zone, Traffic signals and Industrial zones were identified in urban																				

		and suburban areas of Krishnagiri. Adequate Number of observations were made in all the selected sites by using the sound level meter (LT Lutron SL-4001)
11.8	Environmental Impact Assessment Statement Describing Impact on mining on the next Ten years	: Factors to be considered for EIA are, <ol style="list-style-type: none"> 1. Dust generation, 2. Land degradation. 3. Stabilization and vegetation of dumps 4. Adverse effect on water regime 5. Socio economic benefits arising out of Mining. 6. Noise and Vibration.
	a. Dust	: Dust is expected to be generated from drilling, hauling roads; place of excavation etc and it will be suppressed by periodical wetting of lands.
	b. Land degradation	: Land degradation is by means of cutting the trees and removal of fertile soil does not arise. Proposed usage of land for the Ten years shall be less than 2.00.00Ha . Afforestation will be started during the first year of mining operation itself.
	c. Stabilization and vegetation of dumps	: The topsoil will be spread over the non-active dumps along the slope and edges to plant tree saplings to form vegetal cover over the dumps. Such vegetal cover will prevent erosion of dumps during rainy seasons.
	d. Socio economic benefits arising out of mining	: <ol style="list-style-type: none"> 1. To provide Employment opportunities of the nearby villagers. 2. For the cultural development of the nearby villagers.
	e. Noise and vibration	: Since, no deep hole blasting is proposed, small dia explosives are used for breaking the hard rock and boulders; the noise and vibration will be very minimum and are within the permissible limits.
11.9	Proposal for Waste Management	: There is no requirement for waste management as there is 100% recovery percentage.
11.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	: The present mining is proposed to 58m (Surface Ground Level Above height-11m & Surface Ground Level Below Depth-47m). The mined out area will be fenced on top of open cast working with S1 fencing. Low lying areas with water logging shall be used for fish culture.





		No immediate proposals for closure of the rough stone pits persist still at deeper level.
11.11	Program for Afforestation	Trees like tamarind, casuarinas etc will be planted along the lease boundary and avenues as well as in active dumps at a rate 50 trees per annum with an interval of 5m. The rate of survival expected to be 80% in this area.
11.12	Proposed Financial Estimate / Budget for (EMP) Environment Management	
	A. Fixed Asset Cost:	
	Land Cost	: Rs. 2,10,00,000/- (Leased tender amount for Government Poramboke Land)
	Labour Shed	: Rs. 90,000/-
	Sanitary Facility	: Rs. 60,000/-
	Fencing cost	: Rs. 70,000/-
	Total=	: Rs.2,12,20,000/-
	B. Operational Cost:	
	Machinery cost	: Rs.30,00,000/-
	C. EMP Cost:	
	1. Drinking water facility	: Rs. 1,10,000/-
	2. Safety kits	: Rs. 75,000/-
	3. Water sprinkling	: Rs. 50,000/-
	4. Afforestation	: Rs. 25,000/-
	5. Water quality test	: Rs. 30,000/-
	6. Air quality test	: Rs. 30,000/-
	7. Noise/vibration test	: Rs. 30,000/-
	Total=	: Rs. 3,50,000/-
	Total Project cost(A+B+C)	: Rs.2,45,70,000/-

12.0 MINE CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	: The present mining is proposed to 58m (Surface Ground Level Above Height 11m & Surface Ground Level Below Depth 47m). The mined out area will be fenced on top of open cast working with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	: Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by using Barbed wire fencing. Green belt development at the rate of 50 trees per year will be proposed.

12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	: It is a fresh Rough Stone quarry with a mineable depth of 58m (Surface Above Height 11m & Below Depth 47m) for Ten years need of mitigation and restoration / reclamation of the applied lease area.
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13.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Permission will be obtained from the Director of Mines Safety for the extracting the Rough Stone from the Boundary barriers and from slopes.
- (ii) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (iii) The applicant will endeavour every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.
- (iv) Accordingly, Mining Plan is prepared under Rule 8(6)(b) Tamil Nadu Minor Mineral Concession Rules, 1959 & As per Amendment under Rule 41 & 42 by incorporating the conditions imposed in the precise area communication letter and by incorporating all the details proposed in the letter to obtain environment clearance from State Level Environmental Impact Assessment Authority.
- (v) This Mining Plan is prepared for the Applied Rough Stone Quarry for a period of Ten Years.

This Mining Plan is approved based on guidelines / instruction issued and in corporation of the particulars specified in the letter Roc. No. 538/2022 Dated 07.07.2022 of the Deputy Director of Geology and Mining, Krishnagiri and subject to further fulfillment of the conditions laid down under Tamil Nadu Minor Mineral Concession Rules, 1959 and Minor Minerals Conservation and Development Rule 2010.

DEPUTY DIRECTOR
Geology and Mining,
Collectorate, Krishnagiri.

S. MATHAN PRAKASH, M.Sc., M.Phil.
RQP/CNN/270/2016/A

This Mining Plan is approved subject to the conditions / Stipulation indicated in the Mining Plan Approval

Letter Roc. No. 538/2022 Dated 07.07.2022



குறிப்பாணை

பொருள் கனிமங்களும் குவாரிகளும் - சிறுவளிமம் - சாதாரண கனிம கற்கள் - கிருஷ்ணகிரி மாவட்டம் அடர் புலங்களில் அமைந்துள்ள கற்குவாரிகள் டெண்டர் முறையில் குத்தகை வழங்குவது தொடர்பாக அரசிதழ் வெளியீடு - ஒசூர் வட்டம் - கோபளப்பள்ளி கிராமம் - புல எண்.220/1(பகுதி-4) 2.00.0 ஹெக்டேர் பரப்பில் 05.04.2022 அன்று டெண்டருடன் இணைந்த ஏலம் நடத்தப்பட்டது - டெண்டர் விண்ணப்பத்தில் அதிகப்படுத்தாத தொகை குறிப்பிட்ட திரு.ஜெ.விஜயகுமார் என்பவருக்கு டெண்டர் உறுதி செய்யப்பட்டது - விதிகளின்படி குத்தகை தொகை முழுவதும் செலுத்தப்பட்டது - குத்தகை உரிமம் வழங்கிட வேண்டி ஏற்பளிக்கப்பட்ட சுரங்கத் திட்டம் மற்றும் சுற்றுச் சூழல் ஆய்வை முன் அனுமதி பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. வட்டாட்சியர், ஒசூர் கடிதம் ந.க.எண்.426/2022/அ2 நாள்:22.01.2022.
 2. வருவாய் கோட்டாட்சியர் ஒசூர் அறிக்கை ந.க.எண்.103/2022/பி2 நாள்:04.02.2022.
 3. வன உயிரின காப்பாளர், ஒசூர் கடிதம் ந.க.எண்.261/2022/எல் நாள்:10.02.2022.
 4. கிருஷ்ணகிரி மாவட்ட புவியியல் மற்றும் சுரங்கத் துறை நில அளவன், தனி வருவாய் ஆய்வாளர் மற்றும் உதவி புவியியலாளர் (கனிமம்) புலதளிக்கை அறிக்கை நாள்:11.02.2022.
 5. கிருஷ்ணகிரி மாவட்ட அரசிதழ் சிறப்பு வெளியீடு எண்.15 நாள்:14.03.2022 மற்றும் எண்.20 நாள்:28.03.2022.
 6. தி இந்து செய்தி நாளிதழில் விளம்பரம் நாள்:17.03.2022.
 7. தி இந்து, தினகரன், தினமலர் மற்றும் காலகக்கதிர் ஆகிய செய்தி நாளிதழ்களில் 29.03.2022 அன்று வெளியிடப்பட்ட மாவட்ட ஆட்சியரின் அறிவிக்கை.
 8. திரு.ஜெ.விஜயகுமார் மற்றும் இரண்டு நபர்கள் ஆகியோரது டெண்டர் விண்ணப்பம் நாள்:04.04.2022.
 9. திரு.எஸ்.ராஜா மற்றும் ஆறு நபர்களின் ஏல விண்ணப்பங்கள் நாள்:05.04.2022.
 10. திரு.ஜெ.விஜயகுமார் என்பவரது கடிதம் நாள்:19.04.2022.
 11. தொடர்புடைய ஆவணங்கள்.

பார்வையில் காணும் கடிதங்களின்பால் கனிவான கவனம் வேண்டப்படுகிறது.

2. கிருஷ்ணகிரி மாவட்டம், ஓசூர் வட்டம், கோபளப்பள்ளி கிராமம் அரசு புல எண்.220/1(பகுதி-4) விஸ்.200.0 ஹெக்டேர் பரப்பில் அமைந்துள்ள சாதாரண கற்குவாரியம் டெண்டர் / பொது ஏலத்திற்கு கொண்டு வர உரிய நில இருப்பு அறிக்கை வருவாய் கோட்டாட்சியகிடம் கோரப்பட்டதில், ஓசூர் வட்டாட்சியர், ஓசூர் வருவாய் கோட்டாட்சியர் மற்றும் கிருஷ்ணகிரி மாவட்ட புவியியல் மற்றும் கரங்கத் துறை நில அளவர், தனி வருவாய் ஆய்வாளர் மற்றும் உதவி புவியியலாளர் (கனியம்) ஆகியோர் தனித்தனிக் மேற்கொண்டு கிருஷ்ணகிரி மாவட்டம், ஓசூர் வட்டம், கோபளப்பள்ளி கிராமம் அரசு புறம்போக்கு தீ.ஏ.த.தரிக புல எண்.220/1(பகுதி-4) விஸ்.200.0 ஹெக்டேர் பரப்பு பூமிபிளை குத்தகை உரிமம் வழங்கிட விதிகளின்படி மேற்கண்ட புலம் நகுதிவாய்ந்தது என்பதால் டெண்டருடன் இணைந்த ஏலத்தின் மூலம் உரிமம் வழங்கிட பரிந்துரை செய்துள்ளனர். வன உயிரின காப்பாளர், ஓசூர் மேற்கண்ட புலங்கள் விதிகளின்படி அருகில் உள்ள காப்பு காடுகளுக்கு வளையறுக்கப்பட்ட பாதுகாப்பு தொலைவிற்கு அப்பால் அமைந்துள்ளதாக அறிக்கை அளித்துள்ளார்.

3. அதன் அடிப்படையில், கிருஷ்ணகிரி மாவட்டத்தில் அரசு புறம்போக்கு நிலங்களில் உள்ள சாதாரண கற்களை வெட்டியெடுத்துச் செல்ல உரிமம் வழங்க ஏதுவாக கிருஷ்ணகிரி மாவட்ட அரசிதழ் சிறப்பு வெளியீடு எண்.15 நாள்:14.03.2022 மற்றும் எண்.20 நாள்:28.03.2022-ன்படி பிரகடம் செய்யப்பட்டது அதன்படி 04.04.2022-ம் நாள் பிற்பகல் 05.00 மணிக்குள் மூடி முத்திரை இடப்பட்ட டெண்டர் மனுக்களை அறிக்க இறுதி நாளாக அறிவித்து, 05.04.2022 அன்று பொது ஏலம் நடத்தப்பட்டு டெண்டர் மனுக்கள் ஏலத்தில் கலந்து கொண்டவர்கள் முன்னிலையில் திறக்கப்பட்டன.

4. மேற்கண்ட அரசிதழில் விளம்பரம் செய்யப்பட்டிருந்த குவாரிப்பட்டியலில் வரிசை எண்.(10), ஓசூர் வட்டம், கோபளப்பள்ளி கிராமம், அரசு புறம்போக்கு (தீ.ஏ.த.தரிக) புல எண்.220/1(பகுதி-4)-ல் 200.0 ஹெக்டேர் பரப்பில் உள்ள கற்குவாரிக்கு டெண்டர் / பொது ஏலத்தில் கலந்து கொண்டவர்களில் திரு.ஜெ.விஜயகுமார் டெண்டரில் குறிப்பிட்டிருந்த தொகை ரூ.2,10,00,000/- மாவட்ட ஆட்சித் தலைவர் அவர்களால் நிர்ணயம் செய்யப்பட்டிருந்த ஏலத் தொகையை விட அதிகமாக இருந்ததால் அவருக்கு டெண்டர் ஊழிதம் செய்யப்பட்டது. மேற்கண்ட டெண்டர்தாரர் பொத்த குத்தகை தொகையையும் விதிகளின்படி 19.04.2022-க்குள் செலுத்தியுள்ளார்.

5. எனவே, டெண்டர்தாரர் டெண்டர்தொகை முழுவதும் செலுத்திவிட்டபடியால், மேற்படி கற்குவாரி ஏலமானது விதிகளின்படி உயர்நடுபட்ச டெண்டர் கோரிய திரு.ஜெ.விஜயகுமார் என்பவருக்கு உறுதி செய்யப்படுகிறது. மேலும், மேற்படி நபருக்கு ஓசூர் வட்டம், கோபளப்பள்ளி கிராமம், அரசு புறம்போக்கு (தீ.ஏ.த.தரிக) புல

எண்.220/1(பகுதி-4)-ல் 200.0 ஹெக்டேர் பரப்பு பஸத்தில் பந்து குவாரி உரிமம் வழங்க ஏதுவாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.41-ன்படி கீழ்க்கண்ட நிபந்தனைகளுடன் ஏற்பளிக்கப்பட்ட அளங்கதிட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்கவும், அதன் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.42-ன்படி மாவட்ட கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவு பெற்று சமர்ப்பிக்கும் பட்சத்தில் சாதாரண கற்குவாரி உரிமம் வழங்கப்படும் என்ற விவரம் இதுள் மூலம் தெரிவிக்கப்படுகிறது.

நிபந்தனைகள்:

- 1959ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், அட்டவணை-II-ல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்குரிய சீனியரேஜ் தொகை அளவப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர், அரசு புறம்போக்கு புலங்களுக்கு 10 மீட்டர் மற்றும் இது நிலையான அமைப்புகளுக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- விதிகளின் படி ஏற்பளிக்கப்பட்ட அளங்கதிட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் முன் அனுமதி பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்.

இணைப்பு: குத்தகை உரிமம் வழங்க பரிந்துரைக்கப்பட்ட புல வரைபடம்.

மும்/- வி.ஜெய சந்திர பாணு ரெட்டி
மாவட்ட ஆட்சித் தலைவர்,
கிருஷ்ணகிரி.

// உண்மை நகல்// உத்தரவுபடி//

மாவட்ட ஆட்சியருக்காக,
கிருஷ்ணகிரி

பெறுநர்,
திரு.ஜெ.விஜயகுமார்,
டி.குலகுண்டா,
மாடக்கல் - கிராமம்,
தேன்கனிக்கோட்டை வட்டம்
கிருஷ்ணகிரி மாவட்டம்.

நகல்: 1. இயக்குநர், பனியியல் மற்றும் சுரங்கத் துறை, சென்னை
2. தமிழ்நாடு மாநில கற்றுச்சூழல் மதிப்பீட்டு ஆணையம், சென்னை.





கிருஷ்ணகிரி மாவட்ட அரசிதழ்

சிறப்பு வெளியீடு

ஆணையின்படி வெளியிடப்பட்டது

கிருஷ்ணகிரி, மார்ச் 14, 2022
[பி.லெ, மாசி 30 - திருவள்ளூர் ஆண்டு 2053]

[எண் 15

மாவட்ட ஆட்சியர் அறிவிக்கை

[த.க.எண். 180/2022(கனிம), நாள்: 10.03.2022]

சாதாரண கற்குவாரி ஒப்பந்தப்புள்ளி (டெண்டர்) மற்றும் ஏலம் குறித்த அறிவிப்பு

டெண்டர் விண்ணப்பங்கள் பெற கடைசி நாள்	:	30.03.2022 முற்பகல் 05.00 மணி வரை
பொது ஏலம் நடைபெறும் நாள்	:	31.03.2022 முற்பகல் 10.30 மணி முதல்

1. கிருஷ்ணகிரி மாவட்டத்தில் அரசு புறம்போக்கு நிலங்களில் அமைந்துள்ள சாதாரண கற்குவாரிகளிலிருந்து பொது உபயோக பயன்பாட்டிற்காக சாதாரண கற்களை வெட்டிபெடுத்துச் செல்வதற்கு தனிநபர் மற்றும் தனியார் நிறுவனங்களுக்கு குவாரி குத்தகை உரிய வடிவக் டீமா முத்திரையிடப்பட்ட ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்கள் வரவேற்கும் மற்றும் ஏல அறிவிப்பு.
2. 1959 ஆம் வருடத்திய தமிழ்நாடு சிறுகனிமச் சலுகை விதிகளின் விதி 8 உட்படி (1) -ன்படி கிருஷ்ணகிரி மாவட்டத்தில் இயல்பிக்கையான இணைக்கப்பட்ட அட்டவணையில் குறிப்பிடப்பட்டுள்ள அரசு புறம்போக்கு நிலங்களில் அமைந்துள்ள சாதாரண கற்குவாரிகளிலிருந்து சாதாரணகற்களை குவாரி செய்து எடுத்துச் செல்ல டெண்டருடன் இணைந்த ஏல முறையில் குவாரி குத்தகை உரிய வடிவக் டீமா முத்திரையிடப்பட்ட 03 பிரதிகள் கொண்ட டெண்டர் விண்ணப்பங்கள் கிருஷ்ணகிரி மாவட்ட ஆட்சியரால் வரவேற்கப்படுகின்றன.
3. இந்த அறிவிக்கையின்படி விண்ணப்பிக்கப்படும் ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பம் 1959 ஆம் வருடத்திய தமிழ்நாடு சிறுகனிமச் சலுகை விதிகளின் டீன் இணைப்பு VI-ல் குறிப்பிடப்பட்டுள்ள டீமாவற்றிய இரகசிய வேண்டும் யாதிரி விண்ணப்பப்படிவம் இந்த மாவட்ட அரசிதழ் சிறப்பு வெளியீட்டின் இணைப்பில் பிரசுரிக்கப்பட்டுள்ளது. இணைப்பில் பிரசுரிக்கப்பட்டுள்ள டீமாவற்றிய VI-ன்படி பூர்த்தி செய்து அனுப்பப்படாத விண்ணப்பங்கள் ஏற்றுக் கொள்ளப்படாது.
4. ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்களுடன் இணைத்து அனுப்பப்பட வேண்டிய இணைப்புகளின் விவரங்கள் மற்றும் குத்தகை நிபந்தனைகள் பற்றிய விவரங்கள் குறிப்பிடப்பட்டுள்ள அரசிதழ், கிருஷ்ணகிரி மாவட்ட ஆட்சியர் அலுவலகம், கிருஷ்ணகிரி புலியேயம் மற்றும் கரங்கத்துறை துணை இயக்குநர் அலுவலகம், கிருஷ்ணகிரி மாவட்டத்திலுள்ள அணைத்து சார் ஆட்சியர்/ வருவாய் கோட்டாட்சியர், வட்டாட்சியர் மற்றும் ஊராட்சி ஒன்றிய ஆணையர் அலுவலகங்களின் தகவல் பணிகளில் விண்ணப்பம் செய்யப்படும்.

5. அட்டவணையில் குறிப்பிட்டுள்ள குவாரிகளின் குத்தகை காலமானது குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றப்பட்ட நாளிலிருந்து ஏற்கனவே குவாரி குத்தகை வழங்கப்பட்டு குத்தகை காலம் முடிவற்ற சாதாரண கற்குவாரி இளங்குருக்கு 05 ஆண்டுகளும், புவியதாக சேர்க்கப்பட்டுள்ள (virgin) ஏற்கனவே குவாரி பணி நடைபெறாத சாதாரண கற்குவாரி இளங்குருக்கு 10 ஆண்டுகளும் ஆகும்.
6. ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பதாரர் தனது விண்ணப்பத்தில் குவாரியின் பொந்த குத்தகை காலத்திற்குமான ஒரே தவணையில் செலுத்தத்தக்க குத்தகை தொகையை உரிய இடத்தில் எண்ணிலும் எழுத்திலும் தெளிவாக குறிப்பிட வேண்டும்.
7. மாவட்ட அரசினர் சிறப்பு வெளியீட்டின்படி அரசினரின் நிபந்தனைகளின்படி பூர்த்தி செய்யப்பட்ட ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்களை அனைத்து இணைப்புகளுடன் கவரின் வைத்து மூடி முத்திரையிட்டு துணை இயக்குநர், புவியியல் மற்றும் கரங்கத்தூறை, கிடுஷன்கிரி என்ற விலாசமிட்டு நேரிலே அல்லது ஒப்புமை பெறத்தக்க பதிவஞ்சல் மூலமாகவோ மாவட்ட ஆட்சியர் அலுவலக வளாக தளத்தளத்தில் அறை எண் 30ல் உள்ள புவியியல் மற்றும் கரங்கத்தூறை, துணை இயக்குநர் அலுவலகத்தில் 2022ல் ஆண்டு மார்ச் திங்கள் 30-ம் நாள் மாலை 5.00 மணிக்குள் விடைகொடுப்ப அனுப்பப்பட வேண்டும். கவரின் மீது விண்ணப்பிக்கும் குவாரியின் விவரம் மற்றும் அட்டவணையில் குறிப்பிட்டுள்ள குவாரியின் வரிசை எண் போன்றவற்றை தயாராயல் குறிப்பிட வேண்டும்.
8. மேலே குறிப்பிட்ட காலக்கெடுவிற்குள் வர்ப்பெற்ற விண்ணப்பங்கள் யட்டும் ஏலம் நடைபெறும் நாளன்று ஆலோசியிருக்கும் சம்பந்தப்பட்ட குவாரிக்கு விண்ணப்பித்தான விண்ணப்பதாரர்கள் மற்றும் பொது ஏலத்தில் கலந்து கொள்பவர்கள் முன்னிலையில் அட்டவணைகளில் உள்ள குவாரிகளின் வரிசைகளின் முறையே முதலில் பொது ஏலமும் பின்னர் ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்கள் திரும்பும் மேற்கொள்ளப்படும்.
9. மேலே குறிப்பிட்ட நாளில் ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்கள் திரும்பற்கு முன்னர் ஒவ்வொரு குவாரிக்கும் தனித்தனியே பொது ஏலம் விடப்படும். ஏல நடவடிக்கை முடிவு பெற்ற பின்பு சம்பந்தப்பட்ட குவாரிக்கு வர்ப்பெற்ற டெண்டர் விண்ணப்பங்கள் சீர்திரு பரிசீலிக்கப்படும். டெண்டர் விண்ணப்பம் மூலம் கோரப்பட்டுள்ள உயர்ந்தபட்ச டெண்டர் தொகை அல்லது ஏலம் மூலம் கோரப்பட்ட உயர்ந்தபட்ச குத்தகை தொகை இதில் எது அதிகமோ அத்தொகையே சம்பந்தப்பட்ட குவாரிக்கான உயர்ந்தபட்ச குத்தகை தொகையாக எடுத்துக்கொள்ளப்பட்டு குவாரி குத்தகை உரிய வழங்குதல் சம்பந்தமாக நடவடிக்கைகள் மேற்கொள்ளப்படும்.
10. மேற்கண்டபடி வர்ப்பெறும் டெண்டர் / ஏல விண்ணப்பங்கள், 1959ஆம் ஆண்டு தமிழ்நாடு சிறுவளியல் சமூக விதிகள், கரங்கங்கள் மற்றும் களியங்கள் (மேம்படுத்துதல் மற்றும் முறைப்படுத்துதல்) சட்டம் 1957 மற்றும் இந்த ஏல அறிவிப்பில் குறிப்பிட்டுள்ள முக்கிய நிபந்தனைகளின்படி பரிசீலிக்கப்பட்டு அவற்றினின்று தக்க ஆணைகள் பிறப்பிக்கப்படும்.
11. இந்த மாவட்ட அரசினர் அறிவிக்கை பிரசுரிக்கப்பட்ட பின்னரே, குத்தகை உறுதி ஆணை பிறப்பிப்பதற்கு முன்னரே, நிபந்தனைகளை மாற்றவே அல்லது ரத்து செய்யவே மற்றும் பட்டியலில் கண்டுள்ள எல்லா குவாரிகளின் குத்தகை உரிய கோரும் ஒப்பந்தப்பள்ளி மனுக்களை எக்காரணமும் கூறாமல் ரத்து செய்யவே அல்லது பெறப்படி மனுக்களை மூடி முத்திரையிடப்பட்ட உறைகளை திறக்கும் நாள் நேரம் மற்றும் ஏலம் நடத்தும் நாள் மற்றும் நேரம் ஆகியவைகளை தள்ளிவைக்கவோ நிறுத்திவைக்கவோ மாவட்ட ஆட்சியருக்கு முழு அதிகாரம் உண்டு. ஏதாவது காரணத்தினால் ஒத்திவைக்க நேர்ந்தால் அதற்கு மனுதாரர்கள் யாருக்கும் தஷ்டம் கோர உரிமை இல்லை.
12. விண்ணப்பதாரர் ஒவ்வொரு குவாரிக்கும் தனித்தனியே ஒரு ஒப்பந்தப்பள்ளி விண்ணப்பத்தை உரிய இணைப்புகளோடு அனுப்ப வேண்டும். ஒரே விண்ணப்பத்தில் ஒரு குவாரிக்கு மேல் பல குவாரிகளை குறிப்பிட்டு அனுப்பும் விண்ணப்பம் திராசரிக்கப்படும்.



13. ஒப்பந்தப்புள்ளி விண்ணப்பம் அனுப்புவதற்கு முன்/ ஏலத்தில் கலந்து கொள்வதற்கு முன் ஒப்பந்தப்புள்ளி அளித்து அறிவிக்கப்படும் இணைக்கப்பட்டுள்ள பட்டியலில் கண்ட கம்பந்தப்பட்ட குவாரியை / குவாரிகளை விண்ணப்பதாரர் தனது சொந்த செலவிலேயே தேரில் பார்வைகிட்டு பாதை வசதி கனிமத்தின் தரம் மற்றும் கனிமத்தின் இருப்பு ஆகியவற்றை ஆராய்ந்து பின்னர் குத்தகை உரிய கோரி விண்ணப்பிக்க வேண்டும் மற்றும் ஏலத்தில் கலந்து கொள்ளவேண்டும். ஆணை வழங்கப்பட்ட பின் குவாரி அமைந்துள்ள புல எண், பரப்பு குவாரிகளின் தரங்கு எல்லைகள், பாதை வசதி, கனிமத்தின் தரம் கனிமத்தின் இருப்புக்குறித்து எவ்வித தரவாயும் செய்ய குத்தகைதாரருக்கு உரிமை கிடையாது.
14. 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகளில் கண்டுள்ள அனைத்து சாராம்சங்களையும் மீட்ட அளவியில் உள்ள அனைத்து திறத்தகைகளையும் நன்கு தெரிந்து கொண்டபின் ஒப்பந்தப்புள்ளி விண்ணப்பங்களை உரிய இணைப்புகளோடு அனுப்பவேண்டும். விண்ணப்பம் அனுப்பிய பிறகு விதிகள் மற்றும் குத்தகை திறத்தகைகள் பற்றி சரியாக தெரியாது என மனுதாரர் வாதிட்டால் அது ஏற்றுக்கொள்ளப்பட மாட்டாது.
15. ஒப்பந்தப்புள்ளி (டெண்டர்) மற்றும் ஏல திறத்தகைகள் :

- 1) ஒவ்வொரு குவாரிக்கும் இந்த அரசிதழின் பிரிசேர்க்கையில் பிரசுரிக்கப்பட்டுள்ள இணைப்பு VI-ல் காணும் மாதிரி விண்ணப்ப படிவத்தின்படி தனித்தனி விண்ணப்பங்களில் விண்ணப்பிக்க வேண்டும்.
- 2) நடப்பில் மாநில அளவில் ஒரு நபருக்கு அதிகபட்சம் இரண்டு குவாரிகளுக்கு மட்டுமே குத்தகை உரிய வழங்கப்படும்.
- 3) இந்த அரசிதழின் அட்டவணையில் குறிப்பிட்டுள்ள குவாரிகளின் குத்தகை காலமானது, குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றப்பட்ட நாளிலிருந்து ஏற்கனவே குவாரி குத்தகை வழங்கப்பட்டு குத்தகை காலம் முடிவற்ற சாதாரண கற்குவாரி இளங்களுக்கு 05 ஆண்டுகளும் புவியுரை சேர்க்கப்பட்டுள்ள சாதாரண கற்குவாரி இளங்களுக்கு (Virgin quarry) 10 ஆண்டுகளும் ஆகும். குத்தகை ஒப்பந்தப்பத்திரத்தில் குறிப்பிடப்படும் இறுதி நாளில் குத்தகை காலம் முடிவடைபடும், குத்தகை காலம் எக்கவாரணத்தகைக்கொண்டும் நீட்டிக்கப்பட மாட்டாது.
- 4) ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பத்துடன் கீழ்க்கண்டவற்றை இணைத்து அனுப்ப வேண்டும்.

(அ) திரும்ப வழங்க இயலாத விண்ணப்பக் கட்டணமாக ரூ.1500/-க்கான கேட்பு வரைவோகையை (டிமானட் டிராப்ட்) ஏதேனும் ஒரு தேசிய மயமாக்கப்பட்ட வங்கியில் துணை இயக்குநர், புவியியல் மற்றும் காலக்கத்துறை, கிருஷ்ணகிரி அவர்களின் பதவியின் பெயரில் பெற்று அல்லது அரசு கருவியத்தில் செலுத்திய அசல் சலான் இணைக்க வேண்டும்.

(ஆ) பிணை கவப்புத்தொகை (Earnest money deposit) ரூ.25000/- (ரூபாய் இருபத்தகைத்தாயிரம் மட்டும்)க்கான கேட்பு வரைவோகை ஏதேனும் ஒரு தேசியமயமாக்கப்பட்ட வங்கியில் துணை இயக்குநர், புவியியல் மற்றும் காலக்கத்துறை, கிருஷ்ணகிரி அவர்களின் பதவியின் பெயரில் பெற்று இணைக்க வேண்டும். தனிநபர் பெயருக்கு எடுத்து கொடுக்கப்படும் வங்கி வரைவோகை ஏற்றுக்கொள்ளப்படமாட்டாது குத்தகை உரிய வழங்கப்படுபவர் செலுத்த வேண்டிய டெண்டர்/ ஏலத் தொகையில் இந்த தொகை பின்னர் சரி செய்து கொள்ளப்படும்.

(இ) ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பத்தில் குறித்துள்ள மொத்த குத்தகை தொகையில் 10 சதவீதத் தொகைக்கான கேட்பு வரைவோகை (டிமானட் டிராப்ட்டை) துணை இயக்குநர், புவியியல் மற்றும் காலக்கத்துறை, கிருஷ்ணகிரி அவர்களின் பதவியின் பெயரில் ஏதேனும் ஒரு தேசியமயமாக்கப்பட்ட வங்கியில் பெற்று இணைக்க வேண்டும்.

(9) மாவட்ட வாரியாக கனிய வாரியாக விண்ணப்பதாரர் / ஏலதாரர் நோடியாகவோ அல்லது பங்குதாரராகவோ தொடர்புள்ள குவாரிவன் பற்றிய கீழ்க்கண்ட விவரங்கள் அல்லது ஆணையறுதி ஆணை (அபி.வி.) மூலம் தெரிவிக்க வேண்டும்.

1. விண்ணப்பதாரருக்கு கனிய குத்தகையுள்ள மாவட்ட ஆட்சியரால் வழங்கப்பட்ட செல்லத்தக்க கரங்கவரி நிழுவை இவ்வ சான்றிதழ் அல்லது கரங்கவரி நிழுவை இவ்வ சான்பதற்கான ஆணையறுதி வாக்குமூலம் இணைக்கப்பட்ட வேண்டும்.
2. வருமான வரி செலுத்திய சான்றிதழ் அல்லது வருமானவரி பாக்கியில்லை சான்பதற்கான ஆணையறுதி வாக்குமூலம் இணைக்கப்பட்ட வேண்டும்.
3. மற்றும்
 - i) அனுபவத்திலிருக்கும் குவாரி குத்தகை அனுமதி பற்றி விவரம்
 - ii) ஏற்கனவே விண்ணப்பித்து இதுவரை அனுமதி வழங்கப்படாத குவாரி குத்தகை அனுமதி பற்றி விவரம்.
 - iii) அற்போது உடனிகழ்வாக விண்ணப்பிக்கும் குவாரி குத்தகை அனுமதி விவரம்.
4. பெற்கண்ட ஆணையறுதி ஆவணங்களை ரூ.20/- மதிப்புள்ள முத்திரைத்தாளில் சான்று உறுதி அலுவலரிடம் (Notary Public) கையொப்பம் பெற்று முத்திரை செய்யப்பட்ட விண்ணப்பத்துடன் இணைத்து சமர்ப்பிக்கப்பட்ட வேண்டும்.
- 5) ஏலத்தில் நேரடியாக கலந்து கொள்பவர்கள் முத்திரை செய்யப்பட்ட விண்ணப்பப்படிவம், திருப்பித்தாரப்படாத விண்ணப்பக்கட்டணம் ரூ.1500/- மற்றும் விவசாய கையாடல்தொகை ரூ.25000/- ஆகியவற்றிற்கான கேட்பு வரைவோலைகள் (புயாண்டி புராய்ட்) துணை இயக்குநர், புவியியல் மற்றும் கரங்கத்துறை, கிருஷ்ணகிரி அவர்களின் பதவியின் பெயரில் ஏதேனும் ஒரு தேசியமயமாக்கப்பட்ட வங்கியில் பெற்று ஏலத்தில் நேரடியாக கலந்து கொள்வதற்கு முன்னர் ஏலம் நடத்தும் அலுவலரிடம் சமர்ப்பிக்க வேண்டும். மேலும் ஏலம் மூலம் கோரப்பட்ட உயர்ந்தபட்ச தொகை டெண்டர் மூலம் கோரப்பட்ட உயர்ந்த பட்ச தொகையைவிட அதிகமாக இருந்தால் ஏல முடிவு அறிவிப்பு செய்யப்பட்டவுடன் ஏலத்தொகையில் 10 சதவீத தொகையை உடனே ஏலம் நடத்தும் அலுவலரிடம் தேசிய மயமாக்கப்பட்ட ஏதேனும் ஒரு வங்கியில் பெறப்பட்ட கேட்பு வரைவோலையாகவோ அல்லது ரொக்க தொகையாகவோ செலுத்தி தக்க இரசீதுகள் பெற்றுக் கொள்ள வேண்டும்.
- 6) நேரில் விண்ணப்பங்கள் அளித்தால் அதைப்பெற்றுக் கொண்டதற்கான ஒப்புதல் கடிதம் அன்றைய தினமே வழங்கப்படும். தபால் மூலம் பெறப்படும் விண்ணப்பத்திற்கு ஒப்புதல் கடிதம் மூன்று தினங்களுக்குள் தபாலில் அனுப்பி வைக்கப்படும். டெண்டர் விண்ணப்பங்கள் மூடி முத்திரையிடப்பட்ட கவர்களில் மட்டுமே அனுப்பி வைக்கப்பட்ட வேண்டும். கவரின் மேல்முத்திரை விண்ணப்பதாரரின் பெயர் மற்றும் விவசாய தொழிலாக குறிப்பிடப்பட்ட வேண்டும். கவரின் இடது மூலையில் கனியத்தின் பெயர், குவாரி அளவுக்குள்ள கிராமம், புல சண், பாட்பு அரசிதழின் இணைப்பில் பிரசுரிக்கப்பட்டுள்ள குவாரிகளின் பட்டியலில் உள்ள வரிசை எண் ஆகியவற்றை தவறாமல் குறிப்பிட வேண்டும்.



- 7) மாவட்ட ஆட்சியர்கள் அல்லது அவர்கள் அங்கீகாரம் வழங்கப்பட்ட அனுமனிடம் உள்ள பித்தக பதிவுகளை விண்ணப்பதாரர்கள் / ஏலதாரர்கள் கைப்பொட்டிட வேண்டி ஏல அறைக்குள் அனுமதிக்கப்படுவார்கள்.
- 8) ஏலம் மற்றும் ஒப்பந்தப்பள்ளியில் (டெண்டர்) கலந்து கொள்பவர்களுக்கு விண்ணப்பிக்கட்டணத் தொகை ரூ.1500/- திருப்பித்தரப்படாது. ஏலத்தில் நேரிடையாக பங்குபெறுபவர்கள் கொடுக்கும் விண்ணப்பத்தில் குத்தகை தொகையை குறிப்பிட வேண்டியவை. ஏற்கனவே டெண்டர் விண்ணப்பம் கொடுத்தவர்கள் ஏலத்தில் கலந்துகொள்ள முடியாவிடில் அவருக்குப்பின்னாக அவர்கள் நியமிக்கப்பட்ட வேறு ஒரு நபர் மட்டுமே நோட்டீஸ்ப்ளிக் புரஸ்ப் விண்ணப்பதாரர் மற்றும் நியமிக்கப்பட்ட நபர் கைப்பொட்டுக்கள் சான்றுபெறப்பட்ட உறுதிமொழி ஆவணம் (அட்டெஸ்ட்) தாக்கல் செய்வதில் மேலும் ஏலத்தில் கலந்து கொள்ள அனுமதிக்கப்படுவார்கள்.
- 9) ஒப்பந்தப்பள்ளி விண்ணப்பப்பலத்தில் மறு செய்யும் நபர்கள் தங்கள் மறு செய்யும் குவாரிக்கு குத்தகை தொகையாக செலுத்த வேண்டிய தொகையை விண்ணப்பத்தில் குறிப்பிடாமல் இருந்தாலே அல்லது விண்ணப்ப கட்டணம், பிணைவைப்புத் தொகை, அதிகப்படியாக குறிப்பிடும் குத்தகை தொகையின் 10% தொகை ஆகியவற்றிற்கான வங்கி வரைவோலைகளை விண்ணப்பத்துடன் இணைக்காமல் இருந்தாலே, விண்ணப்பதாரரின் விண்ணப்பதாரர் தன் கைப்பொட்டில் செய்பாமல் இருந்தாலே 1959ஆம் வருடத்தில் தங்கியிருந்த சிறுசனிய சலுகை விதிகளில் கூறப்பட்ட கரங்கவரி பாக்கியின்மை சான்றிதழ், வருமானவரி பாக்கியின்மை சான்றிதழ் அல்லது இவைகளுக்காக வழங்கப்படும் ஆணை உறுதி ஆவணம் மற்றும் ஏற்கனவே மறுதாரர் நேரடியாகவோ பங்குதாரராகவோ உள்ள குவாரிகள் தொடர்பான உறுதிமொழி ஆவணம் ஆகியவற்றை இணைக்கப்படாமல் இருந்தாலே மேற்படி ஒப்பந்தப்பள்ளி விண்ணப்பம் விதிகளின்படி நிராகரிக்கப்படும். மேற்குறிப்பிட்டவாறு விண்ணப்பம் நிராகரிக்கப்பட்ட ஒப்பந்தப்பள்ளி விண்ணப்பதாரர்களுக்கு ஒப்பந்தப்பள்ளிகள் திறக்கும் சமயத்தில் விண்ணப்பதாரர் ஆணரில் இருந்தால் மட்டும் விண்ணப்பதாரரிடம் தக்க ஒப்பந்தம் பெற்று வங்கிவரைவோலை திருப்பி வழங்கப்படும். ஒப்பந்தப்பள்ளி திறக்கும் சமயத்தில் ஆணரில் இல்லாத நபருக்கு பரிவர்த்தனை மூலம் வங்கி வரைவோலைகள் தரவிய அனுப்பி வைக்கப்படும்.
- 10) ஒவ்வொரு குவாரிக்கும் பொது ஏலம் நடத்தி முடிந்த பின்னர் சம்பந்தப்பட்ட குவாரிக்கான டெண்டர் விண்ணப்பங்கள் வருகை தந்திருக்கும் சம்பந்தப்பட்ட டெண்டர் விண்ணப்பதாரர்கள் மற்றும் ஏலதாரர்கள் அல்லது அவர்களது அதிகாரம் பெற்ற நபர்கள் முன்வினையில் சம்பந்தப்பட்ட அதிகாரிகளால் திறக்கப்படும் ஒப்பந்தப்பள்ளி (டெண்டர்) திறக்கும் நேரத்தில் விண்ணப்பதாரர் அல்லது ஏலதாரர் அல்லது அங்கீகாரம் பெற்ற நபர் ஆணரில் இல்லாததற்கு மாவட்ட தீர்வாகப் பொறுப்பு அல்ல இதுன்பொழுட்டு ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பம் திறப்பதோ ஏலம் நடத்துவதோ நிறுத்தி வைக்கப்படாட்டாது.
- 11) அட்டவணையில் கண்ட ஒவ்வொரு குவாரிக்கும் வரப்பெற்று வந்த செல்லத்தக்க விண்ணப்பங்கள், விண்ணப்பதாரர்களின் பெயர்கள் ஒவ்வொரு விண்ணப்பதாரராலும் குறிப்பிடப்பட்ட அதிகப்படி டெண்டர் தொகை ஆகியவற்றையும் அதிகப்படி தொகைக்கு ஏலம் கேட்ட நபர் பெயர் மற்றும் அதிகப்படி ஏலத்தொகை ஆகியவற்றையும் ஏலம் முடிவடைந்தவுடன் அறிவிக்கப்படும். ஏலத்தொகை, ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பத்தில் குறிப்பிடப்பட்டுள்ள குத்தகை (டெண்டர்) தொகையை விட குறைவாக இருந்து ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்கள் மூலமாக கோரப்படும் குத்தகை தொகைகள் ஒன்றுக்கும் மேற்பட்ட விண்ணப்பதாரர்களால் ஒரே மாதிரியாக குறிப்பிடப்பட்டிருந்தால் சம்பந்தப்பட்ட விண்ணப்பதாரர்களை மட்டும் அழைத்து சம்பந்தப்பட்ட குவாரிக்கு மட்டும் மறுசேய் மூலம் உபர் குத்தகை தொகை பெற நடவடிக்கை எடுக்கப்படும். அதிகப்படி குத்தகைத் தொகை கோரும் நபர் அதிகப்படி ஏலத்தொகை கோரிய நபராக அறிவிக்கப்படுவார். ஒவ்வொரு குவாரிக்கும் பெறப்பட்ட ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்களில் குறிப்பிடப்பட்டுள்ள அதிகப்படி குத்தகைத்தொகை அல்லது பொது ஏலத்தின் மூலம் கேட்கப்படும் அதிகப்படி குத்தகைத் தொகை இவற்றில் ஏது அதிகமோ அந்த தொகை மேற்கண்ட குவாரிக்கு கோரப்பட்ட அதிகப்படி குத்தகை தொகை என அறிவிக்கப்பட்டு அதிகப்படி குத்தகைத் தொகை குறிப்பிடவாக அறிவிக்கப்படுவார். அதிகப்படித் தொகைக்கு டெண்டர்/ஏலம் மூலம் கேட்ட நபர் என உறுதி செய்யப்பட்டவுடன், டெண்டர்/ ஏலம்

கேட்ட நபர் அவரால் அதிகப்பணக் கோரப்பட்ட தொகையில் பத்து சதவிகித தொகையினை கேட்ட வரையோரையாகவோ / பணமாகவோ உடனடிமாக செலுத்தவேண்டும். அல்லாறு செலுத்தத் தவறும் பட்சத்தில் அவரது ஏலம் / டெண்டர் ரத்து செய்யப்பட்டு அவருக்கு அடுத்தபடியாக அதிகப்பணத்தொகை கேட்ட நபருக்கு வாங்கிக்கப்படும். அவரும் பத்து சதவிகித தொகையினை செலுத்த தவறும் பட்சத்தில் இதை நடைமுறையை தொடர்ந்து நடத்துவது அல்லது மறு ஏலம் விட ஆணையிடவது போன்றவை மாவட்ட ஆட்சியரின் இறுதி முடிவு மற்றும் அதிகார வரம்பிற்கு உட்பட்டதாகும். அதிகப்பண ஏலம் / டெண்டர் கேட்ட நபரை தவிர மற்றவர்களுக்கு அவர் தரப் செலுத்திய பிணைவைப்பத்தொகை திரும்ப தரப்படும். ஏலம் / டெண்டர் உறுதி செய்யப்பட்ட நபர் மீதமுள்ள 90 சதவிகித தொகையினை பதினாந்து (15) தினங்களுக்குள் செலுத்திவிட வேண்டும். தவறும் பட்சத்தில் ஏலம் / டெண்டர் ரத்து செய்யப்பட்டு அவர் செலுத்திய அனைத்து தொகைகளும் ஸ்ரிமுதல் செய்து அரசு கணக்கில் சேர்க்கப்படும்.

12) (அ) சிறப்பு நிபந்தனைகள்:

- (i) இந்த டெண்டர் மற்றும் ஏலமுறையில் கலந்து கொள்ளும் விண்ணப்பதாரர்கள் அனைவரும் இந்திய அரசின் வரமான வரித்துறையினரால் வழங்கப்படும் திரந்தா கணக்கு எண் (PAN - CARD) அட்டையை பெற்றிருக்க வேண்டும் அல்லது வரமான வரி துறையினரிடமிருந்து பெற்று சமர்ப்பிக்க வேண்டும்.
- (ii) இந்த திரந்தா கணக்கு எண்ணை சமர்ப்பித்து டெண்டர் மற்றும் ஏலம் கோரும் தொகைக்கு 2% வரமான வரிவை கிருஷ்ணகிரி மாவட்ட பரிமியல் மற்றும் கரங்கத்துறை, துணை இயக்குநர் அவர்களுக்கு வரமான வரித்துறையினரால் அளிக்கப்பட்டுள்ள TAN No.CHED05905E-ன் கீழ் உரிய வரமானவரித்துறை செலுத்துச்சீட்டின் மூலம் செலுத்த வேண்டும்.
- (iii) மேலும் குத்தகை உரியம் பெற்ற பிள்ளர் களியங்களை எடுத்துச் செல்ல போக்குவரத்து அலுவலர் கீட்டுபெற ஒவ்வொரு முறையும் செலுத்துகின்ற சீனியரிஜெ தொகையின் மீது 2% வரமான வரி தொகை செலுத்தவேண்டும்.
- (iv) மேலும் குத்தகை உரியம் பெற்ற பிள்ளர் களியங்களை எடுத்துச் செல்ல போக்குவரத்து அலுவலர் கீட்டு பெற ஒவ்வொருமுறையும் செலுத்துகின்ற சீனியரிஜெ தொகையின் மீது 10 சதவிகித தொகையை கிருஷ்ணகிரி மாவட்ட களிய அறங்கட்டளை நிதிபாக கிருஷ்ணகிரி பரத மாநில வங்கி (State Bank of India) கணக்கு எண்.37243080996-ல் செலவளி மூலம் செலுத்த வேண்டும்.
- (v) அரசாணை எண்.23 தொழில் (வம்.எம்.சி.1) துறை நாள்.23.02.2022-ன்படி பகைம வரியாக உள்மாநிலங்களில் களியம் கொண்டு செல்வதற்கு சீனியரிஜெ தொகைக்கு 10 சதவிகித அல்லது வெளி மாநிலங்களுக்கு களியம் கொண்டு செல்வதற்கு சீனியரிஜெ தொகைக்கு 20 சதவிகிதம் உரிய அரசு கணக்கில் செலுத்தி களியம் கொண்டு செல்லப்பட வேண்டும்.

- 13) குவாரி குத்தகை கோரி ஒரே ஒரு மாற்றாக டெண்டர் மறு கொடுக்கப்பட்டு திரந்த முறை பொது ஏலத்தில் கலந்து கொள்ள யாரும் முன்வரவில்லையெனில், டெண்டர் தொகை அரசுக்கு ஆதாயமானது என்று உதவி / துணை இயக்குநர் (பரிமியல் மற்றும் கரங்கத்துறை) கருதினால், அந்த டெண்டர் மறுதாரருக்கு குவாரி குத்தகை வழங்க உதவி / துணை இயக்குநர் (பரிமியல் மற்றும் கரங்கத்துறை) ஒப்புதல் அளிக்கலாம். டெண்டர் தொகை அரசுக்கு ஆதாயமானதல்ல என்று உதவி / துணை இயக்குநர் (பரிமியல் மற்றும் கரங்கத்துறை) கருதும் பட்சத்தில், பழுவையத் தள்ளுபடி செய்து ஆணையிடப்பட்டு மறு ஏலத்தின் மூலம் குவாரி குத்தகை வழங்க வேண்டுவடிக்கை எடுக்க மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.



- 14) மாண்புமிகு இந்திய உச்சநீதிமன்றம் வழக்கு எண் ஐ.ஏ 12-13/2012 என்.எல்.பி (சி) எண் 19628 - 19629/2009 ஆகியவற்றின் மீது 27.02.2012 அன்று வழங்கியுள்ள ஆணைகளின்படி, இந்திய அரசு கற்றுச்சுழல் மற்றும் வளத்துறை குறிப்பானவை எண். எம்.11011/47/2011 - IA. II(M) நாள்: 18.05.2012ன்படி, அரசவை எண். (எம்எல்)எண். 79, தொழில் (எம்எம்சி1) துறை நாள்: 08.04.2015ன்படி 1959ஆம் வருடத்திய தமிழ்நாடு சிறுகளிய சிறைக விதிகளில் திருத்தம் செய்யப்பட்டு சேர்க்கப்பட்ட விதிகள் எண். 41 மற்றும் 42-ன் படி அமைத்து சிறைகளிய குவாரிகளுக்கும் குவாரி குத்தகை வழங்கும் முன்பு முயிபியல் மற்றும் கரங்கத் துறை துணை இயக்குறால் அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம் மற்றும் இந்திய அரசின் கற்றுச்சுழல், வளம் மற்றும் பருவநிலை மற்றும் அமைச்சகத்தால் வழங்கப்படும், மாநில கற்றுச்சுழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின் / இவை ஆகியவற்றை பெற்று சமர்ப்பித்த மீன்பு மட்டுமே குவாரி குத்தகை வழங்க முடியும் குவாரி பணி தொடங்குவதற்கு முன்பாக தமிழ்நாடு யாக கட்டுப்பாட்டு வாரியத்தின் இசைவினை பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி பணி தொடங்க அனுமதிக்கப்படும்.
- 15) அதிகப்படுத்த தொகை கேட்ட நபருக்கு குவாரி குத்தகை உரிய உறுதி செய்யப்படுமாயின் அவருக்கு குவாரி குத்தகை உரிய வழங்கப்படவுள்ள குவாரியின் பல எண், பரப்பளவு, ஆகிய விவரங்கள் அடங்கிய அறிவிக்கை வழங்கப்பட்டு அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம், தமிழ்நாடு மாநில கற்றுச்சுழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின்/ இந்திய அரசு கற்றுச்சுழல் மற்றும் வளத்துறையின் தடையின்மை என்று ஆகியவற்றை விதிகளின்படி உரிய காலத்திற்குள் சமர்ப்பிக்குமாறு தெரிவிக்கப்படும்.
- (அ) மேற்கண்ட அறிவிக்கை பெற்றுக்கொண்ட மனுதாரர் கரங்கத்திட்டத்தை தகுதி வாய்ந்த நம் (QP) மூலம் அரசு தெரிவித்துள்ள விதிகள் மற்றும் வழிகாட்டுதலின்படி தயாரித்து அறிவிக்கை பெறப்பட்ட நாளிலிருந்து மூன்று மாத காலத்திற்குள் கிருஷ்ணகிரி முயிபியல் மற்றும் கரங்கத்துறை துணை இயக்குறிடம் அங்கீகாரம் பெற சமர்ப்பிக்க வேண்டும்.
- (ஆ) மேற்கண்ட மனுதாரர் கிருஷ்ணகிரி முயிபியல் மற்றும் கரங்கத்துறை துணை இயக்குறால் அங்கீகாரம் வழங்கப்பட்ட கரங்கத்திட்டத்தை இந்திய அரசு கற்றுச்சுழல், வளம் மற்றும் பருவநிலை மற்றும் அமைச்சகத்தின் மாநில கற்றுச்சுழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின் முன்பு சமர்ப்பித்து தடையின்மை என்று மேலி விண்ணப்பித்து தடையின்மை சான்றினை பெற்று சமர்ப்பிக்க வேண்டும்.
- (இ) காவேரி வடக்கு வளவிலங்கு ஏரணாவயம், தேசிய பூங்கா, யானைகளின் வளகை பாற மற்றும் காய் காவடுகளிலிருந்து பாதுகாப்பு இடைவெளி தூரத்திற்கு அடங்கிய மட்டுமே குத்தகை உரிய வழங்க நடவடிக்கை எடுக்கப்பட்டுள்ளது. எனினும், அரசால் மாற்றி அமைக்கப்படும் பாதுகாப்பு இடைவெளி தூரத்திற்குள் குவாரி பததி வருவதாக பிற்காலத்தில் தெரிபவந்தால் குத்தகை உரிய ரத்து செய்ய மேலநடவடிக்கை தொடரப்படும்.
- (ஈ) அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம் முதல் ஐந்து ஆண்டு காலத்திற்கு மட்டுமே செல்லத்தக்கதாகும்.
- (உ) மேற்கண்ட ஆணைங்களை சமர்ப்பித்த மீன்பு விதிகளின்படி மனுதாரருக்கு குவாரி குத்தகை வழங்கி ஆணையிடப்படும் அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம் மற்றும் தமிழ்நாடு மாநில கற்றுச்சுழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின்/ இந்திய அரசு கற்றுச்சுழல், வளம் மற்றும் பருவநிலை மற்றும் அமைச்சகத்தின் தடையின்மை என்று ஆகியவற்றை குறிப்பிட்ட காலக்கெடுவிற்குள் சமர்ப்பிக்க தவறினால் மனுதாரருக்கு மாவட்ட ஆட்சியர் முன்பு விசாரணைக்கு ஆதாரம் வாய்ப்பளித்து விசாரணை நடத்தப்பட்டு ஏற்கனவே வழங்கப்பட்ட உத்தரவு ரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.
- 16) மேற்கூறிய உத்தரவு கிடைக்கப் பெற்றவுடன் விண்ணப்பதாரர், ஆணையில் குறிப்பிடப்பட்ட காலக்கெடுவிற்குள் கீழ்க்கண்ட ஆணைங்களை குத்தகை குடிபுற ஆணைம் திறைபெற்றவறு தொடர்பாக துணை இயக்குற, முயிபியல் மற்றும் கரங்கத்துறை, கிருஷ்ணகிரி அலாகரிடம் சமர்ப்பிக்க வேண்டும்.
- (அ) விண்ணப்பதாரரின் கையொப்பமிட்ட வரைய குத்தகை குடிபுறத்திரம் மற்றும் வரையம்.

- (அ) அசல் குத்தகை ஒப்பந்தப்பத்திரம் தயார் செய்வதற்கு தேவையான நீதித்துறை சாரா முத்திரைத்தாள்.
- (ஆ) காப்புத் தொகைக்கான ஏலம் / டெண்டர் தொகையில் இருந்து சதவீதம் (20%) அல்லது ரூ.10,000/-ய் இடையில் எது அதிகமோ அதை செலுத்தியதற்கான அசல் செலுத்துச்சீட்டு (சலான்).
- (ஈ) மொத்த குத்தகை பரப்பிற்கான பரப்புலாி செலுத்தியதற்கான அசல் சலான்.
- 17) அல்லாறு குறிப்பிட்ட காலத்திற்குள் மேற்கண்ட ஆய்வுகளை சமர்ப்பிக்க தவறினால் வழங்கப்பட்ட குத்தகை உரிமை ரத்து செய்யப்பட்டு அவர் செலுத்திய அனைத்து தொகைகளும் விதிவிரிவடி அரகக்கு ஆதாயம் செய்து அரசு கணக்கில் சேர்க்கப்படும்.
- 18) மேற்கண்ட ஆய்வுகளை ஒட்டி குவாரி குத்தகை ஒப்பந்த ஆய்வுப் பிளான்பெற்றியினை குவாரிப்பணியை தொடங்க வேண்டும். குவாரி குத்தகை ஆய்வுப் பிளான்பெற்றியுடன் குவாரிப்பணி செய்வது கண்டறியப்பட்டால் அது அனுமதியின்றி களியம் வெட்டியெடுத்ததாக கருதப்பட்டு தமிழ்நாடு சிறுகளிய சலுகை விதிகள் 1950ன் விதி 36-அ -ன்படி உரிய நடவடிக்கை எடுக்கப்படுவதுடன் குற்றவியல் நடவடிக்கையும் எடுக்கப்படும்.
- 19) குவாரி குத்தகைக்காக கோரப்பட்ட மொத்த குத்தகை வரலாற்றுப்படி ஒரே தடையில் மொத்தமாக செலுத்தப்படும் குத்தகைத் தொகை நீங்கலாக குத்தகைதாரர் மேற்படி குவாரியில் இருந்து எடுத்துச்செல்ல உத்தேசிக்கவும் சிறுகளியத்திற்கு 1950ம் ஆண்டைய தமிழ்நாடு சிறுகளிய சலுகை விதிகளின் அட்டவணை 2ல் குறிப்பிடப்பட்டுள்ள விதிதாக்கராபடி சீரியரேஜ் கட்டணத்தை செலுத்தி மொத்த இலையாணைச்சீட்டு மற்றும் அனுப்புகைச் சீட்டு பெற்றுள்ள சிறுகளியத்தின் எடுத்துச் செல்ல வேண்டும். மேலும் அரசால் அங்கப்பொது திருத்தி நிர்ணயிக்கப்படும் சீரியரேஜ் தொகையை செலுத்தி அனுமதிச்சீட்டு பெற வேண்டும். மேலும் களியங்களை வெளியில் எடுத்துச் செல்ல போக்குவரத்து அனுமதிச்சீட்டு பெற ஒவ்வொரு முறையும் செலுத்துகின்ற சீரியரேஜ் தொகையின் மீது 10 சதவீத தொகையை கிராஃண்டிங்கி டீயாட்ட களிய அறக்கட்டளை நிதியாக கிராஃண்டிங்கி பரத யாழி வங்கி (State Bank of India) கணக்கு எண்.37243080996-ல் சலான் மூலம் செலுத்த வேண்டும். மேலும் கூடுதலாக அரசால் நிர்ணயிக்கப்பட்ட பணம் வரியை உரிய அரசு கணக்கில் செலுத்தி அசல் சலான் சமர்ப்பிக்க வேண்டும்.
- 20) குத்தகைதாரர் ஒவ்வொரு மாதமும் குவாரிப்பணி செய்த தொழிலாளர்கள், குவாரி செய்த களியத்தின் அளவிற்குரிய கணக்குகளை மீதி யாதம் ஐந்தாம் நாளுக்குள் துணை இடக்குள் புவியியல் மற்றும் கரங்கத்துறை, கிராஃண்டிங்கி அவர்களக்கு தளிக்கைக்கு ஆஜர் செய்வ வேண்டும்.
- 21) குவாரிகளுக்கு அருகில் உள்ள போக்குவரத்து சாலைகள், கிராம சாலைகள் குடியிருப்பு மருதிகள் வீடுகள், வண்டிப்பாதைகள், மீள் மற்றும் தொலைபேசி கம்பிகள், டிரான்ஸ்மீட்டர்கள், ரயில்பாதைகள் பொதுப்பணித்துறை வாய்க்கால், மதசம்பந்தமான வழிபாட்டுத்தலங்கள் மற்றும் இரா நிவாயான அமைப்புகள் இவற்றிலிருந்து 1950ஆம் ஆண்டைய தமிழ்நாடு சிறுகளிய சலுகை விதிகளின்படி பாதுகாப்பு இடைவெளி மிட்டு மீதமுள்ள இடத்திற்குள் தான் குவாரிப்பணி செய்யவேண்டும். பொதுமக்கள் உபயோகத்தும் இடங்கள் குடியிருப்புக்கள் பட்டா நிலங்கள் அல்லது பொதுச் சொத்துக்கள் ஆகியவற்றிற்கு சேதம் ஏதும் ஏற்படாமல் குவாரிப்பணி செய்ய வேண்டும். குவாரி பணியால் சேதம் ஏதும் ஏற்பட்டால் அதற்கு குத்தகைதாரரே முழு பொறுப்பேற்று அதில் ஏற்படும் நடத்தகை எடு செய்பது தரவேண்டும்.
- 22) குத்தகைதாரரை மேற்குறிப்பிட்ட நிபந்தனைகள் அங்கமல் 1950ஆம் ஆண்டைய தமிழ்நாடு சிறுகளிய சலுகை விதிகள், களியங்கள் மற்றும் கரங்கங்கள் (மேம்படுத்துதல் மற்றும் முறைப்படுத்துதல்) சட்டம் 1957 மற்றும் இந்த அரசினால் குறிப்பிடப்பட்டுள்ள சிறப்பு நிபந்தனைகள் மற்றும் அரசால் அங்கப்பொது கொண்டுவரப்படும் ஆணைகளும் விதிகளும் கட்டுப்படுத்துவர்.



- 23) இவ்விதிகளின்கீழ் வழங்கப்படும் குவாரிசனின் குத்தகை காலம் எவ்வாறானதற்குக் கொண்டு வரப்பட்டிருக்கிறது என்பதைக் காலத்திற்கு மேல் நீட்டிக்கப்படவோ அல்லது குத்தகை காலம் முடிக் கட்டவோ என்று குத்தகை காலம் முடிந்தபின் குத்தகைதாரர்கள் குத்தகைக்கு விட்டபட்ட பகுதிகளில் எவ்விதமான உரிமையுடைய கொண்டாடக் கூடாது. மேலும், குத்தகை காலம் முடிந்தபின் மேற்கண்ட புத்தகை அரசுக்கு திரும்ப ஒப்படைத்து அதற்கான சான்றிதழை கிராம நிர்வாக அலுவலரிடம் பெற்று வட்டாட்சிவர் வாரியாக மாவட்ட ஆட்சியருக்கு தெரிவிக்க வேண்டும்.
- 24) 14 வயதுக்குட்பட்ட குழந்தை தொழிலாளர்களை குவாரிப்பணியில் ஈடுபடுத்தக்கூடாது.
- 25) இங்கு அரசினால் குவாரி குத்தகை உரிமத்திற்காக அறிவிக்கப்பட்டிருக்கும் மட்டியவில் உள்ள குத்தகை விட்டும் குவாரிசனை டெண்டர் / ஏலம் நடவெறுவதற்கு முன்பாக நிறுத்தி வைக்கவோ, நீக்கவோ, புதியதாக சேர்க்கவோ குவாரி பரப்பளவை மாற்றவோ, மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.
- 26) நிர்வாக சூழல் காரணமாக டெண்டர் மற்றும் ஏலத்தை ரத்து செய்ய மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.
- 27) செய்தித்தாளர் மூலமாகவோ, மாவட்ட அரசிதழ் மூலமாகவோ, அறிவிப்பு செய்யப்படாத குவாரிகளுக்கு ஏதாவது ஒப்பந்தப்பள்ளி விண்ணப்பங்கள் கிடைக்கப் பெற்றால் அவையாவும் முதிர்ச்சி அடையாத விண்ணப்பமாக கருதப்பட்டு உடனடியாக நிராகரிக்கப்படும். குறித்த காலக்கெடுவிற்குள் வந்து சேராத விண்ணப்பங்கள் காலவரையறை கடந்த விண்ணப்பமாக கருதப்பட்டு அவையாவும் நிராகரிக்கப்படும். நிராகரிக்கப்பட்ட விண்ணப்பங்களின் விண்ணப்ப கட்டணம் தவிர பிற வங்கி வரையோவைகள் மட்டும் விண்ணப்பதாரருக்கு திரும்ப அனுப்பி வைக்கப்படும்.
- 28) 1959-ஆம் வருடத்தில் தமிழ்நாடு சிறுகணிம சலுகை விதிகள் அட்டவணைப் படிப்பில் கண்ட ஒப்பந்தப்பத்திரத்தில் தேவையான அளவிற்கு நிர்வாகணகளை புதியதாக சேர்க்கவோ, நீக்கவோ மாற்றி அடையக்கவோ அரசுக்கு அதிகாரம் உண்டு. குத்தகை பத்திரம் ஏற்படுத்தியபின்பு புல எண் மற்றும் குவாரி செய்ய ஒதுக்கப்பட்ட பரப்பளவிடத்து எவ்வித தாவரமும் செய்ய குத்தகைதாரருக்கு உரிமை கிடையாது.
- 29) குத்தகை ஒப்பந்தப்பத்திரத்தை புவனரபுத்துடன் சொத்து மாற்றுகைச் சட்டம் 1882-ன் பிரிவு 107ன் கீழ் குத்தகைதாரர் தனது சொந்த செலவில் பதிவுசெய்து பதிவு செய்த ஒப்பந்தப்பத்திரத்தினை கிராமங்களிலி பதிவியல் மற்றும் காவல்துறை துறை இயக்குநர் அலுவலகத்தில் உடனீ ஒப்படைக்க வேண்டும்.
- 30) தமிழ்நாடு சிறுகணிம சலுகை விதிகள் 1959-ன் விதி 36(1)ல் வரையறுக்கப்பட்டுள்ளவாறு அருகிலுள்ள குடியிருப்புகளுக்கு பாதுகாப்பு இடைவெளியாக 300 மீட்டரும் கிராம சாலைகளுக்கு 10 மீட்டரும் இதர சாலைகள் கூட்டங்கள், வயிசாட்டு குளங்கள், மின்கம்பி பாறைகள், தொலைபேசி பாறைகள், பாதகவண்ப்பாறைகள், டிரான்ஸ்மீட்டர்கள், ஆறு, ஏரி, குளம், குட்டை மற்றும் இதர பொது சொத்துக்கள் ஆகியவற்றிற்கு பாதுகாப்பு இடைவெளியாக 50 மீட்டரும் விட்டு மீதமுள்ள இடத்திற்குள்ள்தான் குவாரிப்பணி செய்யப்படவேண்டும். பாரதன சின்னங்களுக்கு தொல்வியல் துறையால் வரையறுக்கப்பட்டுள்ள பாதுகாப்பு இடைவெளி விட்டும் குவாரிப்பணி செய்ய வேண்டும். விதிகளின்படி தொல்வியல் சின்னங்களுக்கு 500 மீட்டர் பாதுகாப்பு இடைவெளி விட்டும், வனவிலங்கு சரணாலயம், தேசிய பூங்கா, பாறைகளின் வளைபாதை மற்றும் காப்புக்காடுகளுக்கு ஒரு கிலோ மீட்டர் பாதுகாப்பு இடைவெளிவிட்டும் குவாரி பணி செய்ய வேண்டும். பொதுயக்கள் உட்காண்க்கும் இடங்களான குடியிருப்புகள் பட்டா நிலங்கள் மற்றும் இதர பொதுசொத்துக்கள் ஆகியவற்றிற்கு சேய் ஏலம் தேரிட்டால் அதற்கு குத்தகைதாரர் முழுபொறுப்பெற்று அதில் ஏற்படும் நடத்தகை ஈடுசெய்து தரவேண்டும்.
- 31) நிர்வாக காரணம் மற்றும் பொது நலனை கருத்தில் கொண்டு குத்தகைக்கு விட்டபட்ட பரப்பினை பின்னர் குறைத்து நிர்ணயிக்கவும், குவாரி குத்தகையை ரத்து செய்யவும் அரசுக்கு அதிகாரம் உண்டு.

- 32) குத்தகைதாரர் 1953ஆம் வருடத்தில் தமிழ்நாடு சிறுகளில் சிறைகளில் விதிக்கப்பட்டிருக்கும் மரபிட்ட அரசினால் உள்ள நிபந்தனைகளின்படியும் ஒப்பந்தப்படுத்தி நிபந்தனைகளின்படியும் நடந்து கொள்ள கடமைப்பட்டவராவார். குத்தகைவசூலில் சட்டத்தீர்மானம் மற்றும் குவாரி குத்தகை நிபந்தனைகளுக்கு ஒப்பந்த விதிகளுக்கு முன்பாக குத்தகைதாரர் நடந்து கொண்டால் குத்தகை ரத்துச் செய்யப்படுவதுடன் காப்பதொகை மற்றும் அளி செலுத்திய அளவற்று தொகைகளும் அரசுக்கு பரிசுதல் செய்யப்படும். அக்குவாரிக்கு மீண்டும் குவாரி குத்தகை வழங்க நடவடிக்கை மேற்கொள்ளப்படும்.
- 33) குவாரி குத்தகை வழங்கப்பட்ட இடத்தில் சாதாரண கற்களை குவாரி செய்வதில் ஏற்படக்கூடிய நஷ்டங்களுக்கு அரசால் எவ்வித நஷ்டமும் வழங்கப்பட மாட்டாது.
- 34) வழங்கப்பட்ட குத்தகை உரிமத்திற்கு சொதுமக்கள் மற்றும் அரசு துறை மூலம் கடுமையான ஆட்சேபம் இருப்பின் பொது நன்மையை கருதி குத்தகையை ரத்துச் செய்ய தேரிட்டால் அதனால் ஏற்படும் இழப்பிற்கு எடுகோ குத்தகைதாரருக்கு உரிமை இல்லை.
- 35) குத்தகைதாரர் குவாரியை வேறு யாருக்கும் மாற்றவோ உள் குத்தகைக்கு விடவோ கூடாது. அப்படி ஏதாவது செய்திருப்பது தெரிய வந்தால் நஷ்ட குத்தகை ரத்துச் செய்யப்படுவதுடன் குத்தகைதாரர் செலுத்திய தொகையும் அரசுக்கு ஆதாயம் செய்யப்படும்.
- 36) குத்தகைதாரர், முனிசிபல் மற்றும் கரங்கத்தறை, துணை இயக்குநர் அலுவலகத்தில் அரசு குறிப்பிட்ட படிவத்தில் அனுப்புகைச் சீட்டுக்களை அச்சிட்டு சமர்ப்பிக்க வேண்டும். குத்தகைதாரர் சிறுகளில் எடுத்து செல்லும் வாகனத்துடன் அனுப்புகைச் சீட்டு கொடுத்து அனுப்ப வேண்டும். இந்நடைச்சீட்டை இரு பிரதிகள் அச்சிட்டு வரிசை எண்ணிட்டு தாங்கள் உத்தேசமாக எடுக்க இருக்கும் மோடுகளுக்கு மோடு ஒன்றுக்கு ஒரு சீட்டு வீதம் கணக்கிட்டு அதற்குரிய சிளிபெடு தொகையினை செலுத்திய பின்னர், சிறுமண்கிரி முனிசிபல் மற்றும் கரங்கத்தறை, துணை இயக்குநரின் அனுப்புகைச்சீட்டு மற்றும் பொத்த இசைவாணைச் சீட்டு ஆகியவற்றில் உரிய முத்திரையும் கைபொப்பும் பெற்றபின்மே பணிபடுத்த வேண்டும்.
- 37) ஒப்பந்த பெறப்படாத அனுப்புகைச்சீட்டுகள் களியம் கொண்டு செல்லும் வாகனங்கள் அதிலுள்ள சிறுகளியத்தை முறையற்ற வகையில் எடுத்துச் செல்வதாக கருதப்பட்டு உரிய சட்டத்தின்படி உரிய அலுவலர்களால் கைப்பற்றப்பட்டு அபராதம் விதிக்கப்படும்.
- 38) முனிசிபல் மற்றும் கரங்கத்தறை அலுவலர்கள், காவல் துறையினர் அல்லது வருவாய்த்துறை அலுவலர்கள் முதலானோர் தணிக்கை செய்யப்போது உரிய கணக்குகள் மற்றும் அனுப்புகைச் சீட்டு முதலானவைகளை குவாரி குத்தகை உரிமம் பெற்ற குத்தகைதாரர் காண்பிக்க வேண்டும்.
- 39) அரசு அலுவலர்கள் தணிக்கை செய்யும் போது சிறுகளியங்கள் கொண்டு செல்லும் வாகனங்களை தணிக்கைக்கு உட்படுத்த வாகன ஓட்டுனர்களை குத்தகைதாரர்கள் அறிவுறுத்த வேண்டும்.
- 40) அனுப்புகைச்சீட்டில் உள்ள கணங்கள் பூர்த்தி செய்யப்படாமலே அல்லது தவறாக எழுதப்பட்டு வாகனங்களுக்கு கொடுக்கப்பட்டிருந்தாலே சிறுகளியம் கொண்டு செல்லும் வாகன உரிமையாளருக்கு அபராதம் மற்றும் குற்றமில் நடவடிக்கை எடுக்கப்படும். மேலும், குவாரி குத்தகையை ரத்து செய்ய நடவடிக்கை மேற்கொள்ளப்படும்.
- 41) குத்தகைதாரர் ஒவ்வொரு நாளும் குவாரியில் எவ்வளவு சிறுகளியங்கள் பெட்டி எடுக்கப்பட்டது என்பதையும் எந்த அளவு களியங்கள் வாரி, வண்டி மூலம் வெளியே அனுப்பப்பட்டது என்ற விவரத்தையும் காட்டும் பதிவேடு பாயரிக்க வேண்டும். குவாரி குத்தகை சம்பந்தமான இதர பதிவேடுகளை பாயரிக்க வேண்டும்.



- 42) அரசு மற்றும் மாவட்ட ஆட்சியர்கள் சுவாரி குத்தகை உரிமை சம்பந்தமாக ஏற்படுத்தப்பட்ட தீர்மானம்-அவ்வாறு ஏற்படுத்தப்படும் சட்ட திட்டங்களுக்கும், நிபந்தனைகளுக்கும் குத்தகைதாரர் கட்டுப்பாட்டு நுட்பம் வேண்டும். குத்தகை காலத்திலே அல்லது அதற்குப்பின்னரே கிராமம் தவிர குத்தகையை பயன்படுத்தியதினால் ஏற்படும் சலச நஷ்டங்களுக்கும் குத்தகைதாரர்கள் பொறுப்பேற்க வேண்டும். இதற்காக விதிக்கப்படும் அபராதம் மற்றும் குற்றவியல் நடவடிக்கைக்கு கட்டுப்பாட்டு நடக்க வேண்டும்.
- 43) குத்தகை நிபந்தனை மீறப்பட்டால் குத்தகையை ரத்துச் செய்யலாம் செய்யப்பட்ட தவறுகளுக்கு குத்தகைதாரருக்கு தண்டனை விதிக்கலாம் கிராமிய வழக்குகளிலே அரசுக்கு அதிகாரம் உண்டு. குத்தகை ரத்துச் செய்யப்பட்டால் காப்புத்தொகை உள்பட அனைத்து தொகைகளும் அரசுக்கு ஆதாயம் செய்யப்படும். வழங்கப்பட்ட குத்தகை உரிமத்தை எக்காரணத்திற்காவது ரத்துச்செய்யும் பட்சத்தில் அதனால் ஏற்படும் எவ்வித நஷ்டங்களுக்கும் அரசு பொறுப்பில்லை. குத்தகை எடுத்துவர் எந்த காரணத்தை முன்விட்டும் தனக்கு திரட்டி ஏற்பட்டால் நஷ்டசூ குடேக்கக்கூடாது.
- 44) குத்தகை எடுத்துவர் குத்தகையை அனுபவிக்காமல் விட்டாலும் செலுத்தப்பட்ட குத்தகை தொகை எக்காரணத்தை முன்விட்டும் திரும்ப வழங்கப்படமாட்டாது.
- 45) சுவாரிகளின் எல்லைகள் பற்றி பிரச்சினைகள் ஏற்பட்டால் மாவட்ட ஆட்சியரின் தீர்மானம் இறுதியானது.
- 46) கஞ்சமாரி குத்தகை உரிமை வழங்கப்பட்ட பின்னர் அக்கஞ்சமாரியின் ஏதாவது ஒரு பகுதியில் வரலாற்று முக்கியத்துவம் வாய்ந்த ஸ்தலங்களை கல்வெட்டுக்கள், சிற்ப வடிவமைப்புகள் போன்றவைகள் காணப்பட்டால் அது குறித்து அரசுக்கு தகவல் தரவேண்டும். மேலும், அப்பகுதியில் கற்கள் உட்பட நிறுத்தப்பட்டு அப்பாடான சின்னங்கள் பாதுகாக்கப்பட வேண்டும்.
- 47) டெண்டிஸ் கோட்டும் புல எண்களின் பேரில் எவையெனும் நீதிமன்றத்தின் ஆணை / தண்டபாணை முதலானவை நீதிமன்றத்தில் தெரிவிக்காத தெரிவிப்பதால் அவைகள் கீழ் குத்தகை உரிமை வழங்குவதில் மாவட்ட ஆட்சியரின் முடிவே இறுதியானது.
- 48) குத்தகைதாரர் குத்தகை வழங்கப்பட்ட சுவாரி முகப்பில் சுவாரியின் புல எண் பரப்பு குத்தகைதாரர் பெயர் குத்தகை வழங்கப்பட்ட செயல்புற ஆணை எண் குத்தகை தொகை, குத்தகை காலம் போன்ற விவரங்கள் குறிக்கப்பட்ட தகவல் பரண்கையை தளவு சொந்த செலவில் வைத்து குத்தகை காலம் முழுதும் பராமரிக்க வேண்டும்.
- 49) குத்தகைதாரர் சுவாரியின் எல்லைகளை தெரிவிக்க தெரிவிப்படி வண்ணமிட்ட எல்லைக் கற்களை (DGPS) முறையில் அளவிட்டு செய்து கண்காணி அனுப்பாமலும் பின்பே சுவாரி செய்ய வேண்டும். எல்லை கற்களை குத்தகை காலம் முழுவதும் தளவு சொந்த செலவில் நன்கு பராமரிக்க வேண்டும்.
- 50) குத்தகைக்கு வழங்கப்பட்ட கஞ்சமாரிகளின் சாதாரண கற்கள், கட்டுக்கல், சக்கை கற்கள், ஸ்டீல் கற்கள் ஆகியவைகளை மட்டுமே சுவாரி செய்ய வேண்டும். அவர் நாட்டிற்கு ஏற்றுமதி செய்வதற்கும் வெள்கு ஏற்றுமதிக்கும் பயன்படும் வடிவமைக்கப்பட்ட கற்களை உறுத்தி செய்யக் கூடாது.
- 51) சுவாரியில் வெடி வைத்து கற்களை உடைக்க அங்கீகாரம் பெற்ற வெடிபொருள் விற்பனையாளரிடம் (Licenced Explosive Dealer) வெடிபொருட்களை கொள்முதல் செய்து சான்று பெற்ற வெடி வெட்டியாளர் (Licenced shot Firer) கொண்டு அனைத்து பாதுகாப்பு நிபந்தனைகளையும் கடைபிடித்து வெடிவை வெடிக்க வைக்க வேண்டும்.
- 52) சுவாரியில் சாதாரண ஏர் கம்பர்சைகளை கொண்டு துண்டிட்டு வெடிவைக்க வேண்டும். ஆய்வுகளை கிணறு உபகரணங்களை (Rig Bore) கொண்டு துண்டிட்டு வெடிவைக்கக்கூடாது. அநுகிணறின் விவரம் நிலங்கள், பொதுச்சொத்துக்கள் மற்றும் பொதுமக்கள் ஆகியோருக்கு எவ்வித பாதிப்பும் ஏற்படாமல் சுவாரி பணி செய்ய வேண்டும்.



13

(1)	(2)	(3)	(4) (மொத்தம்)	(5) (மொத்தம்)	(6)	(7)
3	பெண்கள்	278	2,08.50	2,08.50	தீராத பணம்	10
4	குடிசைகள்	54 (பகுதி-3)	16,45.00	1,40.00	தீராத பணம்	10

(ii) ஒஞ்சு வகுப்புகள் கோட்டம்.

ஒஞ்சு கோட்டம்

5	பெண்கள்	603/1 (பகுதி-1)	21,20.50	1,30.00	தீராத தரிசு	5
6	பெண்கள்	603/1 (பகுதி-2)	21,20.50	2,00.00	தீராத தரிசு	5
7	கோயில்கள்	220/1 (பகுதி-1)	16,76.00	3,00.00	தீராத தரிசு	10
8	கோயில்கள்	220/1 (பகுதி-2)	16,76.00	3,00.00	தீராத தரிசு	10
9	கோயில்கள்	220/1 (பகுதி-3)	16,76.00	3,00.00	தீராத தரிசு	10
10	கோயில்கள்	220/1 (பகுதி-4)	16,76.00	2,00.00	தீராத தரிசு	10
11	கோயில்கள்	381 (பகுதி-1)	4,61.50	1,30.00	தீராத தரிசு	10
12	கோயில்கள்	381 (பகுதி-2)	4,61.50	1,50.00	தீராத தரிசு	10

குளியல்கள் கோட்டம்

13	காணியோட்டி	616/3 (பகுதி-2)	7,66.50	2,75.00	தீராத தரிசு	5
14	காணியோட்டி	653/1(பகுதி)	7,56.00	3,35.00	தீராத தரிசு	5
15	காணியோட்டி	754 & 760 (பகுதி-6)	36,46.50	4,00.00	தீராத பணம்	10
16	காணியோட்டி	86-(பகுதி-1)	60,80.00	2,50.00	தீராத பணம்	5
17	காணியோட்டி	86-(பகுதி-2)	60,80.00	2,00.00	தீராத பணம்	10
18	காணியோட்டி	86-(பகுதி-3)	60,80.00	2,00.00	தீராத பணம்	5
19	காணியோட்டி	88/1 (பகுதி-3)	12,79.00	4,50.00	தீராத பணம்	10

(1)	(2)	(3)	(4) (மொத்தம்)	(5) (மொத்தம்)	(6)	(7)
20	தேரிகள்	72(பகுதி) 87/1(பகுதி)	9.71.00 8.77.00	0.65.00 0.95.00	தீராத பாறை தீராத பாறை	10
			பொத்தம்	1.60.00		
21	துப்புகாணப்பள்ளி	420-(பகுதி-1)	46.61.00	4.00.00	தீராத காடு	10
22	துப்புகாணப்பள்ளி	420-(பகுதி-3)	46.61.00	4.60.00	தீராத காடு	10
23	துப்புகாணப்பள்ளி	420-(பகுதி-4)	46.61.00	4.50.00	தீராத காடு	10
24	செளளப்பள்ளி	327/1 (பகுதி-1)	38.78.00	2.45.00	தீராத காடு	10
25	செளளப்பள்ளி	327/1 (பகுதி-2)	38.78.00	2.45.00	தீராத காடு	10
தேர்வைக்கொட்டை வட்டம்						
26	நாடுவெட்டி	320/1 (பகுதி)	2.23.00	1.70.50	தீராத தரிசு	10
27	நாகவள்ளை	629 (பகுதி)	188.50.00	3.20.50	தீராத கல்வாய் பக்கு	10

கிருஷ்ணகிரி
10-03-2022

வி. ஜெய சந்திர பாண்டிரெட்டி,
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கிருஷ்ணகிரி மாவட்டம்

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RQP/CNN/270/2016/A



வணக்கப்பெறும்

தமிழ்நாடு வனத்துறை

அனுப்புதல்

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பெறுதல்

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கிருஷ்ணகிரி மாவட்டம்,
கிருஷ்ணகிரி.

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அம்மா,

வாரியம் : கனிமங்களும் குவாரிகளும் - கிருஷ்ணகிரி மாவட்டம் - அரக புலங்களில் உரிமம் முடிவடைந்த குவாரிகள் மற்றும் புதிய குவாரிகளை டெண்டர் மற்றும் பொது ஏலத்தில் கொண்டுவர வளப்பகுதி மற்றும் சரணாலயத்திற்கு உள்ள தொலைவு விவரம் மற்றும் இதர விவரங்கள் கோரியது - தொடர்பாக.

- பார்வை :**
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 3. மாவட்ட ஆட்சித் தலைவர், கிருஷ்ணகிரி ந.க.எண்.817/2020/கனிமம் நாள். 04.02.2022.
 4. இவ்வலுவலக ந.க.எண். 261/2022/எல், நாள்.10.02.2022

பார்வையின் கடிதங்களில் தெரிவிக்கப்பட்ட அரக புலங்களில் உரிமம் முடிவற்ற குவாரிகள் மற்றும் புதிய குவாரிகளுக்கு டெண்டர் மற்றும் பொது ஏலத்தில் கொண்டுவர, வளப்பகுதி மற்றும் சரணாலயப் பகுதியிலிருந்து உள்ள தொலைவு விவரம் கோரப்பட்டுள்ளது. இது தொடர்பான விவரம் பின்வருமாறு தெரிவிக்கப்படுகிறது.

குவாரி அனுமதிக்கான வனத்துறையின் குறிப்புரைவய முறையே வளப்பாதுகாவலர் மற்றும் முதன்மை தலைமை வளப்பாதுகாவலர் அவர்களின் அங்கீகாரத்தின்படியே, வனஉயிரின காப்பாளரால் வழங்கப்படுகிறது. எனவே, இவ்வலுவலக வனத்துறையின் தடையின்மேல் ஆவணமாக கருதிடலாகாது. மேலும், பார்வையின் கடிதத்தில் கேட்டவாறு வனத்துறையின் குறிப்புரையளிப்பது குறித்து முன்மொழிவு / பரிந்துரை கடிதம் பார்வை 4ல் கண்ட இவ்வலுவலக கடிதத்தில் வளப்பாதுகாவலர், தருமபுரி மூலமாக முதன்மை தலைமை வளப்பாதுகாவலர் அவர்களுக்கு சமர்ப்பிக்கப்பட்டுள்ளது. அதன்படி, அரக புலங்களில் குவாரி அனுமதி கோரப்பட்ட இடத்தின் தூரம் தகவலின்பொருட்டு பின்வருமாறு தெரிவிக்கப்படுகிறது.

பட்டியல் 1

உள்ளூர் / குடிசை எல்லை விடாமல் பரிசீலனை செய்யப்பட்டுள்ள குவாரி பகுதிகள் விவரம்

Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F. No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
Krishnagiri Taluk								
1	Iinjupalli	Un-assessed waste - Parai	169 (Part)	2.00.00	12.54916	78.15410	3.4 Pethathalapalli	20 Udedurgam
2	Iinjupalli	Un-assessed waste - Tharisu	197/2 (Part)	1.20.00	12.55956	78.15585	4 Pethathalapalli	20.4 Udedurgam
3	Bilanakuppam	Un-assessed waste - Parai	278	2.08.50	12.59999	78.16812	3.2 Naralapalli Extn.	23 Udedurgam
Bargur Taluk								
4	Shoolamalai	Un-assessed waste - Parai	54-Part-3	1.40.00	12.51188	78.25921	7.4 Pethathalapalli	31.2 Udedurgam
Shoolagiri Taluk								
5	Kamandoddi	Un-assessed waste - Tharisu	616/3 (Part-2)	2.75.00	12.66810	77.94928	2.4 Settipalli	14.2 Udedurgam
6	Kamandoddi	Un-assessed waste - Tharisu	653/1 (Part)	3.33.00	12.66448	77.94973	2.8 Settipalli	13.7 Udedurgam
7	Kamandoddi	Un-assessed waste-Malai	754 & 760 (Part-VI)	4.00.00	12.65973	77.96080	2.7 Settipalli	13.3 Udedurgam
8	Kamandoddi	Un-assessed waste - Tharisu	1276 (Part)	2.00.00	12.66421	77.96741	2.2 Settipalli	13.9 Udedurgam
9	Venkatesapuram	Un-assessed waste-Karadu	86-Part-1	2.50.00	12.75552	77.94513	1.05 Athimugam II	24 Udedurgam
10	Venkatesapuram	Un-assessed waste-Karadu	86-Part-2	2.00.00	12.75586	77.94660	1.05 Athimugam II	24.1 Udedurgam
11	Venkatesapuram	Un-assessed waste-Karadu	86-Part-3	2.00.00	12.75397	77.94352	1.04 Athimugam II	23.8 Udedurgam
12	B.S. Thimmasandiram	Un-assessed waste-Parai	88/1 (Part-3)	4.50.00	12.84070	77.95736	1.01 Amuthugondapalli	33.5 Udedurgam
13	Doripalli	Un-assessed waste-Parai	72(Part)	0.65.00	12.71262	77.95474	2.2 Settipalli	19.3 Udedurgam
			87/1(Part)	0.95.00				
			Total	1.60.00				
14	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-1	4.00.00	12.62856	77.95266	4.5 Sanamavu	9.9 Udedurgam
15	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-3	4.60.00	12.62804	77.95370	4.8 Sanamavu	9.7 Udedurgam
16	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-4	4.50.00	12.62499	77.95265	4.7 Sanamavu	9.6 Udedurgam



Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F. No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
17	Chennapalli	Un-assessed waste - Karadu	327/1 - Part-1	2.45.00	12.62504	78.05404	2 Errandapalli	14.3 Udedurgam
18	Chennapalli	Un-assessed waste - Karadu	327/1 - Part-2	2.45.00	12.62400	78.05477	2 Errandapalli	14.3 Udedurgam
Hosur Taluk								
19	Mugalur	Un-assessed waste	232/2 (Part-2)	4.85.00	12.62273	77.81719	5.6 Sanamavu	11.6 Udedurgam
20	Panchakshipuram	Un-assessed waste	603/1 (Part-C)	1.30.00	12.59781	77.79278	8.6 Sanamavu	11.6 Udedurgam
21	Panchakshipuram	Un-assessed waste	603/1 (Part-D)	2.00.00	12.59668	77.79277	8.6 Sanamavu	11.5 Udedurgam
22	Gobanapalli	Un-assessed waste	220/1 (Part-1)	3.00.00	12.63255	77.81140	6.4 Sanamavu	13 Udedurgam
23	Gobanapalli	Un-assessed waste	220/1 (Part-2)	3.00.00	12.63169	77.81128	6.4 Sanamavu	12.8 Udedurgam
24	Gobanapalli	Un-assessed waste	220/1 (Part-3)	3.00.00	12.63221	77.81357	6.2 Sanamavu	12.8 Udedurgam
25	Gobanapalli	Un-assessed waste	220/1 (Part-4)	2.00.00	12.63109	77.81268	6.3 Sanamavu	12.7 Udedurgam
26	Gobanapalli	Un-assessed waste	381 (Part-1)	1.30.00	12.63489	77.81198	6.4 Sanamavu	13.2 Udedurgam
27	Gobanapalli	Un-assessed waste	381 (Part-2)	1.50.00	12.63391	77.81214	6.4 Sanamavu	13.1 Udedurgam
Denkanakottal Taluk								
28	Hosapuram	Un-assessed waste	346 (Part), 353, 354/2	1.97.50	12.64563	77.81959	6.1 Sanamavu	13.8 Udedurgam
29	Darevendiram	Un-assessed waste - Podu	320/1 (Part)	1.70.50	12.56214	77.68326	6.5 Jawalagiri	6.5 Jawalagiri
			320/2	0.29.50				
			Total	2.00.00				
30	Nagamangalam	Un-assessed waste - Kallankuthu	629 (Part)	3.20.50	12.57400	77.91418	3.9 Udedurgam	3.9 Udedurgam

தேற்கண்ட அட்டவணை இல் உள்ள குவாரி பகுதிகள், அவ்வாறு வடக்கு வளைவரிடம் அமைந்துள்ள குழல் உயர்தரம் மண்டலத்திற்குள் (Eco-Sensitive Zone) வருவதில்லை.


அட்டவணை 2

கெண்டர் / பொது ஏரல் மூலம் சூத்தலை அணுபதி வயங்குவரை தற்காலிகமாக நிறுத்திவைக்க பரிந்துரை செய்யப்படும் குவாரிகளின் விவரம்

Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F.No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
Krishnagiri Taluk								
1	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-II)	1.00.00	12.55536	78.22426	3.2 Kundarapalli II	27.7 Udedurgam
2	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-III)	1.00.00	12.55541	78.22483	3.2 Kundarapalli II	27.8 Udedurgam
3	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-IV)	0.90.00	12.55463	78.22316	3.2 Kundarapalli II	27.6 Udedurgam
4	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-V)	3.50.00	12.55034	78.22850	3.9 Kundarapalli II	28.05 Udedurgam
5	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-VI)	1.00.00	12.54704	78.22598	3.7 Pethathalapalli	27.8 Udedurgam
Uthangarai Taluk								
6	Katteri	Govt. Punjai - Podugal	17/1	1.25.00	12.19712	78.53751	1.6 Onnakarai	65.4 Marandahalli
7	Thathanur		10//2	1.61.00	12.21405	78.53499	0.5 Onnakarai	64.6 Marandahalli
Shoolagiri Taluk								
8	Mattampalli	Un-assessed waste-Karadu	53/1 (Part-1)	3.00.00	12.69400	78.06509	0.53 Kumbalam I	21 Udedurgam
9	Mattampalli	Un-assessed waste-Karadu	53/1 (Part-2)	1.90.00	12.69279	78.06464	0.64 Kumbalam I	20.9 Udedurgam
10	Marandapalli	Un-assessed waste-Parsi	71/2	1.15.0	12.67734	78.05708	1.4 Thekkalapalli	19.1 Udedurgam

மேற்கண்ட அட்டவணை 2ல் குறிப்பிட்டுள்ள இடங்கள் குறித்து வனம் மற்றும் வனஉயிர் பாதுகாப்பு தொடர்பான கட்டுரைகள் ஆய்வு மேற்கொள்ள வேண்டி உள்ளதாலும், மேலும் கால அவகாசம் தேவைப்படுவதால் அப்பகுதியை ஒட்டி அமைந்துள்ள இடங்களில் காப்பு நிலம் தொடர்பான முன்சொழிவுகள், பரிசீலனையில் உள்ளதாலும் இதுகுறித்த மேல் நடவடிக்கையினை துரிதப்படுத்தி இயலாத சூழ்நிலையில் உள்ளது. எனவே, அட்டவணை 2ல் உள்ள இவ்விடங்களின் கெண்டர் மற்றும் பொது ஏரல்தில் விடுவதை தற்சமயம் நிறுத்தி வைக்க பரிந்துரைக்கப்படுவதுடன், இவ்விடங்கள் தூரத்தை கணக்கிடும் பொருட்டு அனுப்பப்படுகிறது குவாரி பணிகள் மேற்கொள்ள தனியாக துறைத்தலைவரிடமிருந்து வனத்துறையின் தடை குறித்த குறிப்புரை வரங்கப்படும் என அன்புடன் தெரிவித்துக்கொள்கிறேன்.

தங்கள் அன்புள்ள,
ஒம்/- க. கார்த்திகேயனி,
வனஉயிர் பாதுகாப்பாளர்,
ஒசூர் வனக்கோட்டம்.


S. MATHAN PRAKASH, M.Sc., M.Phil.,
RQP/CNN/270/2016/A

//உ.ந.உ.ய//





Handwritten text, possibly a date or number, located below the trapezoidal shape.

ANNEXURE - 2

ಮೂಲಕ ಸೇವೆಗಾಗಿ ನೇಮಕಗೊಂಡ ಅಧಿಕಾರಿಗಳ ವಿವರ

ಕ್ರ. ಸಂ.	ನಾಮ	ವಿಭಾಗ	ಹುದ್ದೆ	ವಿಧ	ತರಗತಿ	ವಿವರ
1	ಶ್ರೀಮತಿ. ಬಿ. ಸುಜಾತಾ	ಆರೋಗ್ಯ	ಆರೋಗ್ಯ ಸಹಾಯಕಿ	ಸರ್ಕಾರಿ	ಬಿ.ಎ.ಸಿ.	ಬಿ.ಎ.ಸಿ. 1987-88
2	ಶ್ರೀಮತಿ. ಬಿ. ಸುಜಾತಾ	ಆರೋಗ್ಯ	ಆರೋಗ್ಯ ಸಹಾಯಕಿ	ಸರ್ಕಾರಿ	ಬಿ.ಎ.ಸಿ.	ಬಿ.ಎ.ಸಿ. 1987-88



ಅಧಿಕಾರಿಗಳ ವಿವರ
ಶ್ರೀಮತಿ. ಬಿ. ಸುಜಾತಾ

ಕ್ರ. ಸಂ.	ನಾಮ	ವಿಭಾಗ	ಹುದ್ದೆ	ವಿಧ	ತರಗತಿ	ವಿವರ
1	ಶ್ರೀಮತಿ. ಬಿ. ಸುಜಾತಾ	ಆರೋಗ್ಯ	ಆರೋಗ್ಯ ಸಹಾಯಕಿ	ಸರ್ಕಾರಿ	ಬಿ.ಎ.ಸಿ.	ಬಿ.ಎ.ಸಿ. 1987-88
2	ಶ್ರೀಮತಿ. ಬಿ. ಸುಜಾತಾ	ಆರೋಗ್ಯ	ಆರೋಗ್ಯ ಸಹಾಯಕಿ	ಸರ್ಕಾರಿ	ಬಿ.ಎ.ಸಿ.	ಬಿ.ಎ.ಸಿ. 1987-88

380/20-87, 11.6.11-50,000 Cps-587, ಮೂ. 7-2017.



1	2	3	4	5	6	7	8	9	10		
214	10	214-1	ர	4	...	8-3	7	2 77	0 34-5	0 96	245 ம. மலர் காந்தியார்.
	2	-2	அ	40	...	...	...	...	0 16-0	...	...
									1 28-0	3 12	...
215	...	215	ர	4	...	8-5	10	1 09	0 39 0	0 44	115 சூ. சிவா மங்கையர்.
216	...	216	அ	40	...	...	...	...	0 90-0	...	...
217	...	217	அ	40	...	...	...	...	0 22-0	...	...
218	...	218	ர	4	...	8-5	10	1 09	0 33-0	0 37	330 சூ. ம.கமலர்.
219	...	219	அ.ப.ச.ச	...	...	...	...	...	2 94-0	...	...
220	1	220-1	அ.ப.ச.ச	...	...	...	...	...	16 76-0	...	...
	2	-2	அ	40	...	...	...	...	0 91-0	...	...
	3	-3	ர	4	...	8-5	10	1 09	1 85 0	2 00	379 ச. நாராயணர் மர்.
									19 52-0	2 00	...
221	1	221-1	ர	4	...	8-3	7	2 77	0 27 0	0 75	465 ம. கந்தையர் (1). ம. மலர் (2). சூ. ம.கமலர் மர் (3).
	2	-2	ர	4	...	8-5	10	1 09	0 10 0	0 12	406 சூ. ம.கமலர் (1). ச. சித்தையர் மர் (2). சூ. சிவா மங்கையர் (3).
									0 37-0	0 57	...
222	...	222	அ	40	...	...	...	...	0 52 0	...	...
223	...	223	ர	4	...	8-3	7	2 77	0 35-0	1 00	507 ம. கந்தையர் (1). ம. மலர் (2). ச. சித்தையர் மர் (3). சூ. சிவா மங்கையர் (4).
224	...	224	அ	40	...	...	...	...	0 32-0	...	...
225	...	225	ர	4	...	8-3	7	2 77	0 28 0	0 75	507 ம. கந்தையர் (1). ம. மலர் (2). ச. சித்தையர் மர் (3). சூ. சிவா மங்கையர் (4).

Village Administration Officer
B.S. GOPANAPALLI
Hosur-Tk, Krishnagiri Dt.

ZONA DEPUTY TAHSILDAR
HOSUR



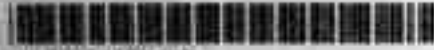
இந்திய அரசாங்கம் - Unique Identification Authority of India - Government of India

இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

புது அடையாளம் / Enrollment No. : 2007/23909/40345

2011/2013

To
Vijaykumar Jayaram
விஜயகுமார் ஜெயராம்
S/O: Jayaram
ச ஓ
T SULAGUNDA
Sulagunda
Shoolingunta Krishnagiri
Tamil Nadu - 635118



NLS52694796FT

55294479



உங்கள் ஆதார் எண் / Your Aadhaar No. :

6257 2920 2442

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய அரசாங்கம்
Government of India
விஜயகுமார் ஜெயராம்
Vijaykumar Jayaram



கடைசி எண்/DGE: 2205H1981
புது அடையாளம் / New

6257 2920 2442



ஆதார் - சாதாரண மனிதனின் அதிகாரம்

भारत सरकार / GOVERNMENT OF INDIA
खान मंत्रालय / MINISTRY OF MINES
भारतीय खान भूदो / INDIAN BUREAU OF MINES



Signature

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

श्री एस. माथन प्रकाश, 2/274, ईस्ट स्ट्रीट, कुलसेकरानल्लूर पोस्ट, ओटपिडारम तालुक, थूथुकुडी डिस्ट्रिक्ट - 628 401, तमिलनाडु, जिसका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिन्होंने अपनी अर्हता और अनुभव का संतोषजनक साक्ष्य दिया है, को खनिज योजना तैयार करने हेतु खनिज विन्यास नियमावली 1960 के नियम 22सी के तहत अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Sri S. Mathan Prakash, 2/274, East Street, Kulasekaranallur Post, Ottapidaram Taluk, Thoothukudi District - 628 401, Tamilnadu, 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.

उनकी पंजीयन संख्या है
His registration number is

RQP/CNN/270/2016/A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 09.02.2026 को समाप्त होगी।
This recognition is valid for a period of 10 years ending on 09.02.2026.

उनकी द्वारा प्रस्तुत खनिज 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 : 10.02.2016

S. MATHAN PRAKASH, M.Sc., M.Phil.,
RQP/CNN/270/2016/A

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines
भारतीय खान भूदो / Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region



PHOTO SHOWN PROPOSED APPLIED LEASE AREA VIEW



PHOTO SHOWN PROPOSED APPLIED LEASE AREA VIEW-2



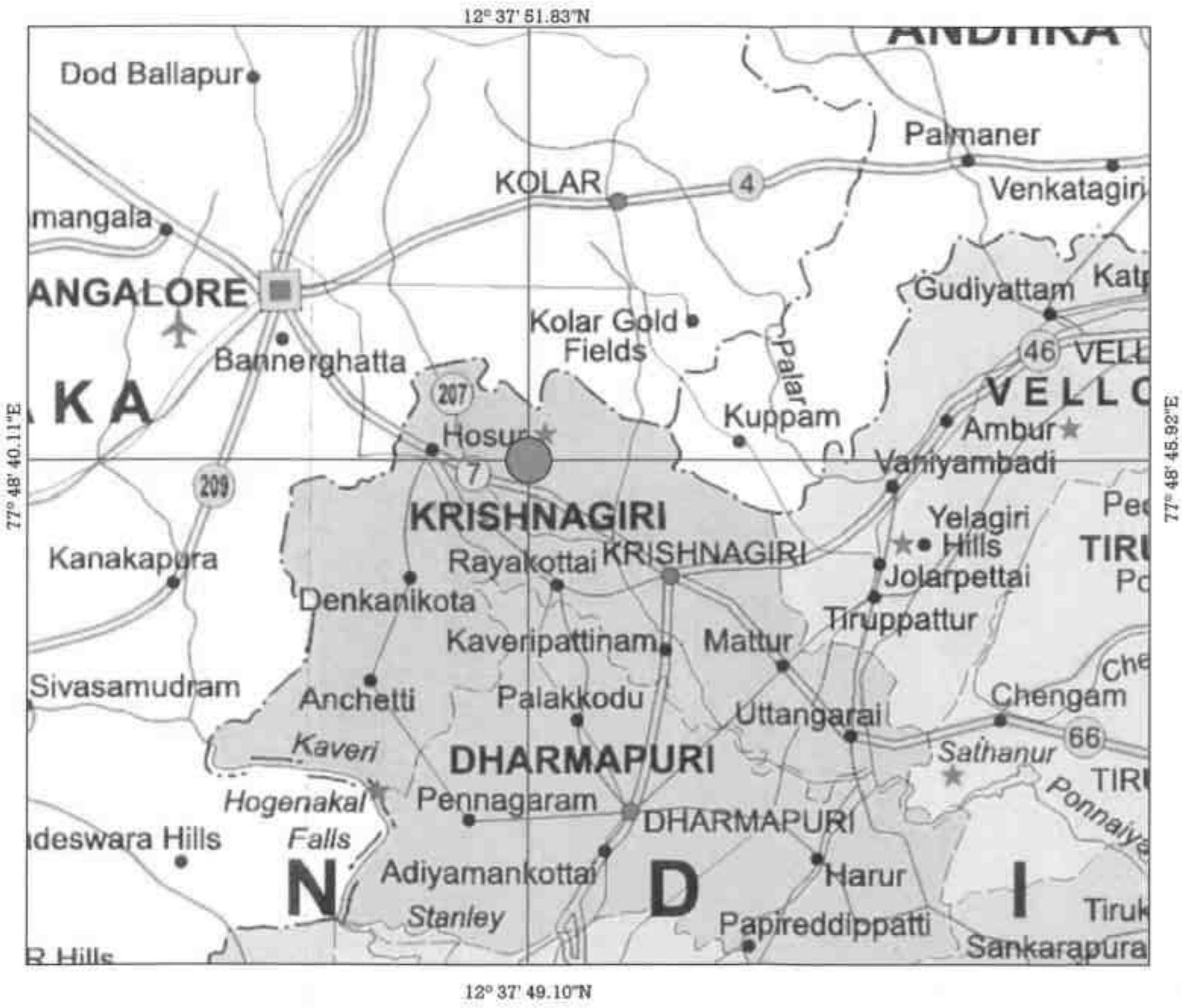




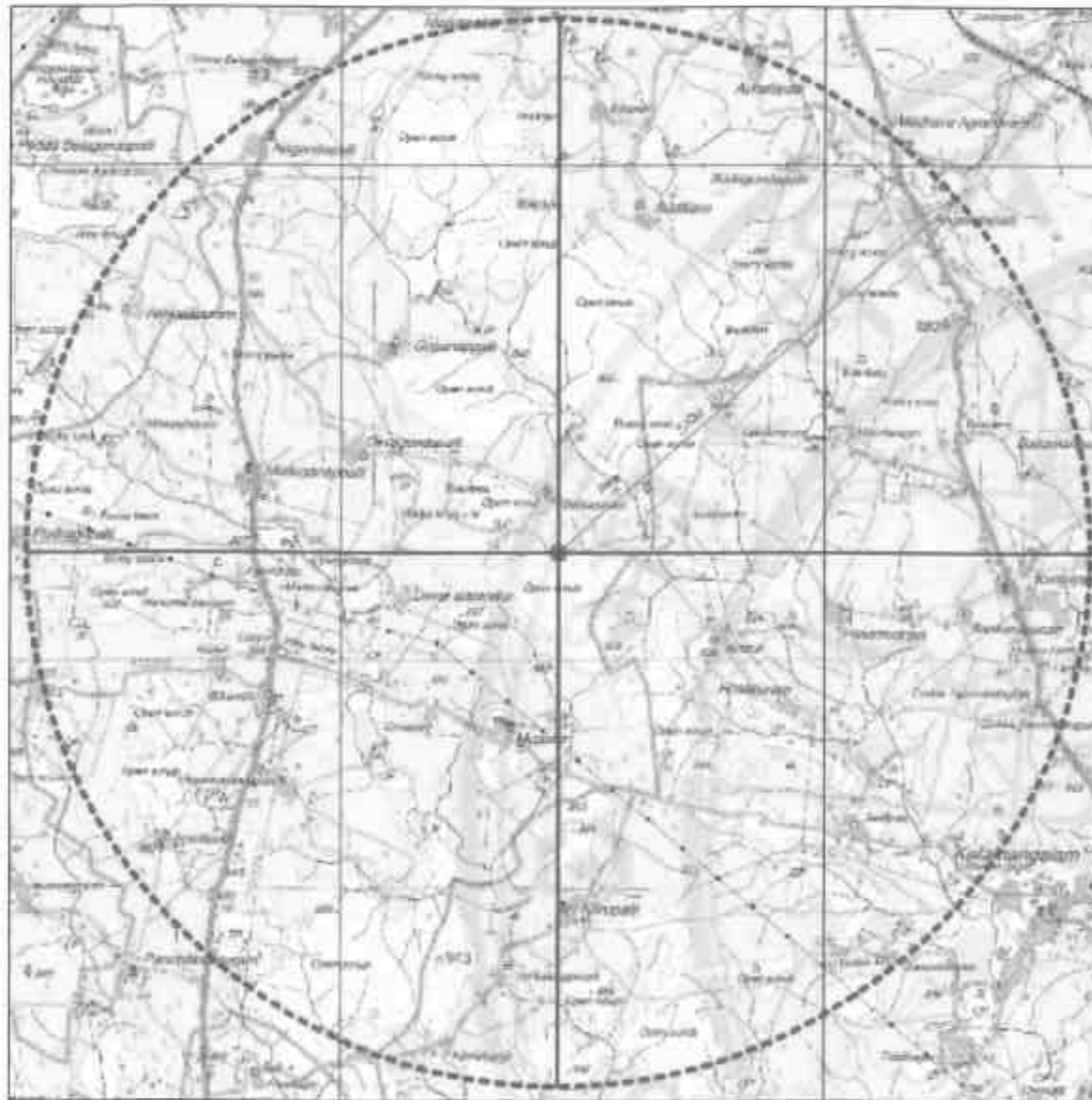
PLATE NO: I	
DATE OF SURVEY: 28-04-2022	
APPLICANT ADDRESS:	
THIRU. J. VJAYAKUMAR, S/o. JAYARAM, D. No. 1/41, T. SHOOLAGUNDA, MADAKKAL VILLAGE, DENKANIKOTTAI TALUK, KRISHNAGIRI DISTRICT - 635 118.	
LOCATION OF QUARRY:	
EXTENT	: 2.00.00 Ha,
S.F.NO	: 220/1 (Part-4)
VILLAGE	: GOPANAPALLI,
TALUK	: HOSUR,
DISTRICT	: KRISHNAGIRI.
INDEX	
QUARRY LEASE AREA	: ●
TOPO SHEET NO.	: 57-H/14,
LATITUDE	: 12° 37' 51.83" N to 12° 37' 49.10" N
LONGITUDE	: 77° 48' 45.92" E to 77° 48' 40.11" E
LOCATION PLAN	
NOT TO SCALE	
PREPARED BY:	
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE	
 S. MATHAN PRAKASH, M.Sc., M.Phil., RECOGNIZED QUALIFIED PERSON RQP/CNM/220/2016/A	



PLATE NO:IA	
DATE OF SURVEY: 28-04-2022	
APPLICANT ADDRESS:	
THIRU.J.VIJAYAKUMAR, S/o.JAYARAM, D. No.1/41, T.SHOOLAGUNDA, MADAKKAL VILLAGE, DENKANIKOTTAI TALUK, KRISHNAGIRI DISTRICT - 635 118.	
LOCATION OF QUARRY:	
EXTENT	: 2.00.00 Ha,
S.F.NO	: 220/1 (Part-4)
VILLAGE	: GOPANAPALLI,
TALUK	: HOSUR,
DISTRICT	: KRISHNAGIRI.
INDEX	
QUARRY LEASE AREA	
ROAD	
ROUTE MAP	
NOT TO SCALE	
Prepared By:	
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE	
 SHATHAN PRAKASH, H.Sc., M.Phil., RECOGNIZED QUALIFIED PERSON RQP/CIN/270/2016/A	

77° 48' 40.11"E



12° 37' 51.83"N

12° 37' 49.10"N

77° 48' 45.92"E



PLATE NO:IB

DATE OF SURVEY: 20/04/2022

APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOTING RANGE,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.



LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE AREA :



5KM RADIUS :



TOPO SHEET NO.: 57+V14,

LATITUDE :12° 37' 51.83"N to 12° 37' 49.10"N

LONGITUDE: 77° 48' 45.92"E to 77° 48' 40.11"E

PARTIAL SURVEY	
Area	2.00.00 Ha
S.F.No	220/1 (Part-4)
Village	GOPANAPALLI
Taluk	HOSUR
District	KRISHNAGIRI
Survey No	20/04/2022
Scale	1:50,000
Map No	57+V14
Latitude	12° 37' 51.83"N to 12° 37' 49.10"N
Longitude	77° 48' 45.92"E to 77° 48' 40.11"E
Prepared by	S.MATHAN PRAKASH
Checked by	
Date	20/04/2022

TOPO SHEET MAP OF THE LEASE AREA

SCALE-1:50,000

PREPARED BY:

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

S. Mathan Prakash

S.MATHAN PRAKASH, M.Sc., M.Phil.,
RECOGNIZED QUALIFIED PERSON
RQP/CNR/270/2015/A

12° 37' 54.26"N
77° 48' 40.80"E



12° 37' 49.10"N
77° 48' 40.11"E

12° 37' 51.83"N
77° 48' 45.92"E

12° 37' 47.55"N
77° 48' 42.64"E

PLATE NO:IC

DATE OF SURVEY: 28-04-2022




APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

- QUARRY LEASE BOUNDARY 
- 500M RADIUS 
- 300M RADIUS 

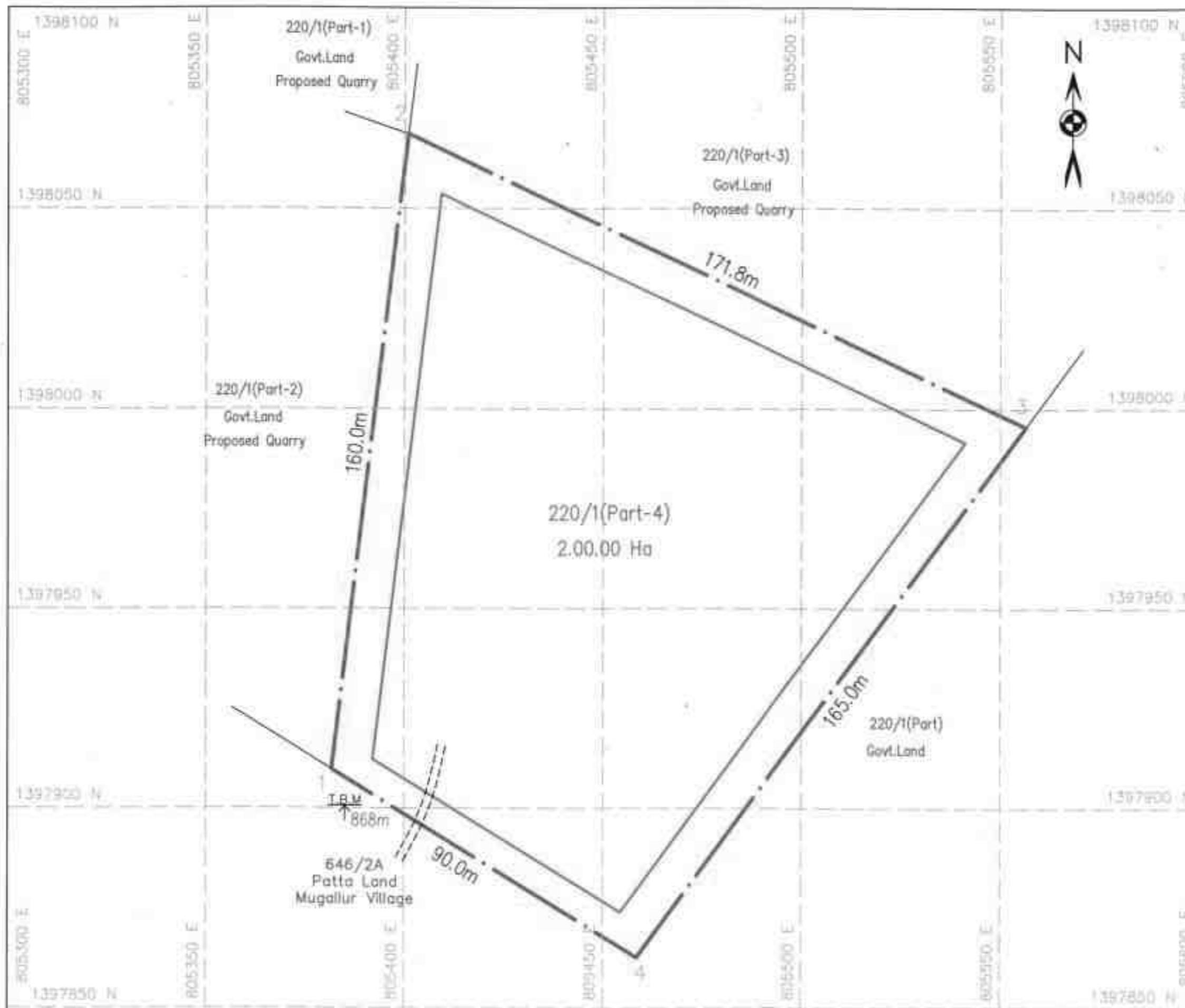
SATELLITE IMAGE
(500m RADIUS)

SCALE 1:5000

Prepared By:

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

S.MATHAN PRAKASH, M.Sc., M.Phil.
RECOGNIZED QUALIFIED PERSON
RQP/CAN/275/2016/A



S.F.No.220/1 (Part-4)

BOUNDARY CO-ORDINATES		
LABEL	LATITUDE	LONGITUDE
1	12° 37' 49.2085" N	77° 48' 40.1127" E
2	12° 37' 54.3668" N	77° 48' 40.8039" E
3	12° 37' 51.9387" N	77° 48' 45.9251" E
4	12° 37' 47.6537" N	77° 48' 42.6373" E

PLATE NO:II
DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	

MINE LEASE PLAN
SCALE 1:1000

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

S.NATHAN PRAKASH, M.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CHN/278/2016/A

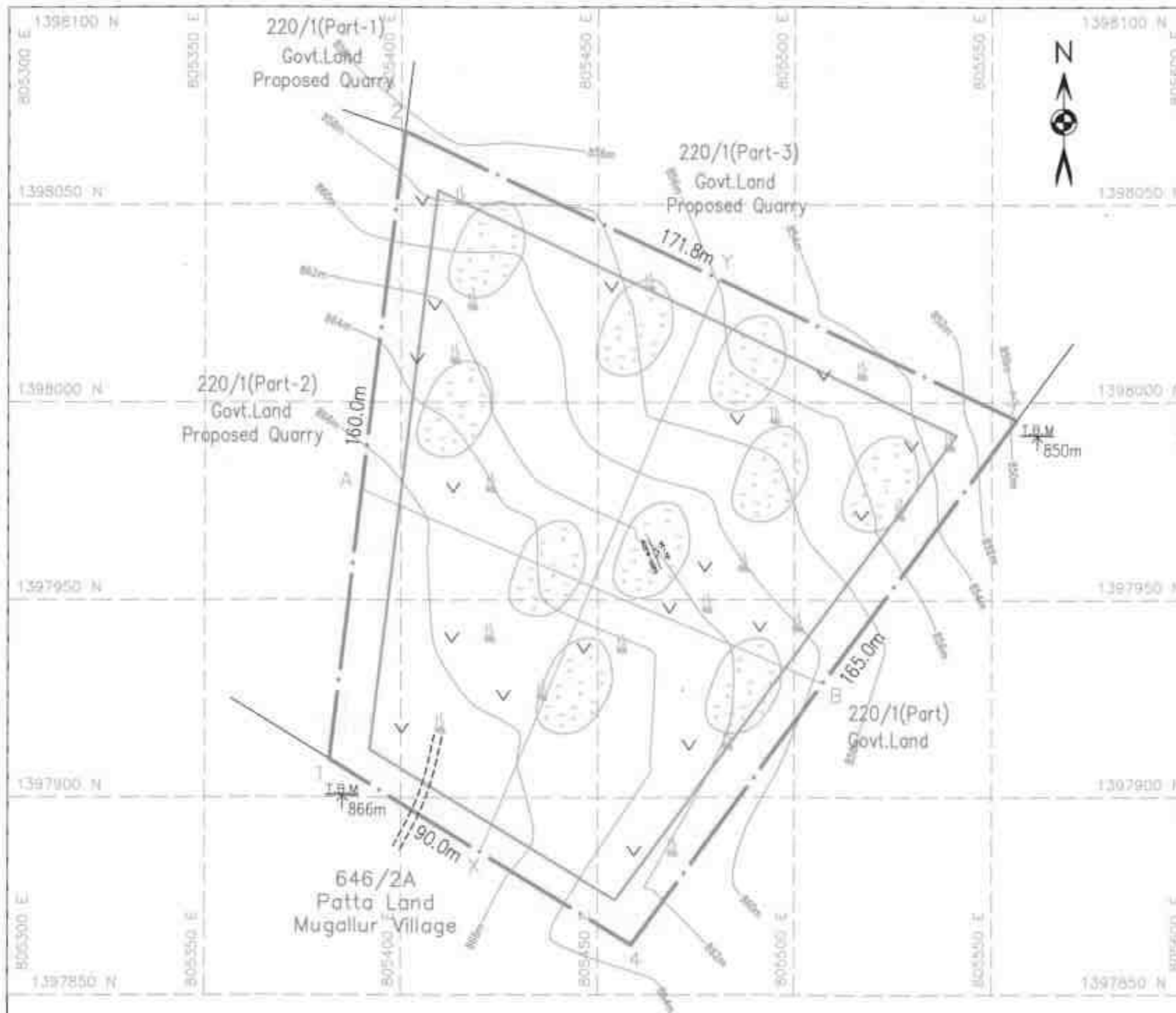


PLATE NO:III
DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOGLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
ROCK OUTCROPS	
CONTOUR LINE	
STRIKE & DIP	
QUARRY ROAD	
SHRUB	

SURFACE AND GEOLOGICAL PLAN

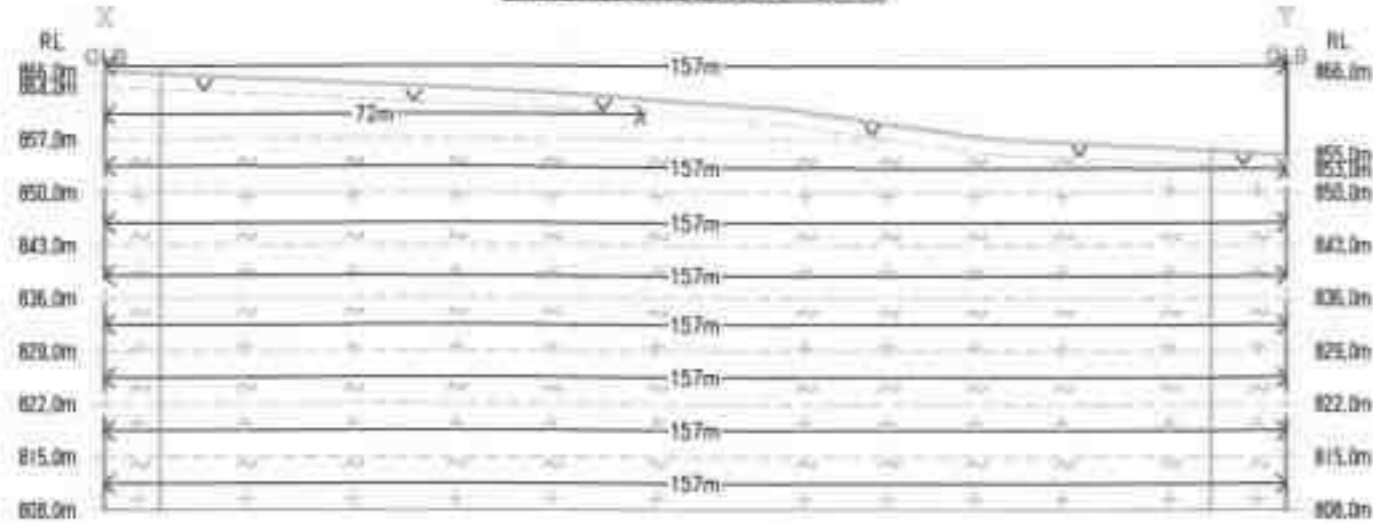
SCALE 1:1000

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

S.NATHAN PRAKASH, M.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CMU/270/2018/A



SECTION ALONG X-Y



Surface Ground Level Above Height - 11m
Surface Ground Level Below Depth - 47m

SECTION ALONG A-B



GEOLOGICAL RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in (Cu.m.)	Recoverable Reserve in Cu.m(100%)	Topsilt (Gravel) in Cu.m.
XY-AB	I	157	127	2			39878
	II	72	64	7	32256	32256	
	III	157	127	7	139573	139573	
	IV	157	127	7	139573	139573	
	V	157	127	7	139573	139573	
	VI	157	127	7	139573	139573	
	VII	157	127	7	139573	139573	
	VIII	157	127	7	139573	139573	
	IX	157	127	7	139573	139573	
Total=					1009267	1009267	39878

PLATE NO:III-A

DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:

THIRU J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TOP SOIL (GRAVEL)
- ROUGH STONE

GEOLOGICAL SECTIONS

SCALE 1:1000

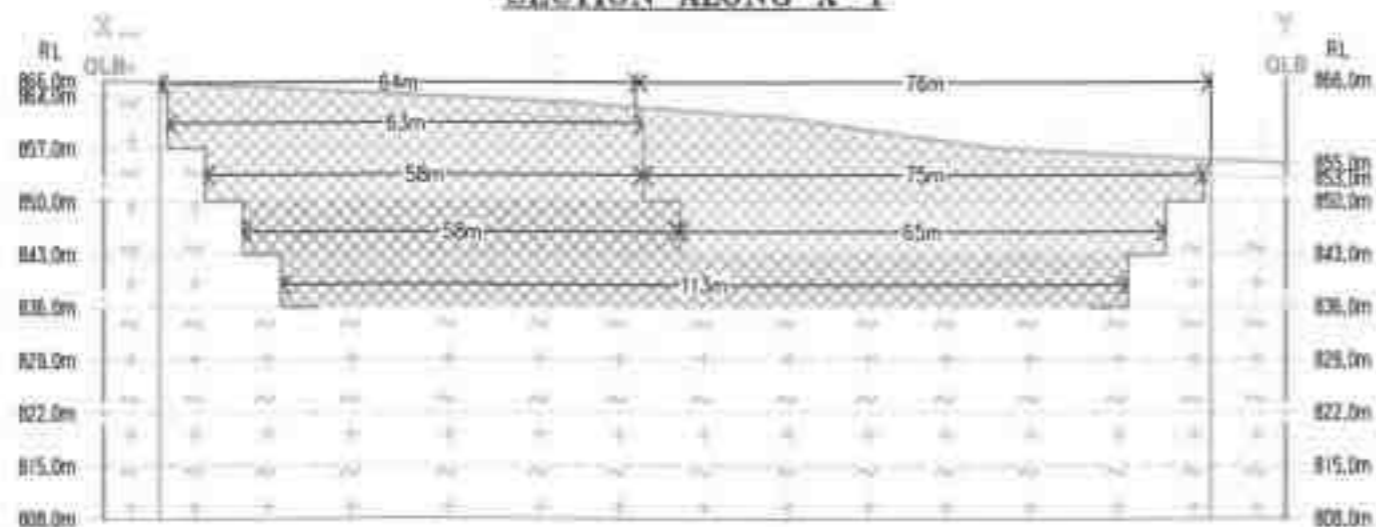
Prepared By:

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


S.NATHAN PRAKASH, M.Sc., M.Phil.,
RECOGNIZED QUALIFIED PERSON
RQP/CNRU/270/2016/A

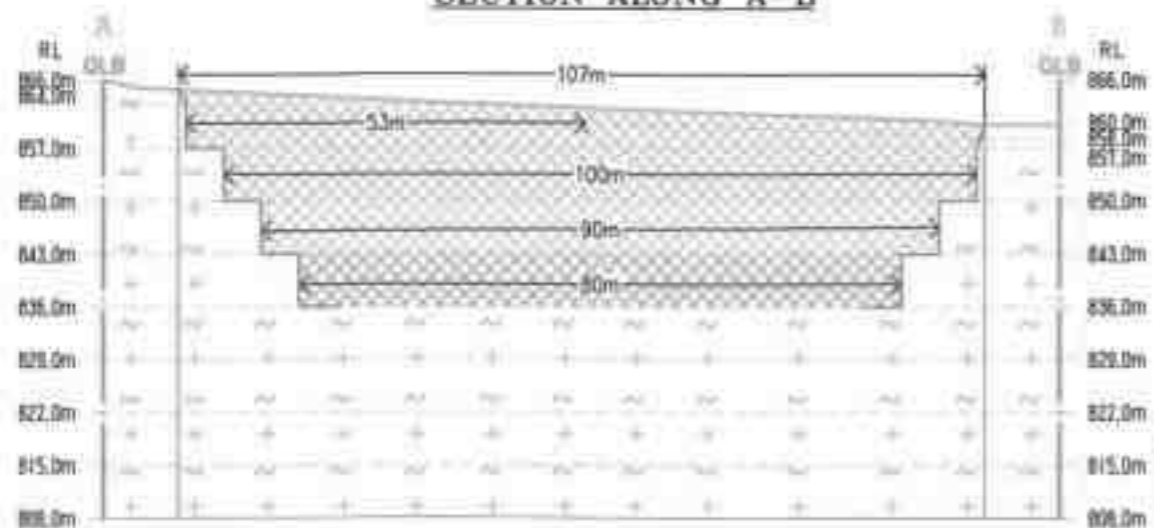


SECTION ALONG X-Y



SURFACE GROUND LEVEL ABOVE HEIGHT - 11m
SURFACE GROUND LEVEL BELOW DEPTH - 19m

SECTION ALONG A-B



- I-YEAR PROPOSED EXCAVATION
- II-YEAR PROPOSED EXCAVATION
- III-YEAR PROPOSED EXCAVATION
- IV-YEAR PROPOSED EXCAVATION
- V-YEAR PROPOSED EXCAVATION

PLATE NO:IV-A1

DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TOP SOIL (GRAVEL)
- ROUGH STONE

YEARWISE DEVELOPMENT AND PRODUCTION								
YEAR	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in (m ³)	Recoverable Reserve in m ³ (100%)	Top Soil in m ³
I-YEAR	XY-AB	I	64	107	2			13686
		II	63	58	7	23373	23373	
		III	58	100	7	40000	40000	
TOTAL						63973	63973	13686
II-YEAR	XY-AB	I	76	107	2			16264
		III	75	100	7	52500	52500	
TOTAL						52500	52500	16264
III-YEAR	XY-AB	IV	58	90	7	36540	36540	
TOTAL						36540	36540	
IV-YEAR	XY-AB	IV	65	90	7	40950	40950	
TOTAL						40950	40950	
V-YEAR	XY-AB	V	113	80	7	63280	63280	
TOTAL						63280	63280	
GRAND TOTAL						257243	257243	29960

YEARWISE DEVELOPMENT AND PRODUCTION SECTIONS
(First Five (I-V) Years)

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.

S.MATHAN PRAKASH, B.Sc., M.Phil.,
RECOGNIZED QUALIFIED PERSON
RGP/CHN/270/2016/A

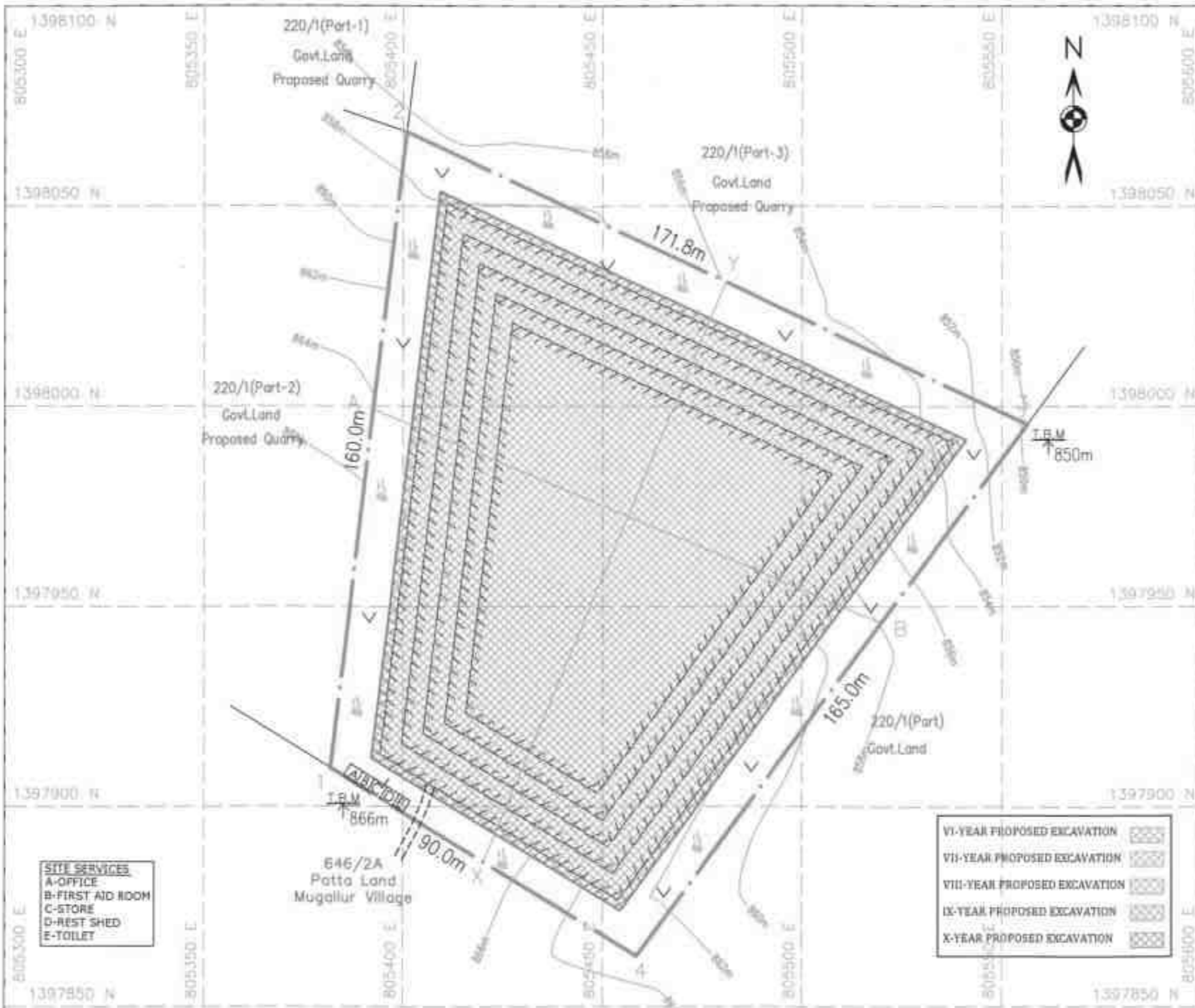


PLATE NO:IV-B
DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:
 THIRU J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHODLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
CONTOUR LINE	
QUARRY ROAD	

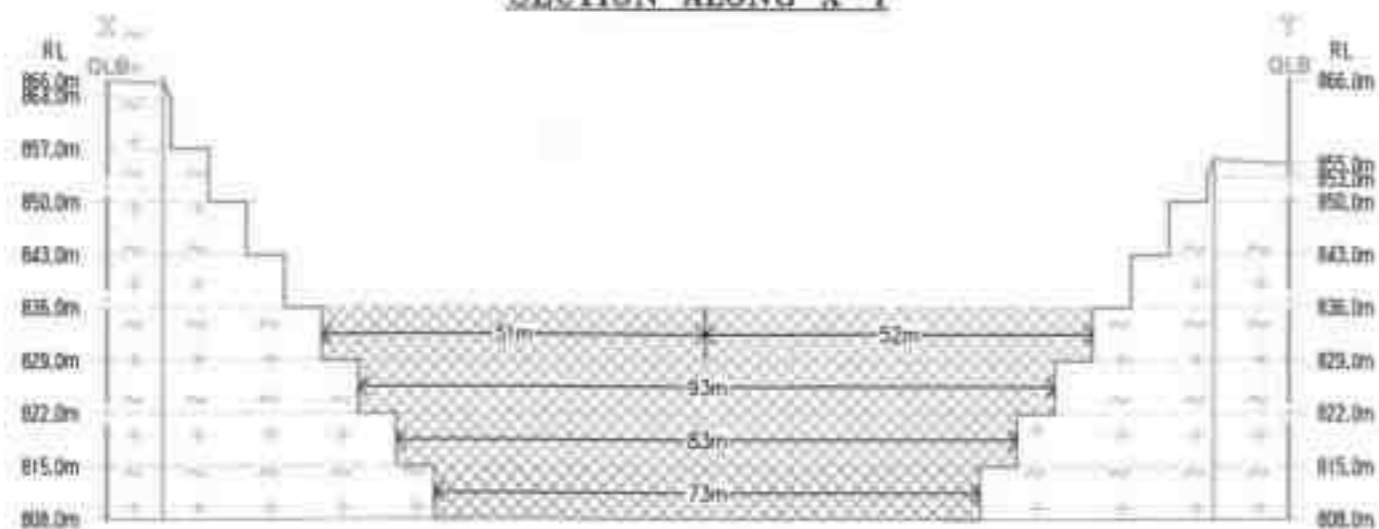
YEARWISE DEVELOPMENT AND PRODUCTION PLAN
 (Second [VI-X] Years)
SCALE 1:1000

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

S.NATHAN PRKASH, M.Sc., M.PHE.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CNN/220/2016/A



SECTION ALONG X-Y

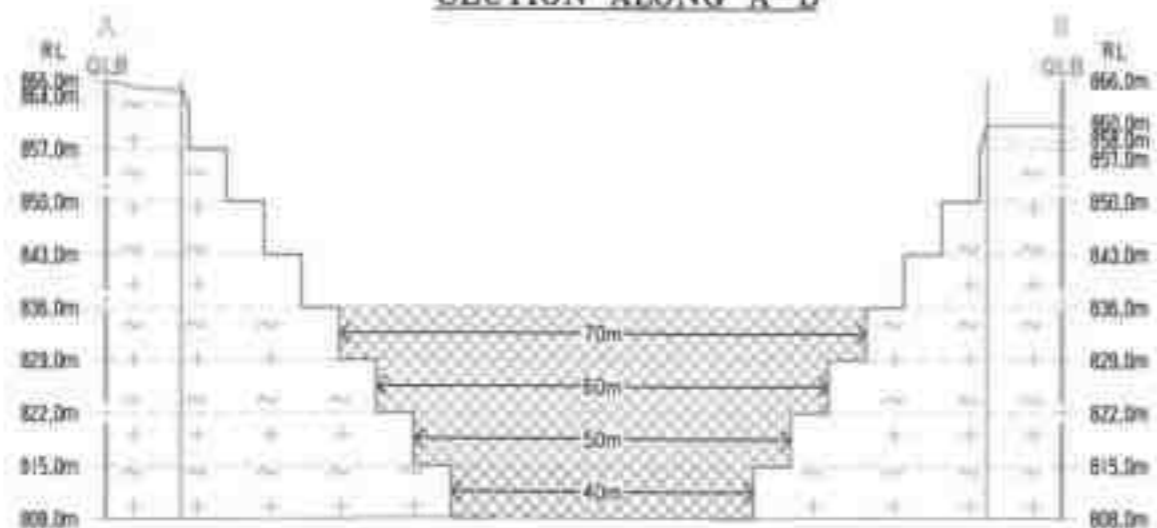


SURFACE GROUND LEVEL BELOW DEPTH - 28M

PLATE NO:IV-B1
 DATE OF SURVEY: 28-04-2022
APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

SECTION ALONG A-B



VI-YEAR PROPOSED EXCAVATION	
VII-YEAR PROPOSED EXCAVATION	
VIII-YEAR PROPOSED EXCAVATION	
IX-YEAR PROPOSED EXCAVATION	
X-YEAR PROPOSED EXCAVATION	

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TOP SOIL (GRAVEL)	
ROUGH STONE	

YEARWISE DEVELOPMENT AND PRODUCTION AND PRODUCTION SECTIONS
 [Second Five (VI-X) Years]

SCALE 1:1000

YEARWISE DEVELOPMENT AND PRODUCTION							
YEAR	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in (m3)	Recoverable Reserve in m3 (100%)
VI-YEAR	XY-AB	VI	51	70	7	24990	24990
VII-YEAR		VII	52	70	7	25480	25480
VIII-YEAR		VIII	93	60	7	39060	39060
IX-YEAR		IX	83	50	7	29050	29050
X-YEAR		X	73	40	7	20440	20440
TOTAL						139020	139020
GRAND TOTAL						139020	139020

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

S.NATHAN PRAKASH, B.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CNN/270/3010/A

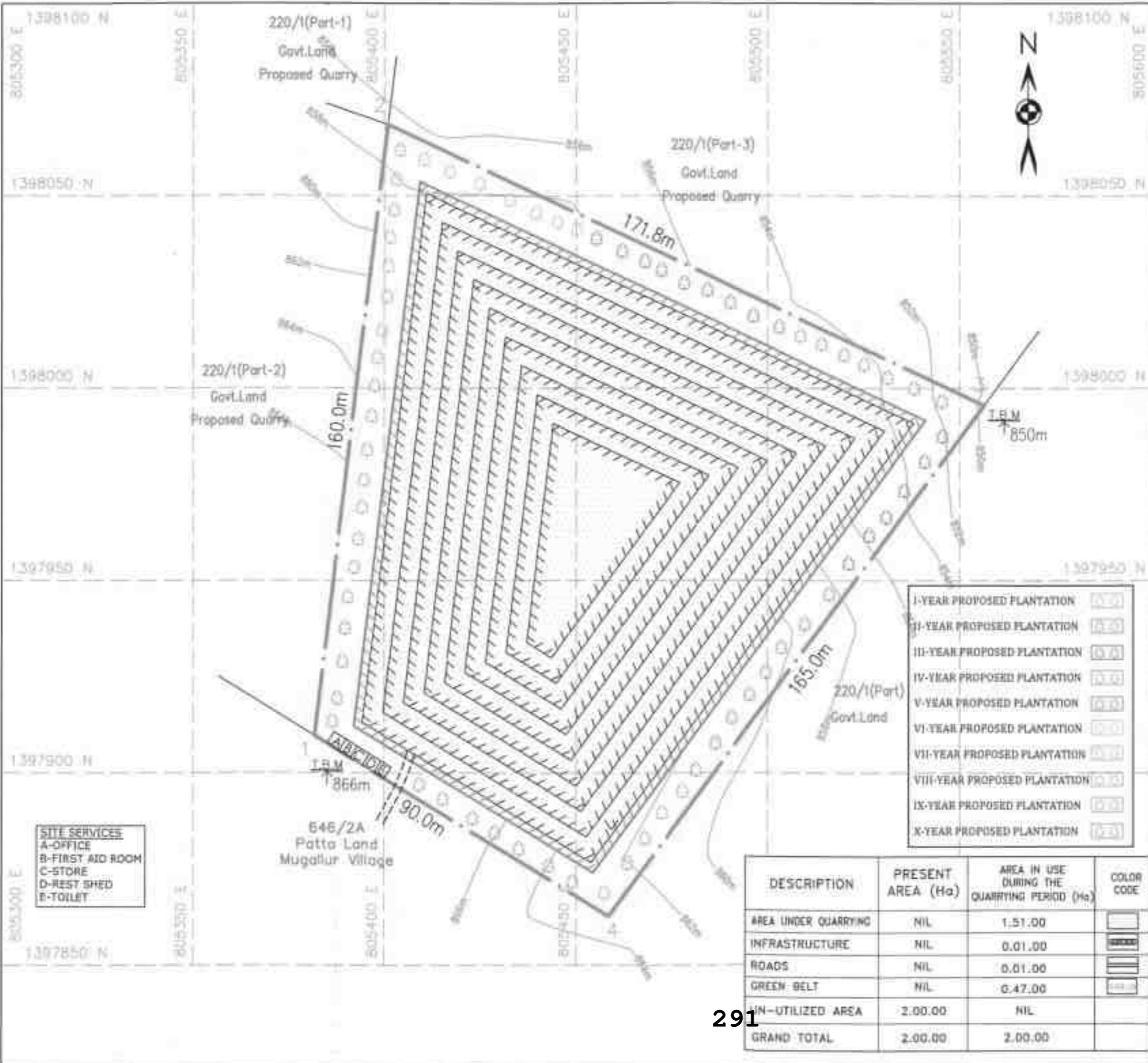


PLATE NO:V
DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
CONTOUR LINE	
QUARRY ROAD	
MINE LAYOUT	

I-YEAR PROPOSED PLANTATION	
II-YEAR PROPOSED PLANTATION	
III-YEAR PROPOSED PLANTATION	
IV-YEAR PROPOSED PLANTATION	
V-YEAR PROPOSED PLANTATION	
VI-YEAR PROPOSED PLANTATION	
VII-YEAR PROPOSED PLANTATION	
VIII-YEAR PROPOSED PLANTATION	
IX-YEAR PROPOSED PLANTATION	
X-YEAR PROPOSED PLANTATION	

DESCRIPTION	PRESENT AREA (Ha)	AREA IN USE DURING THE QUARRYING PERIOD (Ha)	COLOR CODE
AREA UNDER QUARRYING	NIL	1.51.00	
INFRASTRUCTURE	NIL	0.01.00	
ROADS	NIL	0.01.00	
GREEN BELT	NIL	0.47.00	
NON-UTILIZED AREA	2.00.00	NIL	
GRAND TOTAL	2.00.00	2.00.00	

MINE LAYOUT, LAND USE PATTERN & AFFORESTATION 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.

[Signature]
 S.NATHAN PRANASH, M.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CR/270/2018/A



PLATE NO:VI

DATE OF SURVEY: 28-07-2022

APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
500M RADIUS	
300M RADIUS	
60M RADIUS	
APPROACH ROAD	
QUARRY ROAD	
TREES	
SHURB	
WIND DIRECTION	
ADJACENT QUARRY	
CRUSHER UNIT	
INFRASTRUCTURES	
DRY AGRICULTURAL LAND	

ENVIRONMENT PLAN

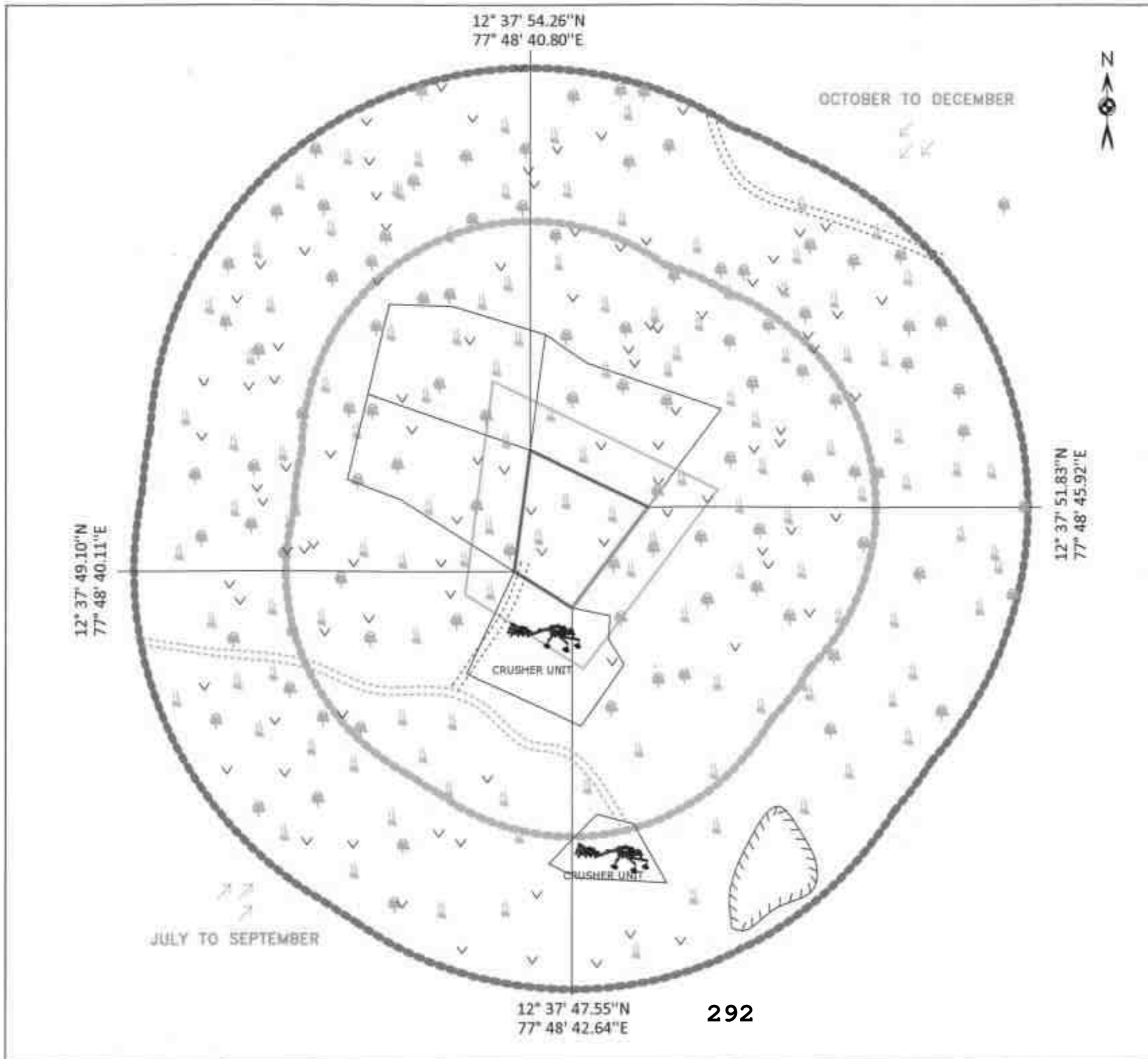
SCALE 1:5000

Prepared By:

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

[Signature]

S.MATHAN PRKASH, M.Sc., M.P.NIL,
RECOGNIZED QUALIFIED PERSON
RGP/CNV/279/2018/A



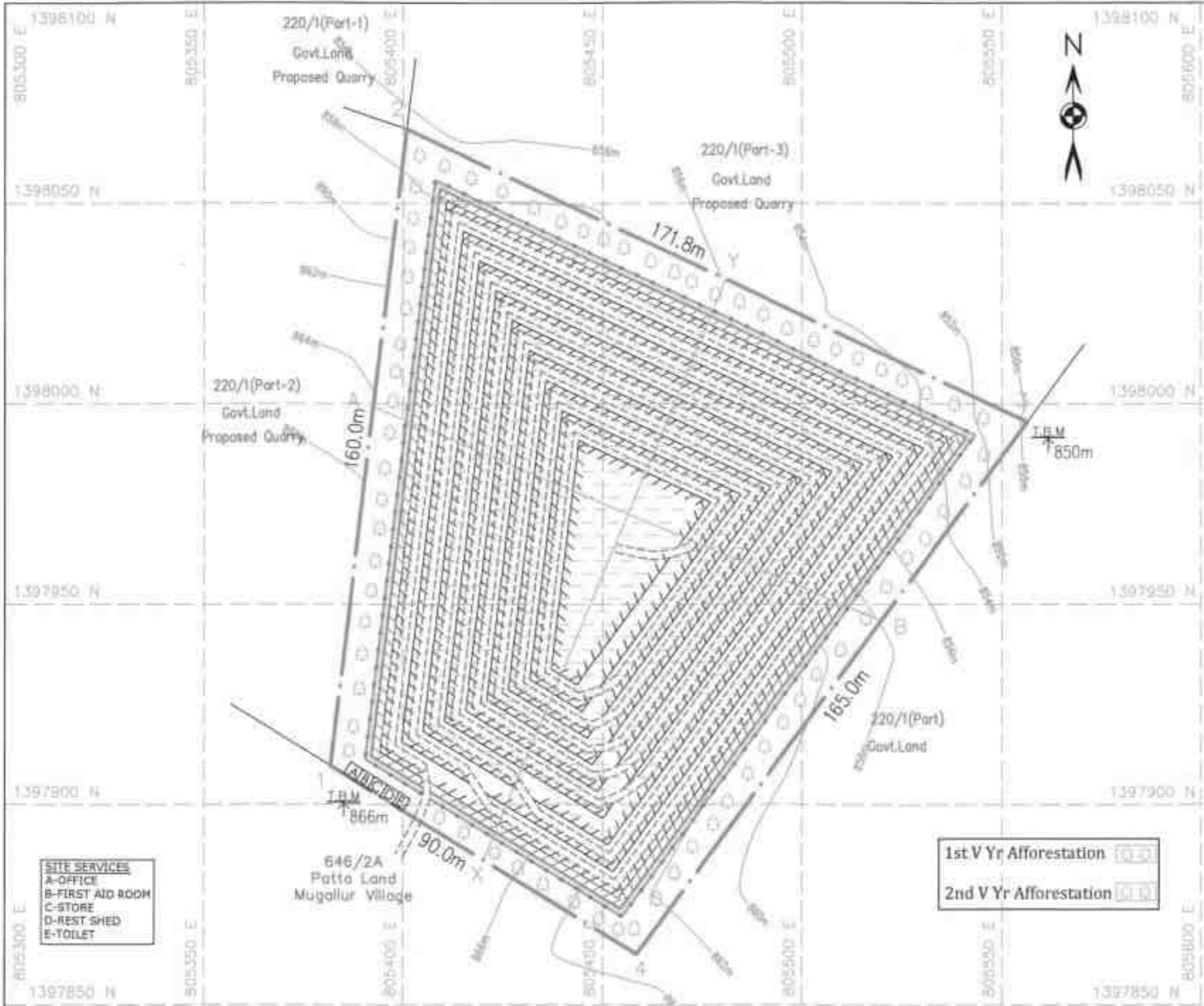


PLATE NO:VII

DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:

THIRU J.VIJAYAKUMAR,
S/o JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HDSUR,
DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
CONTOUR LINE	
TRUCK ROAD (QUARRY ROAD)	
FENCING	
PARAPET WALL	
ULTIMATE PIT LIMIT	
PROPOSED WATER STORAGE	

CONCEPTUAL & FINAL MINE CLOSURE 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

S.NATHAN PRAKASH, M.Sc., M.Phil.,
RECOGNIZED QUALIFIED PERSON
RQP/DPV/275/2016/4

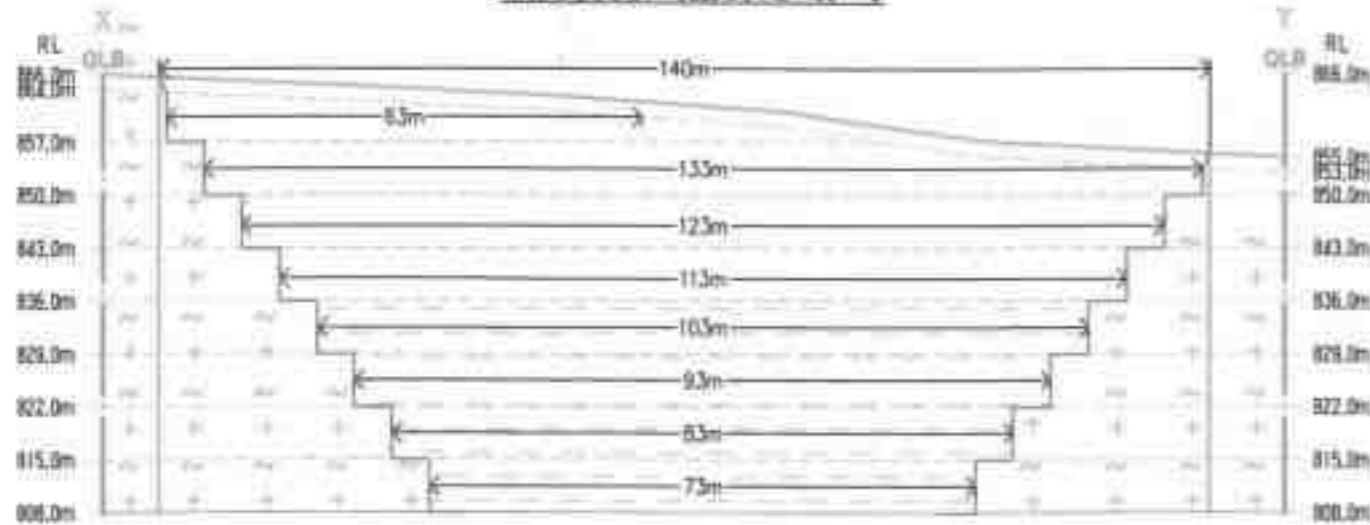
SITE SERVICES
A-OFFICE
B-FIRST AID ROOM
C-STORE
D-REST SHED
E-TOILET

1st V Yr Afforestation

2nd V Yr Afforestation



SECTION ALONG X-Y



Surface Ground Level Above Height - 11m
Surface Ground Level Below Depth - 47m

PLATE NO:VII-A

DATE OF SURVEY: 28-04-2022

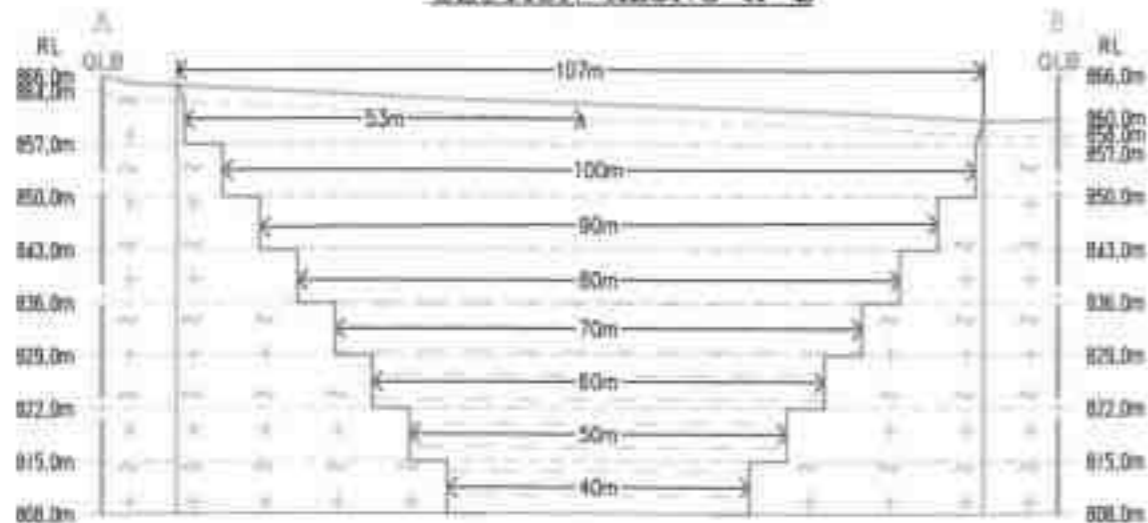
APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

SECTION ALONG A-B



MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in (Cu.m.)	Recoverable Reserve in Cu.m.(100%)	Topsoil (Gravel) in Cu.m.
XY-AB	I	140	107	2			29960
	II	63	53	7	23373	23373	
	III	133	100	7	93100	93100	
	IV	123	90	7	77490	77490	
	V	113	80	7	63280	63280	
	VI	103	70	7	50470	50470	
	VII	93	60	7	39060	39060	
	VIII	83	50	7	29050	29050	
	IX	73	40	7	20440	20440	
Total=					396263	396263	29960

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TOP SOIL (GRAVEL)
- ROUGH STONE
- ULTIMATE PIT SLOPE
- PROPOSED WATER STORAGE

CONCEPTUAL & FINAL MINE CLOSURE SECTIONS

SCALE 1:1000

Prepared By:

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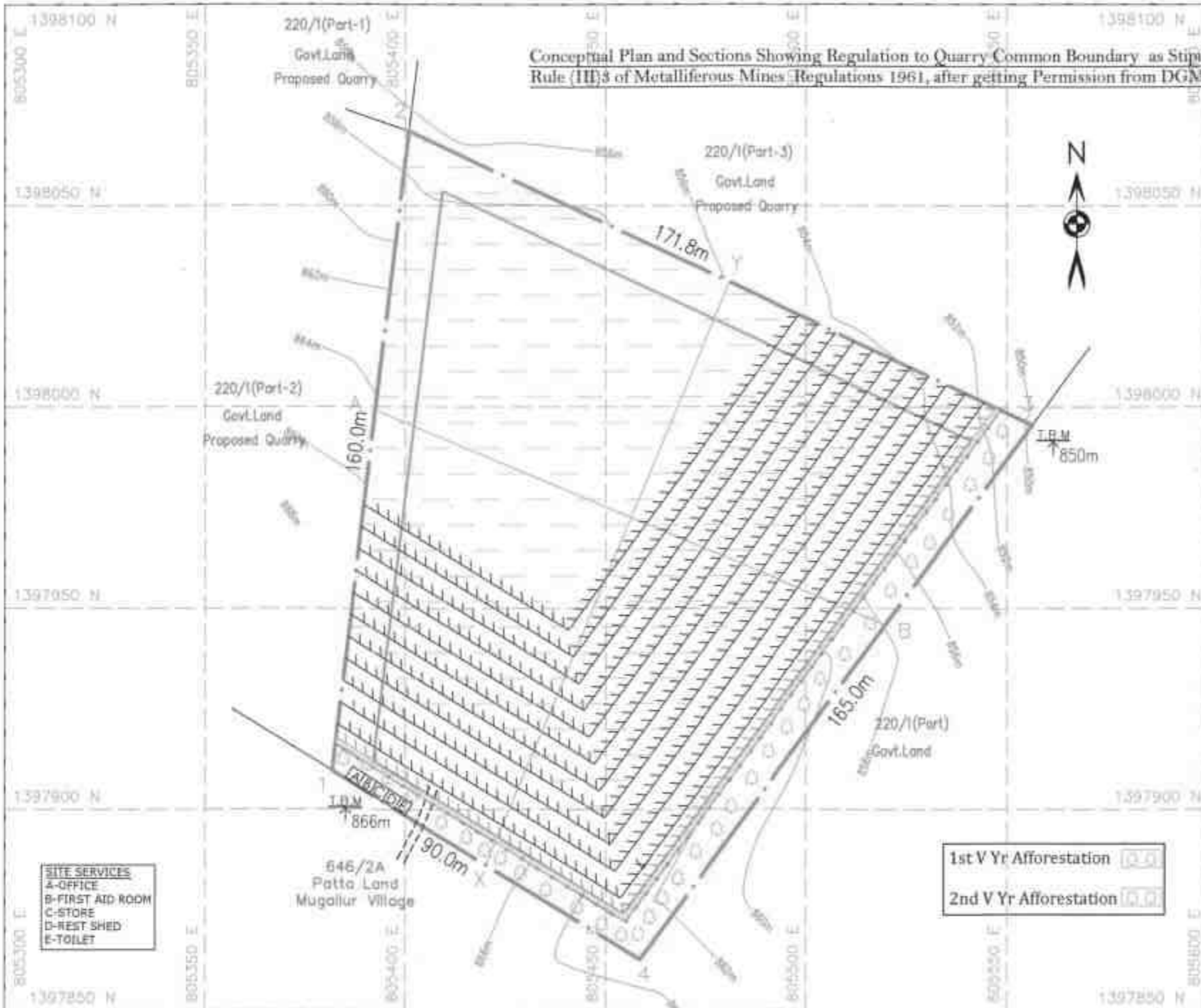
(Signature)

S.MATHAN PRAKASH, M.Sc., M.P.NIL,
RECOGNIZED QUALIFIED PERSON
RQP/CNV/215/2014/A

ULTIMATE PIT DIMENSION
= 140.0m(L) X 107.0m(W)X 47.0m(D)



Conceptual Plan and Sections Showing Regulation to Quarry Common Boundary as Stipulated in Rule (III)3 of Metalliferous Mines Regulations 1961, after getting Permission from DGMS, if needed.



SITE SERVICES
 A-OFFICE
 B-FIRST AID ROOM
 C-STORE
 D-REST SHED
 E-TOILET

1st V Yr Afforestation
 2nd V Yr Afforestation

PLATE NO:VIII
 DATE OF SURVEY: 28-04-2022
APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.
LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HDSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
CONTOUR LINE	
QUARRY ROAD	
FENCING	
PARAPET WALL	
ULTIMATE PIT LIMIT	
PROPOSED WATER STORAGE	

**CONCEPTUAL PLAN
 COMMON BOUNDARY**
 SCALE 1:1000

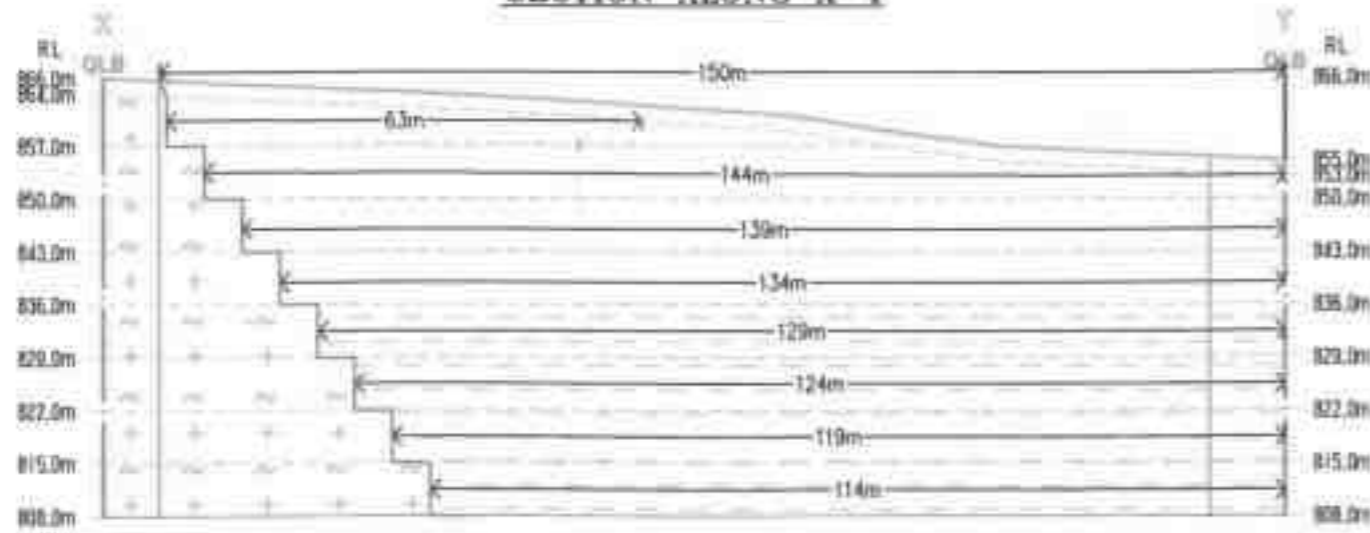
Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE
 HAS BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE:

 S.NATHAN PRAKASH, B.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CMR/270/2018/A

Conceptual Plan and Sections Showing Regulation to Quarry Common Boundary as Stipulated in Rule (III)3 of Metalliferous Mines Regulations 1961, after getting Permission from DGMS, if needed.

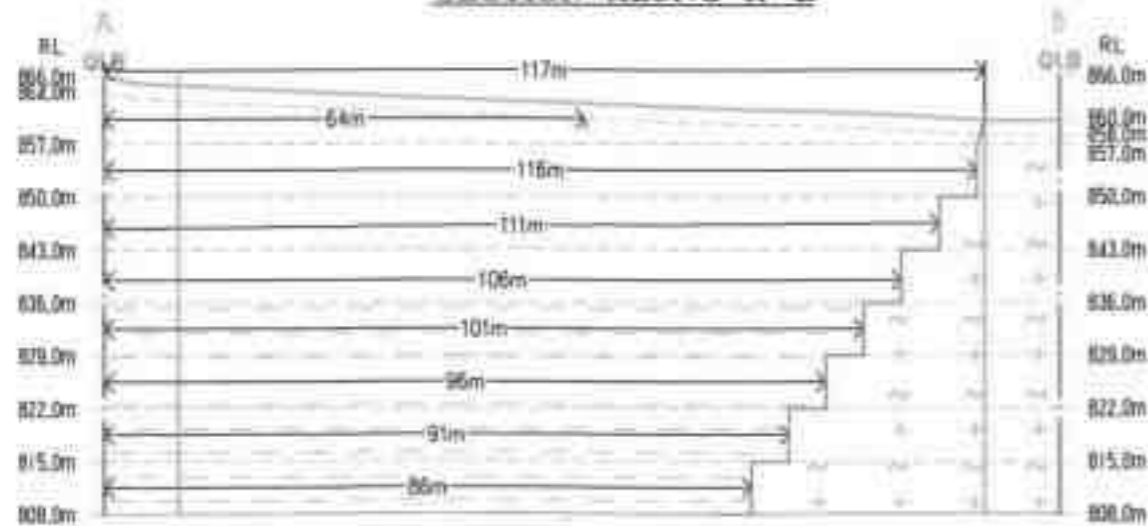


SECTION ALONG X-Y



Surface Ground Level Above Height - 11m
Surface Ground Level Below Depth - 47m

SECTION ALONG A-B



ULTIMATE PIT DIMENSION
= 150.0m(L) X 117.0m(W) X 47.0m(D)

MINEABLE COMMON BOUNDARY RESERVES

Section	Bench	Length In (m)	Width In (m)	Depth In (m)	Volume In (Cu.m.)	Recoverable Reserve In Cu.m.(100%)	Topsoil (Gravel) In Cu.m.
XY-AB	I	150	117	2			35100
	II	63	64	7	28224	28224	
	III	144	116	7	116928	116928	
	IV	139	111	7	108003	108003	
	V	134	106	7	99428	99428	
	VI	129	101	7	91203	91203	
	VII	124	96	7	83328	83328	
	VIII	119	91	7	75803	75803	
	IX	114	86	7	68628	68628	
Total=					671545	671545	35100

PLATE NO:VIII-A

DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:

THIRU.J.VIJAYAKUMAR,
S/o.JAYARAM,
D. No.1/41, T.SHOOLAGUNDA,
MADAKKAL VILLAGE,
DENKANIKOTTAI TALUK,
KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:

EXTENT : 2.00.00 Ha,
S.F.NO : 220/1 (Part-4)
VILLAGE : GOPANAPALLI,
TALUK : HOSUR,
DISTRICT : KRISHNAGIRI.

INDEX

- QUARRY LEASE BOUNDARY
- 7.5m & 10.0m SAFETY DISTANCE
- TOP SOIL (GRAVEL)
- ROUGH STONE
- ULTIMATE PIT SLOPE
- PROPOSED WATER STORAGE

CONCEPTUAL SECTIONS
COMMON BOUNDARY

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

S.NATHAN PRAKASH, B.Sc., M.Phil.,
RECOGNIZED QUALIFIED PERSON
RQP/CHN/220/2016/A

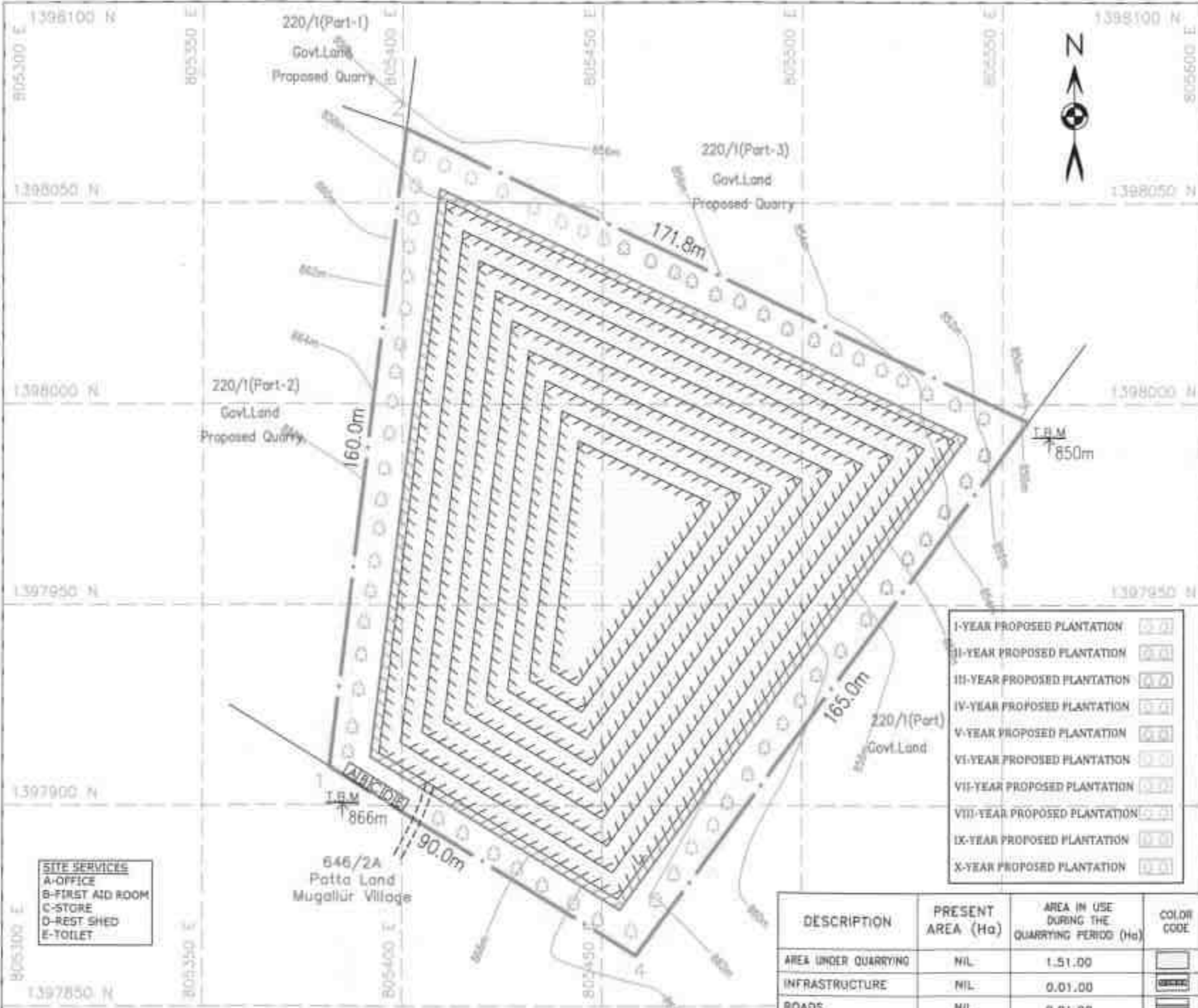


PLATE NO:IX
DATE OF SURVEY: 28-04-2022

APPLICANT ADDRESS:
 THIRU.J.VIJAYAKUMAR,
 S/o.JAYARAM,
 D. No.1/41, T.SHOOLAGUNDA,
 MADAKKAL VILLAGE,
 DENKANIKOTTAI TALUK,
 KRISHNAGIRI DISTRICT - 635 118.

LOCATION OF QUARRY:
 EXTENT : 2.00.00 Ha,
 S.F.NO : 220/1 (Part-4)
 VILLAGE : GOPANAPALLI,
 TALUK : HOSUR,
 DISTRICT : KRISHNAGIRI.

INDEX

QUARRY LEASE BOUNDARY	
7.5m & 10.0m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
TOP SOIL (GRAVEL)	
ROUGH STONE	
CONTOUR LINE	
QUARRY ROAD	
MINE LAYOUT	

I-YEAR PROPOSED PLANTATION	
II-YEAR PROPOSED PLANTATION	
III-YEAR PROPOSED PLANTATION	
IV-YEAR PROPOSED PLANTATION	
V-YEAR PROPOSED PLANTATION	
VI-YEAR PROPOSED PLANTATION	
VII-YEAR PROPOSED PLANTATION	
VIII-YEAR PROPOSED PLANTATION	
IX-YEAR PROPOSED PLANTATION	
X-YEAR PROPOSED PLANTATION	

SITE SERVICES
 A-OFFICE
 B-FIRST AID ROOM
 C-STORE
 D-REST SHED
 E-TOILET

DESCRIPTION	PRESENT AREA (Ha)	AREA IN USE DURING THE QUARRYING PERIOD (Ha)	COLOR CODE
AREA UNDER QUARRYING	NIL	1.51.00	
INFRASTRUCTURE	NIL	0.01.00	
ROADS	NIL	0.01.00	
GREEN BELT	NIL	0.47.00	
UN-UTILIZED AREA	2.00.00	NIL	
GRAND TOTAL	2.00.00	2.00.00	

PROGRESSIVE MINE CLOSURE 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

(Signature)
 S.MATHAN PRAKASH, M.Sc., M.Phil.,
 RECOGNIZED QUALIFIED PERSON
 RQP/CNR/270/2011/IA

From

Dr.S.Vediappan,M.Sc.,Ph.D.,
Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

To

Thiru.J.VijayaKumar,
S/o. Jayaram,
D.No.1/41, T.Shoolagunda,
Denkanikottai Taluk,
Krishnagiri District - 635118.

Rc.No.538/2022/Mines Dated: 07.07.2022.

Sir,

Sub: Mines and Minerals - Minor Minerals - Rough stone
- Krishnagiri District - Hosur Taluk - Gopanapalli
Village- Government Poramboke land in S.F.No.
220/1(Part-4) Over an extent of 2.00.0 Hects -
Tender Cum Auction conducted -
Thiru.J.Vijayakumar declared as highest bidder -
Precise area communicated - Draft Mining Plan
submitted for approval - Approved - reg.

Ref: 1. Krishnagiri District, Extraordinary Gazette
notification No. 15 & 20, dated 14.03.2022 &
28.03.2022.
2. This Office Letter No.538/2022/Mines dated:
26.04.2022.
3. Draft Mining plan submitted by
Thiru.J.Vijayakumar, dated: 27.06.2022.

Kind attention is invited to the references cited above.

2. Tender Cum Auction has been conducted on 05.04.2022 for the grant of quarry lease to quarry rough stone in government lands situated in Krishnagiri district including S.F.No. 220/1(Part-4) Over an extent of 2.00.0 Hects of Gopanapalli Village, Hosur Taluk, Thiru.J.Vijayakumar has quoted highest lease amount and hence he has been declared as successful bidder.

3. Accordingly, Thiru.J.Vijayakumar has been directed to submit the mining plan for approval and to obtain Environmental Clearance for quarrying Rough stone over an extent of 2.00.0 Hects of Government Poramboke land in S.F.No. 220/1(Part-4) in Gopanapalli Village, Hosur Taluk, Krishnagiri District for a period of 10 (Ten) years

under the provisions of Rule 8 of Tamil Nadu Minor Mineral Concession Rules, 1959.

4. In this regard, the bidder Thiru.J.Vijayakumar had submitted 03 copies of draft Mining Plan vide letter dated: 27.06.2022 and the same has been examined in detail and it is found correct.

5. As per the mining plan the year wise production for the proposed first and second five years are as follows.

First Five Years	Year	Recoverable Reserves (m³) @ 100%	Top Soil (Gravel)in (m³)
	1 st Year	63973	13696
	2 nd year	52500	16264
	3 rd year	36540	0
	4 th year	40950	0
	5 th year	63280	0
	Total	257243	29960

Second Five Years	Year	Recoverable Reserves (m³) @ 100%	Top Soil (Gravel)in (m³)
	1 st Year	24990	0
	2 nd year	25480	0
	3 rd year	39060	0
	4 th year	29050	0
	5 th year	20440	0
	Total	139020	0

6. Hence, as per the powers delegated under Rule 42 of TNMMCR, 1959 and also as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated:19.11.2012, the said mining plan submitted by the Thiru.J.Vijayakumar is here by approved subject to the following conditions.

- i. That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time.

whether such laws are made by the Central Government, State Government or any other authority.

- ii. This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws Industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.
- iii. That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.
- iv. All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.
- v. The applicant should get prior Environmental clearance from the appropriate authority and should submit it to the District Collector, Krishnagiri.
- vi. Provisions of the Mines Act 1952 and the rules and regulation made there under including submission of notice of opening, appointment of manager and other statutory officials has required under Mines Act 1952 shall be complied with.
- vii. Provisions made under the Mines and Minerals (Development and Regulation) Acts 1957, amended Act 2015 made there under shall be complied with.
- viii. This approval of Mining Plan is restricted to the mining lease area only as shown in the plan.
- ix. The earlier instances of irregular / illegal quarrying, if any shall not be regularized through the approval of this document.

- x. The applicant shall remit penalty /cost of the mineral /other dues if any.
- xi. Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.
- xii. Non adherence to any condition set out above, the approval shall be deemed to have been withdrawn with immediate effect.

S. S. 202
04.07.22
Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

202
4/7/22

GA/11

Copy submitted to : 1. The Commissioner,
Dept of Geology and Mining,
Guindy, Chennai -32.



வணக்கப்பெறும்

தமிழ்நாடு வனத்துறை

அனுப்புதல்

செவ்வி. க. கார்த்திகேயனி, இலய.,
வனஉயிரினகாப்பாளர்,
ஒரூர் வனக்கோட்டம்,
மத்திகிரி, ஒரூர் - 635 110.
தொலைபேசி எண். 04344 296600.

பெறுதல்

மாவட்ட ஆட்சித் தலைவர்,
கிருஷ்ணகிரி மாவட்டம்,
கிருஷ்ணகிரி.

ந.க.எண். 261/2022/எல் நாள். 10.02.2022
(முன்மொழிவு எண். 28, நாள். 28, திருவள்ளூர் ஆண்டு 2022)

அம்மை,

வார்ப்புறு : கனிமங்களும் குவாரிகளும் - கிருஷ்ணகிரி மாவட்டம் - அரக புலங்களில் உரிமம் முடிவடைந்த குவாரிகள் மற்றும் புதிய குவாரிகளை டெண்டர் மற்றும் பொது ஏலத்தில் கொண்டுவர வளப்பகுதி மற்றும் சரணாலயத்திற்கு உள்ள தொலைவு விவரம் மற்றும் இது விவரங்கள் கோரியது - தொடர்பாக.

- பார்வை :**
1. அரக ஆய்வு (நிலை) எண். 295 தொழிற் (எம்எம்சி.1) துறை நாள். 03.11.2021
 2. துணை இயக்குனர், புனிமியல் மற்றும் காங்கரெட், கிருஷ்ணகிரி மாவட்டம் ந.க.எண்.817/2020/கனிமம் நாள். 31.12.2021 மற்றும் 04.02.2022.
 3. மாவட்ட ஆட்சித் தலைவர், கிருஷ்ணகிரி ந.க.எண்.817/2020/கனிமம் நாள். 04.02.2022.
 4. இவ்வழுவக ந.க.எண். 261/2022/எல், நாள்.10.02.2022

பார்வையின் கடிதங்களில் தெரிவிக்கப்பட்ட அரக புலங்களில் உரிமம் முடிவற்ற குவாரிகள் மற்றும் புதிய குவாரிகளுக்கு டெண்டர் மற்றும் பொது ஏலத்தில் கொண்டுவர, வளப்பகுதி மற்றும் சரணாலயப் பகுதியிலிருந்து உள்ள தொலைவு விவரம் கோரப்பட்டுள்ளது. இது தொடர்பான விவரம் பின்வருமாறு தெரிவிக்கப்படுகிறது.

குவாரி அனுமதிக்கான வனத்துறையின் குறிப்புரைவைய முறையே வளப்பகுதிக்காவலர் மற்றும் முதன்மை தலைமை வளப்பகுதிக்காவலர் அவர்களின் அங்கீகாரத்தின்படியே, வனஉயிரின காப்பாளரால் வழங்கப்படுகிறது. எனவே, இவ்வரைவு வனத்துறையின் தடையின்மேல் ஆய்வுகளைக் கருதிடலாகாது. மேலும், பார்வையின் கடிதத்தில் கேட்டவாறு வனத்துறையின் குறிப்புரைவையின்படி குறித்து முன்மொழிவு / பரிந்துரை கடிதம் பார்வை 4ல் கண்ட இவ்வழுவக கடிதத்தில் வளப்பகுதிக்காவலர், தருமபுரி மூலமாக முதன்மை தலைமை வளப்பகுதிக்காவலர் அவர்களுக்கு சமர்ப்பிக்கப்பட்டுள்ளது. அதன்படி, அரக புலங்களில் குவாரி அனுமதி கோரப்பட்ட இடத்தில் தூரம் தகவலின்பொருட்டு பின்வருமாறு தெரிவிக்கப்படுகிறது.

அட்டவணை 1

உள்ளூர் / குடிசை எல்லை விடுவதற்கு பரிசீலனை செய்யப்படும் குவாரி பகுதிகள் விவரம்

Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F. No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
Krishnagiri Taluk								
1	Iinjupalli	Un-assessed waste - Parai	169 (Part)	2.00.00	12.54916	78.15410	3.4 Pethathalapalli	20 Udedurgam
2	Iinjupalli	Un-assessed waste - Tharisu	197/2 (Part)	1.20.00	12.55956	78.15585	4 Pethathalapalli	20.4 Udedurgam
3	Bilanakuppam	Un-assessed waste - Parai	278	2.08.50	12.59999	78.16812	3.2 Naralapalli Extn.	23 Udedurgam
Bargur Taluk								
4	Shoolamalai	Un-assessed waste - Parai	54-Part-3	1.40.00	12.51188	78.25921	7.4 Pethathalapalli	31.2 Udedurgam
Shoolagiri Taluk								
5	Kamandoddi	Un-assessed waste - Tharisu	616/3 (Part-2)	2.75.00	12.66810	77.94928	2.4 Settipalli	14.2 Udedurgam
6	Kamandoddi	Un-assessed waste - Tharisu	653/1 (Part)	3.33.00	12.66448	77.94973	2.8 Settipalli	13.7 Udedurgam
7	Kamandoddi	Un-assessed waste-Malai	754 & 760 (Part-VI)	4.00.00	12.65973	77.96080	2.7 Settipalli	13.3 Udedurgam
8	Kamandoddi	Un-assessed waste - Tharisu	1276 (Part)	2.00.00	12.66421	77.96741	2.2 Settipalli	13.9 Udedurgam
9	Venkatesapuram	Un-assessed waste-Karadu	86-Part-1	2.50.00	12.75552	77.94513	1.05 Athimugam II	24 Udedurgam
10	Venkatesapuram	Un-assessed waste-Karadu	86-Part-2	2.00.00	12.75586	77.94660	1.05 Athimugam II	24.1 Udedurgam
11	Venkatesapuram	Un-assessed waste-Karadu	86-Part-3	2.00.00	12.75397	77.94352	1.04 Athimugam II	23.8 Udedurgam
12	B.S. Thimmasandiram	Un-assessed waste-Parai	88/1 (Part-3)	4.50.00	12.84070	77.95736	1.01 Amuthugondapalli	33.5 Udedurgam
13	Doripalli	Un-assessed waste-Parai	72(Part)	0.65.00	12.71262	77.95474	2.2 Settipalli	19.3 Udedurgam
			87/1(Part)	0.95.00				
			Total	1.60.00				
14	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-1	4.00.00	12.62856	77.95266	4.5 Sanamavu	9.9 Udedurgam
15	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-3	4.60.00	12.62804	77.95370	4.8 Sanamavu	9.7 Udedurgam
16	Thuppuganapalli	Un-assessed waste-Karadu malai	420-Part-4	4.50.00	12.62499	77.95265	4.7 Sanamavu	9.6 Udedurgam



Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F. No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
17	Chennapalli	Un-assessed waste - Karadu	327/1 - Part-1	2.45.00	12.62504	78.05404	2 Errandapalli	14.3 Udedurgam
18	Chennapalli	Un-assessed waste - Karadu	327/1 - Part-2	2.45.00	12.62400	78.05477	2 Errandapalli	14.3 Udedurgam
Hosur Taluk								
19	Mugalur	Un-assessed waste	232/2 (Part-2)	4.85.00	12.62273	77.81719	5.6 Sanamavu	11.6 Udedurgam
20	Panchakshipuram	Un-assessed waste	603/1 (Part-C)	1.30.00	12.59781	77.79278	8.6 Sanamavu	11.6 Udedurgam
21	Panchakshipuram	Un-assessed waste	603/1 (Part-D)	2.00.00	12.59668	77.79277	8.6 Sanamavu	11.5 Udedurgam
22	Gobanapalli	Un-assessed waste	220/1 (Part-1)	3.00.00	12.63255	77.81140	6.4 Sanamavu	13 Udedurgam
23	Gobanapalli	Un-assessed waste	220/1 (Part-2)	3.00.00	12.63169	77.81128	6.4 Sanamavu	12.8 Udedurgam
24	Gobanapalli	Un-assessed waste	220/1 (Part-3)	3.00.00	12.63221	77.81357	6.2 Sanamavu	12.8 Udedurgam
25	Gobanapalli	Un-assessed waste	220/1 (Part-4)	2.00.00	12.63109	77.81268	6.3 Sanamavu	12.7 Udedurgam
26	Gobanapalli	Un-assessed waste	381 (Part-1)	1.30.00	12.63489	77.81198	6.4 Sanamavu	13.2 Udedurgam
27	Gobanapalli	Un-assessed waste	381 (Part-2)	1.50.00	12.63391	77.81214	6.4 Sanamavu	13.1 Udedurgam
Denkanakottal Taluk								
28	Hosapuram	Un-assessed waste	346 (Part), 353, 354/2	1.97.50	12.64563	77.81959	6.1 Sanamavu	13.8 Udedurgam
29	Darevendiram	Un-assessed waste - Podu	320/1 (Part)	1.70.50	12.56214	77.68326	6.5 Jawalagiri	6.5 Jawalagiri
			320/2	0.29.50				
			Total	2.00.00				
30	Nagamangalam	Un-assessed waste - Kallankuthu	629 (Part)	3.20.50	12.57400	77.91418	3.9 Udedurgam	3.9 Udedurgam

தேற்கண்ட அட்டவணை இல் உள்ள குவாரி பகுதிகள், அவ்வாறு வடக்கு வளைப்புகள்
 சமீபத்தில் உயர்நீர் மட்டம் உயர்ந்திருக்கும் (Eco-Sensitive Zone) வருவதில்லை.

அட்டவணை 2

கெண்டர் / பொது ஏரல் மூலம் சூத்தலை அணுபதி வயங்குவதை தடுக்கவிரும்பும் நிறுவனவர்க்க பரிந்துரை செய்யப்படும் துவாரிகளின் விவரம்

Sl. No.	Village	Classification of the proposed site (As per Revenue Record)	S.F.No.	Extent Proposed for Quarry Lease	GPS coordinates of the proposed sites		Distance from nearest Reserved Forest (km)	Distance from CNWLS (km)
					Latitude	Longitude		
Krishnagiri Taluk								
1	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-II)	1.00.00	12.55536	78.22426	3.2 Kundarapalli II	27.7 Udedurgam
2	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-III)	1.00.00	12.55541	78.22483	3.2 Kundarapalli II	27.8 Udedurgam
3	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-IV)	0.90.00	12.55463	78.22316	3.2 Kundarapalli II	27.6 Udedurgam
4	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-V)	3.50.00	12.55034	78.22850	3.9 Kundarapalli II	28.05 Udedurgam
5	Kallukurukki	Govt. Poramboke - Ko Malai	701 (Part-VI)	1.00.00	12.54704	78.22598	3.7 Pethathalapalli	27.8 Udedurgam
Uthangarai Taluk								
6	Katteri	Govt. Punjai - Podugal	17/1	1.25.00	12.19712	78.53751	1.6 Onnakarai	65.4 Marandahalli
7	Thathanur		10//2	1.61.00	12.21405	78.53499	0.5 Onnakarai	64.6 Marandahalli
Shoolagiri Taluk								
8	Mattampalli	Un-assessed waste-Karadu	53/1 (Part-1)	3.00.00	12.69400	78.06509	0.53 Kumbalam I	21 Udedurgam
9	Mattampalli	Un-assessed waste-Karadu	53/1 (Part-2)	1.90.00	12.69279	78.06464	0.64 Kumbalam I	20.9 Udedurgam
10	Marandapalli	Un-assessed waste-Parai	71/2	1.15.0	12.67734	78.05708	1.4 Thekkalapalli	19.1 Udedurgam

மேற்கண்ட அட்டவணை 2ல் குறிப்பிட்டுள்ள இடங்கள் குறித்து வனம் மற்றும் வனஉயிர் பாதுகாப்பு தொடர்பான கட்டுரைகள் ஆய்வு மேற்கொள்ள வேண்டி உள்ளதாலும், மேலும் கால அவகாசம் தேவைப்படுவதால் அப்பகுதியை ஒட்டி அமைந்துள்ள இடங்களில் காப்பு நிலம் தொடர்பான முன்சொழிவுகள், பரிசீலனையில் உள்ளதாலும் இதுகுறித்த மேல் நடவடிக்கையினை துரிதப்படுத்தி இயலாத சூழ்நிலையில் உள்ளது. எனவே, அட்டவணை 2ல் உள்ள இவ்விடங்களின் கெண்டர் மற்றும் பொது ஏரல்தில் விடுவதை தடுப்பாய் நிறுத்தி வைக்க பரிந்துரைக்கப்படுவதுடன், இவ்விடங்கள் தூரத்தை கணக்கிடும் பொருட்டு அனுப்பப்படுகிறது குவாரி பணிகள் மேற்கொள்ள தனியாக துறைத்தலைவரிடமிருந்து வனத்துறையின் தடை குறித்த குறிப்புரை வரங்கப்படும் என அன்புடன் தெரிவித்துக்கொள்கிறேன்.

தங்கள் அன்புள்ள,
ஒம்/- க. கார்த்திகேயனி,
வனஉயிர் பாதுகாப்பாளர்,
ஒசூர் வனக்கோட்டம்.

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//உ.ந.உ.ய//

[Signature]



Quality Council of India



National Accreditation Board for Education & Training

Certificate of Accreditation

Geo Technical Mining Solutions

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

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Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IA AC Minutes dated January 29, 2021 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/21/1674 dated March 30, 2021. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions, Dharmapuri following due process of assessment.

Sr. Director, NABET
Dated: March 30, 2021

Certificate No.
NABET/EIA/2023/IA0067

Valid till
December 29, 2023

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