

**DRAFT OF ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENT MANAGEMENT PLAN
FOR OBTAINING**

Environmental Clearance under EIA Notification – 2006

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

“B1” CATEGORY- MINOR MINERAL- CLUSTER- NONFOREST LAND- FRESH QUARRY

CLUSTER EXTENT = 9.50.0hectares

Rough Stone Quarry

At

**Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State
TOR File No. 12360 and ToR Identification No. TO25B0108TN5155022N, Dated: 16.10. 2025**

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and address	Extent & S.F.No.	Production in m ³ & Tons
M/s. Shri Natural Stones, Parner Thiru. M.N. Ravikumar, No. 194/18A, Jajakendeshwara nagar, Opp to Anand Electronics, NH Road, Hosur Taluk, Krishnagiri District, Tamil Nadu.	2.00.0 ha & S.F. No. 738 (Part- 2)	Rough stone 293695 & 807661 Topsoil 14700 & 29400 Depth- 51m (16m AGL + 35m BGL)

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



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

Oddapatti, Collectorate Post office,

Dharmapuri-636705. Tamil Nadu.

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

Website: www.gtmsind.com

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

Valid till: 31.12.2026

ENVIRONMENTAL LAB

GREEN LINK ANALYTICAL & RESERCH LAB

NABL Accredited and MoEF notified Laboratory

S.F. No,414/1, Tex Park Road, Opp. Good Luck,

Syndicate, Civil Aerodrome Post,

Coimbatore, Tamil Nadu- 641014,

NABL Certificate Number: TC- 15901,

Valid till: 18.05.2029

Baseline Study Period – October to December- 2025

JAN-2026

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No.12360

ToR Identification No. TO25B0108TN5155022N, dated. 16/10/2025

M/s. Shri Natural Stones, Rough Stone Quarry

Specific Terms of Reference s for (Mining of Minerals)

1. SEIAA Specific Conditions:

S.No	Terms of Reference	Remarks
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC-1 and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 2,93,695 m ³ of Rough Stone up to the depth of 51m (16m AGL + 35m BGL) as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-1 & normal conditions & the SEIAA Standard conditions.	After the detailed discussions of SEAC, as per the ToR conditions the quantity of production has not exceed.

2. Seiaa Standard Conditions:

S.No	Terms of Reference		Remarks
Cluster Management Committee			
2.1	1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as	A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of

		members including the existing as well as proposed quarry.	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 under Chapter II in the EIA report page 14-20.
	5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
	6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in	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

		accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	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 deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	The information on the health of the workers and the local people will be updated periodically.
Agriculture & Agro-Biodiversity			
	9	Impact on surrounding agricultural fields around the proposed mining Area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6 under Chapter IV in the EIA report page 115-117.
	10	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.7 under Chapter III in the EIA report page 68-82. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.

	11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.7 under Chapter III in the EIA report page 68-82. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 115-117.
	12	The Environmental Impact Assessment should study the agro-biodiversity, agro- forestry, horti cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.7 under Chapter III in the EIA report page 62-82 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 115-117.
	13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore the ecosystem, as discussed in Chapter IV in the EIA report page 97-121.
	14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV in the EIA report page 98-99.
	Forests		
	15	The project proponent shall detail 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.

	16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 115-117.
	17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV in the EIA report page 115-117.
	18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	The Protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius has been provided in Table 3.39 under Chapter III in the EIA report page 95.
	Water Environment		
	19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The detailed hydro-geology study is discussed in section 3.4.4 under chapter III in the EIA report page 44-54.

20	Erosion Control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV in the EIA report page 100-103.
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	The matter has been discussed under Chapter IV in the EIA report page 97-121.
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.7 under Chapter III in the EIA report page 62-82.
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV in the EIA report page 97-121.
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV in the EIA report page 115-117.
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 99-100.

26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV in the EIA report page 100-103.
27	The EIA shall include the impact of mining activity on the following:	
	a. Hydrothermal / Geothermal effect due to destruction in the Environment.	a. The average geothermal gradient of earth is 25 ⁰ C/km. As the proposed depth of mining is 51m (16m AGL+35m BGL), the temperature will increase by 0.875 ⁰ C at the depth of mining.
	b. Bio-geochemical processes and its foot prints including environmental stress.	b. No, Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and allowed to collect rain water and shall enrich the ecosystem.
	c. Sediment geochemistry in the surface streams	c. The details of sediment geochemistry are discussed in the Table 3.6 under Chapter III in the EIA report page 36.
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control noise, air, water, and dust have been given under Chapter IV in the EIA report page 97-121.
Climate Change		
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature	The carbon emission to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV in the EIA report page 115-117.

		reduction including control of other emission and climate mitigation activities.	
	30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	The matter has been discussed in Chapter IV in the EIA report page 97-121.
	31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	There is no emission impact to local livelihood from this quarry project. All the vehicles used for transportation of the quarry materials will be maintained regularly to keep the GHGs emissions within statutory limits.
Mine Closure Plan			
	32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.10 under Chapter II in the EIA report page 17.
EMP			
	33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	A detailed Environment Management plan has been given under Chapter X in the EIA report page 144-150.
	34	The Environmental Impact Assessment should hold detailed study on EMP with budget for green	A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X in the EIA report page 146-150.

	belt development and mine closure plan including disaster management plan.	
Risk Assessment		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII in the EIA report page 128-131.
Disaster Management Plan		
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 131-132.
Others		
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	The VAO certificate is attached in the attached in the Annexure IV.

	38	As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	The concerns raised during the public consultation will be submitted in the final EIA report.
	39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 138-139.

SEAC conditions - Site specific

S.No	Terms of Reference		Remarks
1	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting methodology, etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:		
	(i)	Copy of the agreement forming CMC.	

	(ii)	The Organization chart of the Committee with defining the role of the members	The Cluster Management Committee (CMC) regarding following these conditions and same documents will be submitted during the EIA appraisal meeting.
	(iii)	The 'Standard Operating Procedures' (SOP) executing the planned activities.	
2	The PP should submit an affidavit to follow the scientific formation of benches for 5m * 5m properly during mining as per the approved mining plan.		Affidavit for scientific of benches will be submitted in final EIA report.
3	The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/video graphic evidence along with the EIA report.		It's a fresh quarry lease. After getting the environmental clearance CCTV will be installed.

SEAC Standard Conditions

S. No	Terms of Reference		Remarks
1	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:		As it is a fresh quarry, the conditions are not applicable.
	(i)	Original pit dimension	
	(ii)	Quantity achieved vs EC Approved Quantity	
	(iii)	Balance Quantity as per Mineable Reserve calculated.	
	(iv)	Mined out Depth as on date Vs EC Permitted depth	
	(v)	Details of illegal/illicit mining	
	(vi)	Violation in the quarry during the past working.	
	(vii)	Quantity of material mined out outside the mine lease area	

	(viii)	Condition of Safety zone/ benches	
	(ix)	Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.		The VAO certificate is attached in Annexure IV.
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.		The map showing the details of structures within the radius of 500m will be attached in final EIA report.
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.		Detailed hydrological study is conducted and discussed in section 3.4.4 under chapter III in the EIA report page 45-54.
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.		The details of Bio diversity from the reputed institution will be submitted in the final EIA report.

6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc, up to a radius of 25 km from the proposed site.	The DFO letter will be submitted in the final EIA report.
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	As it is a fresh lease area, the Slope Stability report is not required.
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	As it is a fresh quarry lease. So, slope stability report is not required.

9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	The affidavit for blasting will be enclosed in the final EIA report.
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	A conceptual design of blasting has been given in Section 2.6.1 under Chapter II in the EIA report page 14-16.
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The Proponent not operated any quarries in the past.
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	As it is a new quarry, the conditions are not applicable.
14	Quantity of minerals mined out.	
	- Highest production achieved in any one year. - Detail of approved depth of mining.	

	• Actual depth of the mining achieved earlier.	
	• Name of the person already mined in that leases area.	
	• If EC and CTO already obtained, the copy of the same shall be submitted.	
	• Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Toposheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.2 under Chapter II in the EIA report page 9.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.	The drone video will be submitted during final presentation.
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Photographs of adequate fencing, green belt along the periphery of the project area and the photographs showing nearby water bodies will be included in final EIA report.

18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	The Resources and Reserves of Rough Stone were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. The details reserve estimation has been shown in Table 2.5 under Chapter II in the EIA report page 8.
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Details of manpower required for this project have been given in Table 2.15 under Chapter II in the EIA report page 21.
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect	The hydrogeological study is discussed in the Section 3.4.4 under Chapter III in the EIA report page 45-54.

	groundwater. Necessary data and documentation in this regard may be provided.	
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III in the EIA report page 23-96.
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 132-138.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks.
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to	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 3.2 under Chapter III in the EIA report page 25-34. The details of surrounding sensitive

	encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	ecological features have been provided in Table 3.39 under Chapter III in the EIA report page 95. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.9 under Chapter II in the EIA report page 17.
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project 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.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks. The rainwater harvesting report will be submitted in final EIA report.
28	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section 3.9 under Chapter III in the EIA report page 93-94.

29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	A detailed tree survey was carried out within 300 m radius and the results have been discussed in Section 3.7 under Chapter III in the EIA report page 68-82.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.10 under Chapter II in the EIA report page 17.
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. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV in the EIA report page 115-117.

33	Taller/one year old Saplings raised in appropriate size of bags; preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3m 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 in the EIA report page 131-132.
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII in the EIA report page 128-131.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV in the EIA report 118-119.

37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 141-142.
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 in the EIA report page 140.
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.	The benefits of the project are discussed in the Chapter VIII in the EIA report page 140-142.
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	It is a fresh quarry lease, so this condition is not applicable.

	MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	A detailed environment management plan has been prepared following the suggestion made by SEAC, as shown in Chapter X in the EIA report page 144-150. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted in final EIA report.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard Terms of Reference

1(a)	Mining of minerals	
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.	It's a government poramboke land.

3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	All the documents are 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 2.2 under Chapter II in the EIA report page 9.
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 in the EIA report page 24-96.
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 system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report	The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 144-145.
8.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided	It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9.	The study area will comprise of 10 km zone around the mine lease from lease	The study area considered for this study is of 5 km radius for air, soil, water, and noise level sample

	periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	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.
10.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.2 under Chapter III in the EIA report page 25-34. The details of surrounding sensitive ecological features have been provided in Table 3.39 under Chapter III in the EIA report page 95. Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.9 under Chapter II in the EIA report page 17.
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.	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the	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 in the EIA report page 95.

	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.	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.	There is no any reserve forest in the study area. The details of reserve forest is discussed in the Table 3.39 under Chapter III in the EIA report page 95.
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	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 in the EIA report page 95.

	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.	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 in the EIA report page 95.
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	A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.7 under Chapter III in the EIA report page 68-82.

	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 '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 Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other	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.

	weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspect should be discussed in the Report	
22	One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m	Baseline data were collected for the period of October - December 2025 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.2-3.9 under Chapter III in the EIA report page 25-94.

	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 in the EIA report page 103-109.
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 2.12 under Chapter II in the EIA report page 19.
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 in the EIA report page 100-103.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The ground water table is found at the depth of 70m below ground level. The ultimate depth of quarry is 51m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in table 3.9 under Chapter III in the EIA report page 41.
29.	Details of any stream, seasonal or otherwise, passing through the lease area	Not Applicable.

	and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out	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 880m AMSL. Ultimate depth of the mine is 51m BGL. Depth to the water level in the area is 70m below the ground level.
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. From on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 115-117.
32.	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a	Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is

	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.	no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.9 under Chapter III in the EIA report page 93-94.
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 in the EIA report page 19.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.5 under Chapter II in the EIA report page 17-18.
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 detail have been explained in Section 4.8 under Chapter IV in the EIA report page 118-119.

36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 141-142.
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 140.
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 Table 10.1 & 10.2 under Chapter X in the EIA report page 146-150.
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 submitted during the final EIA 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.8,55,27,057 /- CER Cost is Rs. 5,00,000/- In order to implement the environmental protection measures, an amount of Rs. 21.56lakhs as capital cost and recurring cost as Rs. 267.21 Lakhs as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 289.21 Lakhs as shown in Tables 10.1 & 10.2 under Chapter X, pp.146-150.
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 in the EIA report page 131-132.
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII in the EIA report page 140-142.
44.	Besides the above, the below mentioned general points are also to be followed	
a)	All documents to be properly referenced with index and continuous page numbering	All the documents have been properly referenced with index and continuous page numbering
b)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated	List of tables and source of the data collected have been mentioned.
c)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL	Original Baseline monitoring report will be submitted in final EIA report.

	accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	
d)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
e)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be submitted in final EIA report.
f)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report.
g)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	No changes are made in the basic scope and the project parameters.
h)	As per the circular no. J 11011/618/2010-IA.II(I) dated 30.5.2012, certified report	It is a new lease area, the condition is not applicable.

	of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	
i)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

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.	It's a government poramboke land.
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the	All the documents are in the name of the lessee.

	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/ 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 2.2 under Chapter II in the EIA report page 9.
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 in the EIA report page 23-96.
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	The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 144-145.

	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	It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90° bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	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.
10.	Land use of the study area delineating forest area, agricultural land, grazing land,	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary,

	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.	national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.2 under Chapter III in the EIA report page 25-34. The details of surrounding sensitive ecological features have been provided in Table 3.39 under Chapter III in the EIA report page 95. Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.9 under Chapter II in the EIA report page 17.
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 in the EIA report page 95.

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.	There is no any reserve forest in the study area. The details of reserve forest is discussed in the Table 3.39 under Chapter III in the EIA report page 95.
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 in the EIA report page 95.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), if any, within	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

	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.	been given in Table 3.39 under Chapter III in the EIA report page 95.
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 3.7 under Chapter III in the EIA report page 68-82.
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	Not Applicable. Project area / Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.

	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 w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to	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.

	shifting of village(s) including their R&R and socio-economic aspect should be discussed in the Report	
22	One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline data were collected for the period of October - December 2024 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.2-3.9 under Chapter III in the EIA report page 25-97.
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	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 103-109.

	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	
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 2.12 under Chapter II in the EIA report page 19.
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	Impact studies and mitigation measures of water environment including surface water and ground

	measures, if any required, should be provided.	water have been discussed in Section 4.3 under Chapter IV in the EIA report page 100-103.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The ground water table is found at the depth of 100m below ground level. The ultimate depth of quarry is 60m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.4 under Chapter III in the EIA report page 39-54.
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 876m AMSL. Ultimate depth of the mine is 51m (16m AGL+35m BGL). Depth to the water level in the area is 70m below the ground level.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 115-117.

	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.	Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.9 under Chapter III in the EIA report page 93-94.
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 in the EIA report page 19.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.5 under Chapter II in the EIA report page 17.
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 detail have been explained in Section 4.8 under Chapter IV in the EIA report page 118-119.
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 141-142.
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 29 people directly as discussed in Section 8.1 under Chapter VIII page 140.

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 Table 10.1 & 10.2 under Chapter X in the EIA report page 146-150.
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 submitted during the final EIA 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.8,02,56,857/- CER Cost is Rs. 5,00,000/- In order to implement the environmental protection measures, an amount of Rs. 21.56 Lakhs as capital cost and recurring cost as Rs. 289.21 Lakhs as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 289.21 Lakhs as shown in Tables 10.1 & 10.2 under Chapter X, pp.146-150.

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 in the EIA report page 131-132.
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII in the EIA report page 140-142.
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 submitted 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 submitted in the final EIA report.

g)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report
h)	Changes, if any made in the basic scope and project parameters (as submitted in Form- I and the PFR for securing the TOR) should be brought to the attention 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 new lease area, the condition is not 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.	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 the projects are categorized into A, B1 & B2 to determine the level of scrutiny and process. The mining projects whose extent is ≥ 5 ha or the cluster of quarries (if homogeneous mineral) within 500m radius extent is greater than 5ha falls under Category- B1. These projects require preparation and submission of an EIA report after public consultation to SEIAA to obtain environmental clearance as per the Office Memorandum F.No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018.

1.1 PURPOSE OF THE REPORT

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

1.2 ENVIRONMENTAL CLEARANCE

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

Screening

The project had applied in PARIVESH 2.0 proposal no. SIA/TN/MIN/542402/2025, Dated: 23.06.2025 to obtain terms of reference.

Scoping

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

Public Consultation

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

Appraisal

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

1.3 TERMS OF REFERENCE (ToR)

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

Table 1.1 Details of quarries within the cluster of 500m radius

Proposed Quarries					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	M/s. Shri Natural Stones, Partner Thiru. M.N. Ravikumar, No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk, Krishnagiri District.	738(Part 2)	Thandarai	2.00.0	Proposed Area
P2	M. Jeevankumar	738(Part 3)	Thandarai	1.50.0	Applied Area
P3	S.M. Harish S/o. Muniraj, No.2/159, Achettipalli, J. Karupalli, Denkanikottai	755(P)	Panchakchipuram	2.00.0	Applied Area
Existing Quarries					
E1	Thiru H.S. Srinath, S/o Sundar Raj, No.219 Near Milk Dairy, Huskur, Anekal Taluk, Bangalore District, Karnataka State	738/1(Part)	Thandarai	4.00.0	19.06.2019 To 18.06.2029
Total Cluster Extent				9.50.0	---

Source: DD Letter: Roc.No.26/2025/Mines, Dated:20.06.2025

The file was appraised in 609th SEAC meeting on 26.08.2025 and issued terms of reference (ToR) identification no **TO25B0108TN5155022N** on **16.10.2025** by SEIAA, TN.

1.4 POST ENVIRONMENT CLEARANCE MONITORING

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

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

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

1.6 IDENTIFICATION OF THE PROJECT PROPONENT

The details of the project proponent are given in Table 1.2 below.

1.2 Details of Project Proponent

Name of the Project Proponent	M/s. Shri Natural Stones
Address	Partner Thiru. M.N. Ravikumar, No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk, Krishnagiri District-635109.
Status	Partner

1.7 BRIEF DESCRIPTION OF THE PROJECT

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

The overall extent of the project site is 2.00.0ha and it is located in Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu.

The proposed project deals with excavation of rough stone which is primarily used in construction projects. The increasing demand for rough stone fueled by a booming construction

industry presents a valuable opportunity. This project will not only meet the rising demand for rough stone but also create jobs for the surrounding villages.

1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster and formulate the effective mitigation measures. The baseline monitoring study has been carried out during the period of **October to December 2025** for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts of the cluster on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

1.9 Legislation Applicable to Mining of Mineral Sector

A few important legislations are given below:

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

CHAPTER II

PROJECT DESCRIPTION

2.0 DECSRIPTION OF THE PROJECT

The proponent **M/s. Shri Natural Stones** is involved in the mining and its auxiliary activities. The proponent had applied for quarry lease on 23.06.2025 to extract rough stone. The precise area communication letter was issued by Deputy Director of Geology and Mining, Krishnagiri vide (Rc.No.26/2025/Mines, Dated 03.04.2025). The mining plan thus prepared was approved by Regional Joint Director/Deputy Director (FAC) Department of Geology and Mining, Krishnagiri (Roc.No.26/2025/Mines Dated 17.06.2025). The project area and the proposed excavation details were given in Table 2.1.

History of the Project

It's a fresh quarry lease.

Table 2.1 Proposed project area and excavation details

Name of the Quarry	M/s. Shri Natural Stones	
Type of Land	Government Poramboke Land	
Extent	2.00.0ha	
S.F. No	738 (Part- 2)	
Toposheet No	57 H/14	
Highest Elevation	880m AMSL	
Latitude	12°34'00.7992"N to 12°34'59.7873"N	
Longitude	77°47'43.9868"E to 77°47'49.3133"E	
Proposed depth as per ToR	51m BGL	
Ultimate depth for ten years	51m BGL	
Geological Resources	Rough stone in m ³ & Tons	Topsoil in m ³ & Tons
	8,19,310 & 22,53,103	20,000 & 40,000
Mineable Reserves	2,93,695 & 8,07,661	14,700 & 29,400
Proposed production for 10 years	2,93,695 & 8,07,661	14,700 & 29,400
Method of Mining	Open cast mechanized mining method	
Topography	Elevated Topography	
Machinery requirements	Jack hammer	2
	Excavator	1
	Compressor	2
	Tipper	6
Proposed Manpower Deployment	18	
Project Cost	Rs.8,55,27,057/-	
Proposed Water Requirement	3.5 KLD	

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu as shown in Figure 2.1.

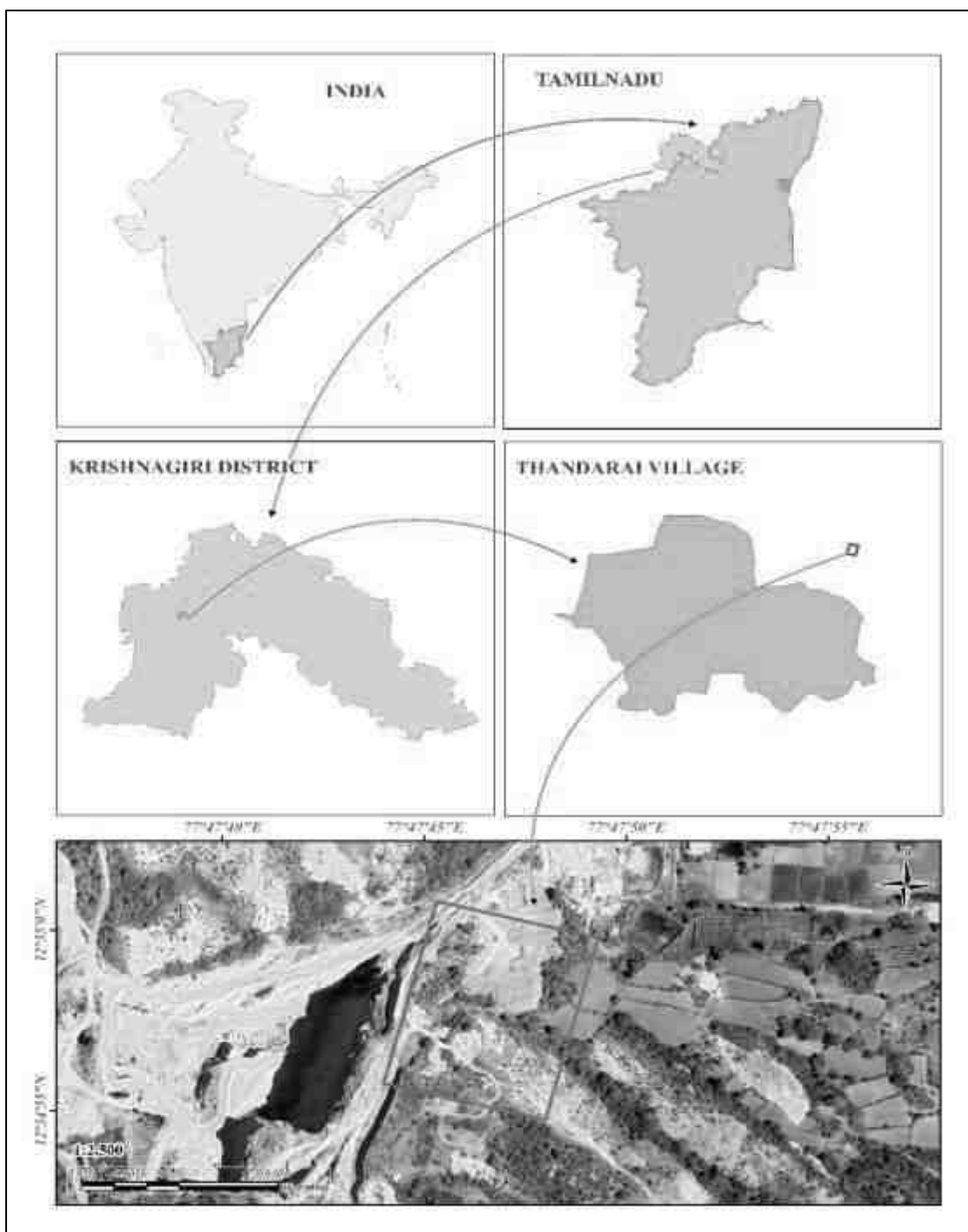


Figure 2.1 Key Map Showing Location of Project Site

The aerial distance between the project site boundary and the Karnataka state boundary is about 11.63km in the North West side. To reach the site access the SH 17A Hosur-Denkanikottai road. The travel distance is around 8km from Denkanikottai bus stand. Accessibility details to the proposed project site have been given in Table 2.2.

Table 2.2 Site Connectivity to the Project Area

Type of Features	Name/ Location	Distance (km)	Direction
Bituminous road	Panchakshipuram Village	1	N

Nearest Roadways	SH -17A	1.6	W
Nearest Town	Denkanikottai	6	S
Nearest Airport	Bangalore	44	N
Nearest Villages	Koratagiri	1.3	NW
	Kamaiyanur	1.0	NE
	Adaikkalpuram	1.4	SE
	Onnupalli	1.5	SW

2.3 LEASEHOLD AREA

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

Table 2.3 Lease hold area details

Survey No	Sub Division	Total Extent in Ha	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F.No.	Applied area out of total area in Ha
738	2	2.00.0	Government Poramboke Land	M/s. Natural Stones	738/2(Part)	0.42.52
Total Extent		2.00.0	Applied lease area extent			0.42.52

The proposed project is site specific. There is no mineral beneficiation or processing proposed inside the project area. There is no forest land involved in the proposed area and is devoid of major vegetation and trees. The overall extent of the project area is 2.00.0Ha as per the precise area communication letter vide Roc.No.26/2025/Mines, dated: 03.04.2025 issued by Dept of Geology and Mining, Krishnagiri District lies near the Nerigam village, Kariyasandiram post, Krishnagiri District, Tamil Nadu. The breakup of the existing land use for mining and ancillary feature is given in Table 2.3.

Table 2.3 Present Land use pattern of the project area

Sl. No.	Land Use	Present area (Hect.)
1.	Area under Mining	Nil
2	Infrastructure	Nil
3	Roads	Nil
4	Unutilized	2.00.0
5	Greenbelt + Earth bund+ Dump	Nil
Grand Total		2.00.0

2.3.1 Geo Coordinates

The proposed lease area is elevated topography. The maximum elevation (880m) was observed southern side of the lease area and minimum elevation (875m) was observed northern side of the site. The boundary corner and the intermediate stone geographic coordinates is given in Table 2.4 and shown in Figure 2.2.

The quarries within the cluster of 500m radius as per the letter RoC.No.26/2025/Mines dated: 20.06.2025 is enclosed as Annexure II is shown in Figure 2.3.

Table 2.4 Geographic coordinates of the Project area

PILLAR No	LATITUDE	LONGITUDE
1	12°34'59.7873"N	77° 47'49.3133"E
2	12°34'54.7483"N	77° 47'47.9947"E
3	12°34'55.7602"N	77° 47'43.9868"E
4	12°34'00.7992"N	77° 47'45.3054"E

2.4 GEOLOGY

The rock present in the project site is charnockite exhibits layered, medium to coarse grained hornblende biotite, orthopyroxene charnockite gneiss. The Charnockite Group occupies a major part of the south-west portion of this district with small bands of garnetiferous quartzo- feldspathic gneiss, Granite gneiss and dolerite dykes. The order of superposition of the proposed lease area is

Age	Group	Rock Formation
Recent to Sub recent	----	Top Soil (1m Thick)
Archean to Lower Proterozoic	Migmatite complex	Pegmatite and Quartz/veins Dolerite dyke Peninsular gneisses and Migmatites
Archean	Charnockite Group	Charnockite, Garnetiferous quartzo-feldspathic, Biotite gneisses

The topsoil available at a depth of 0-1m, weathered rock is obtained the average of 1-3m and a rough stone starts from 3m to 51m.

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety margins, as shown in Figure 2.5 and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 51m (16M AGL & 35m BGL) considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The results of geological resources and reserves is given in Table 2.5 and the approved year wise development plan is enclosed as Figure 2.5 & 2.5a.

Table 2.5 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone in m ³ & Tons	Topsoil in m ³ & Tons
Geological Resource in (m ³ & Ts)	8,19,310 & 22,53,103	20,000 & 40,000
Mineable Reserves in (m ³ & Ts)	2,93,695 & 8,07,661	14,700 & 29,400
Proposed production for 10 years (m ³ & Ts)	2,93,695 & 8,07,661	14,700 & 29,400

Source: Approved Mining Plan & ToR

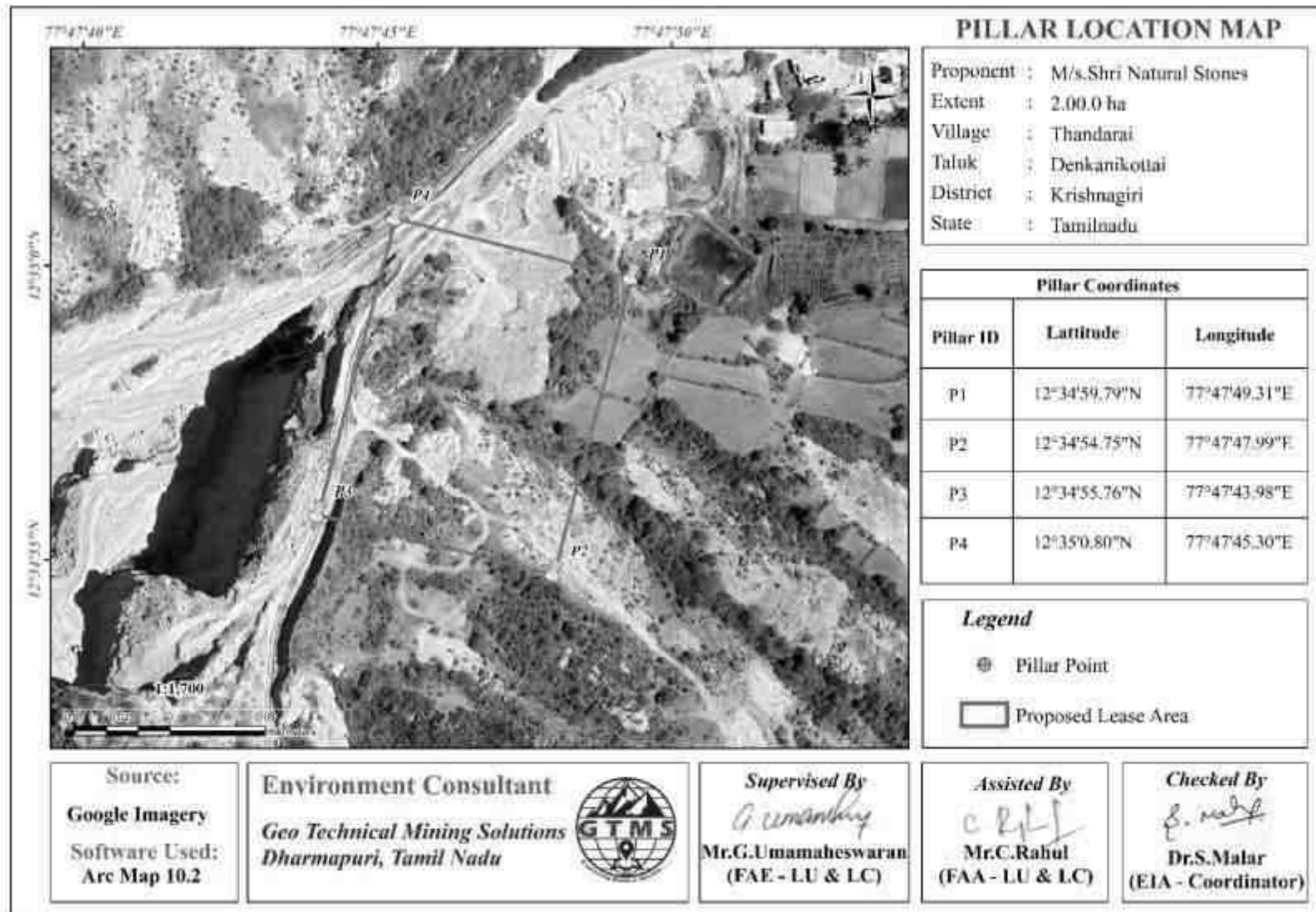


Figure 2.2 Google Earth Image Showing Pillar Coordinates of Lease Area

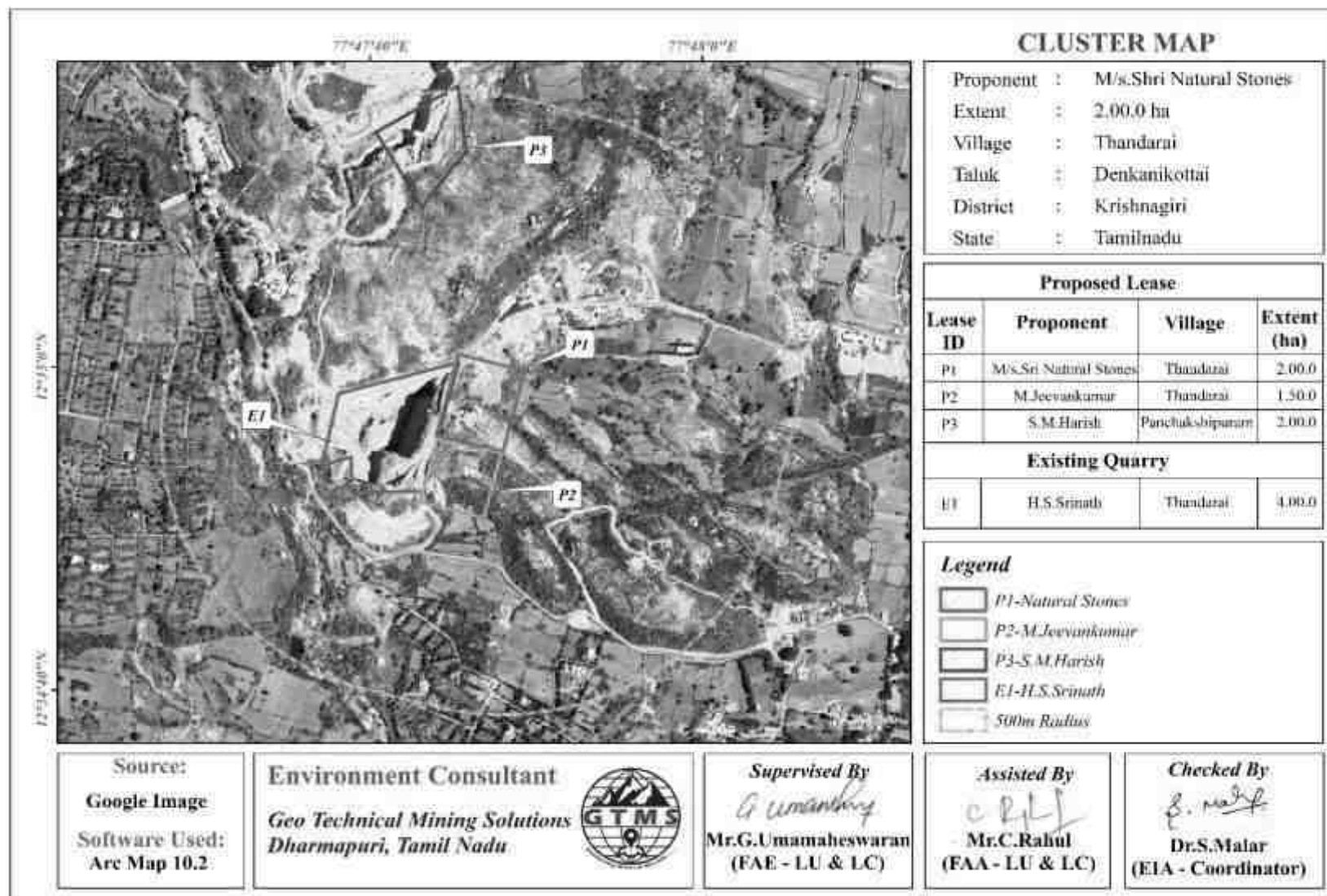


Figure 2.3 Google Earth Image of the cluster



Figure 2.4 Surface & Geological Plan

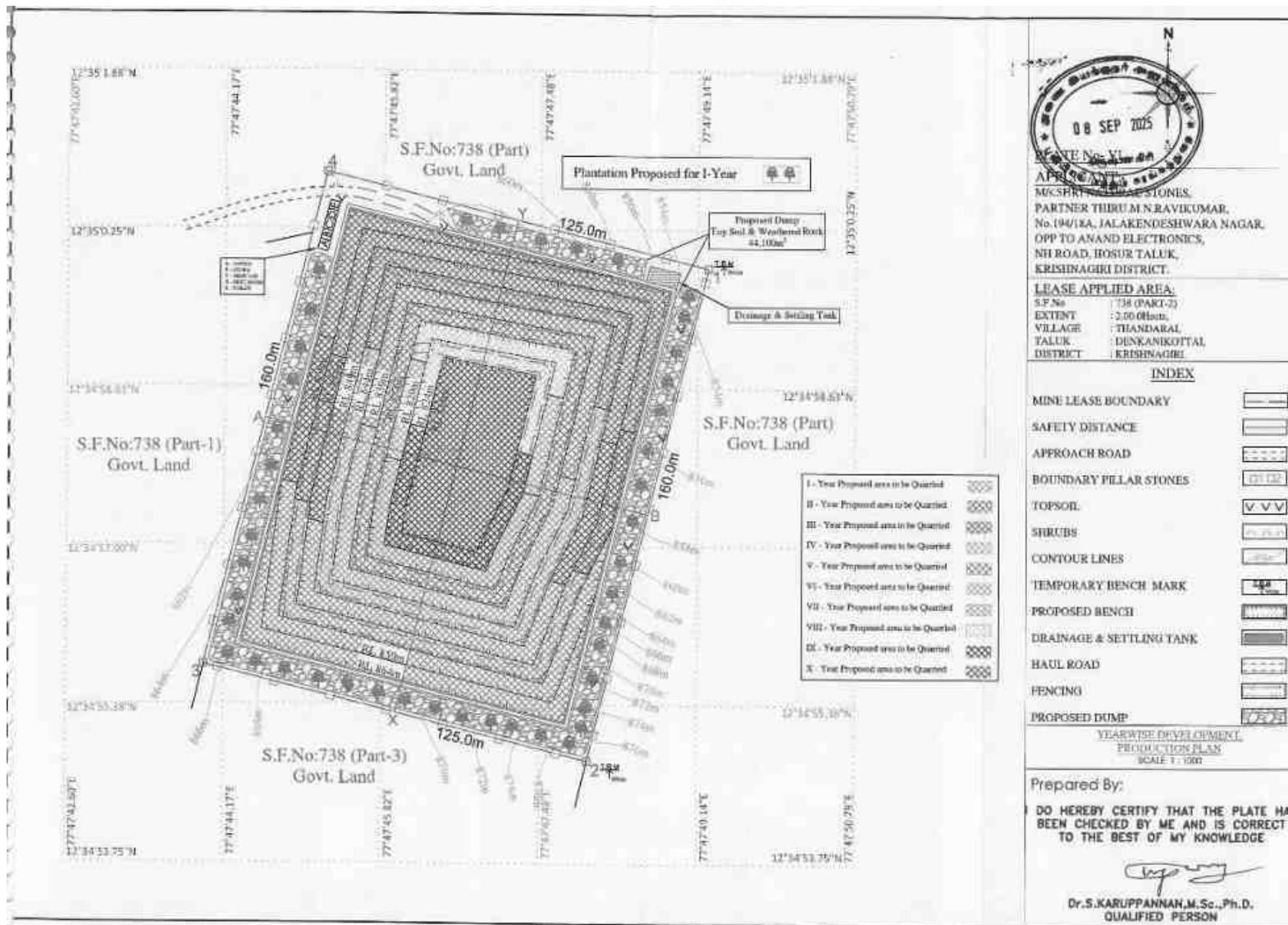


Figure 2.5 Year wise Development & Production Plan

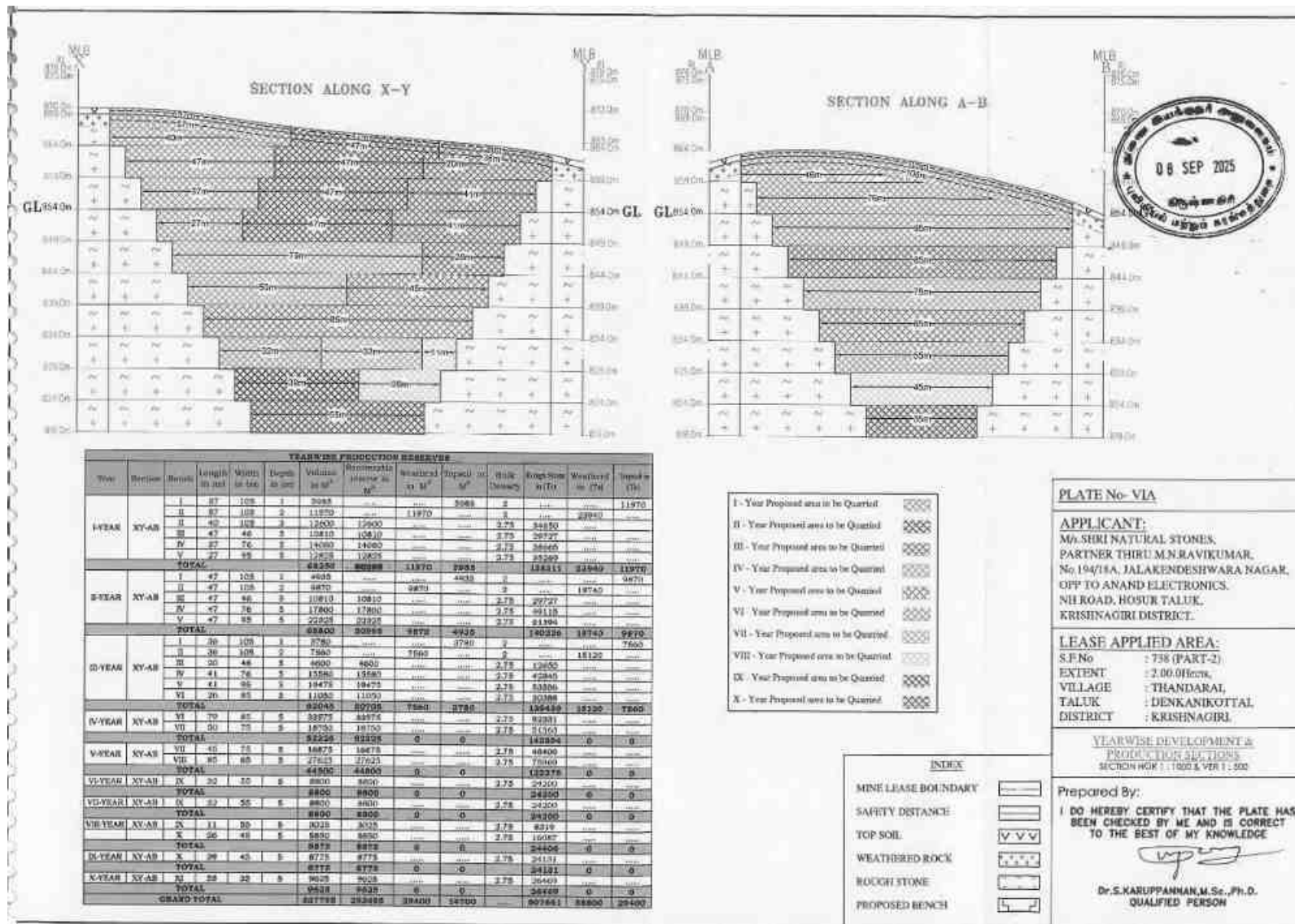


Figure 2.5a Year wise Development & Production Section

2.6 MINING METHOD

The Quarrying operation is proposed to be carried out by open cast mechanized mining method with the bench height and width of 5m each. The open cast mechanized method involving drilling and blasting is proposed to extract rough stone. The extracted rough stone will be loaded to the trucks to the nearby stone crushing units. Due permission from D.G.M.S, will be taken as per Rule 106 of MMR 1961 is proposed. Mining operation is proposed in one shift i.e. 8 AM to 4 PM. The average number of working days in a year would be 300 days/yr excluding Sunday & holidays. The production will be slow down trend during monsoon period. 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 (Chapter 8 (nps.gov)). These rules will be applied to blast rocks in the proposed project.

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

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

Rule 2: Generally, select the densest explosive possible.

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

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

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

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

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

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

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

Rule 6: Stemming should be equal to the burden.

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

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

Sub drill 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 sub drill should be determined by the largest dimension, which can be the spacing or the burden. An average sub drill of 0.4 of spacing is best to use for planning purposes. Based on the above-mentioned rules, blasting design has been conceptualized is given in Table 2.6.

Table 2.6 Conceptual Blasting Design

Blast hole Diameter (D) in mm	32
Burden (B) in m	1.2
Spacing (S) in m	1.38
Sub drill in m	0.5
Charge length (C) in m	0.70
Stemming	0.5

Hole Length (L) in m	1.2
Bench Height (BH) in m	2.5
Stemming material size in mm	3.2
Burden stiffness ratio	2.08
Blast volume/hole in m ³	4.14
Number of blastholes/day	25
Blast hole pattern	Staggered
Mass of explosive /day in kg	11.08
Powder factor in kg/m ³	0.11
Type of explosives	Slurry
Initiation system	NONEL

Statutory Provision & Precaution during Blasting: -

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

2.6.2 Magnitude of Operation

Based on the results of estimated production the details about the size of operation had provided in Table 2.7.

Table 2.7 Operational Details for Proposed Project

	Rough Stone (m³) & Ts / 10 years
Proposed production	2,93,695 & 8,07,661
Number of Working Days	270
Production /Day (m ³) & Ts	109 & 300
No. of Lorry Loads	18

2.6.3 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.8.

Table 2.8 Machinery Details

S. No.	Type	No. of Unit	Size/Capacity	Dia of Hole (mm)	Motive Power
1	Jack Hammers	2	Hand Held	32mm	Diesel
2	Compressor	2	AIR	---	Diesel
3	Excavator	1	2.9 - 4.5 m ³	---	Diesel
Haulage & Transport Equipment					
4	Tipper	6	--	---	Diesel

2.6.4 Post mining land use

The land use at present, at the end of plan period & at the end of conceptual period is given in Table 2.9 below

Table 2.9 Land Use at the end of mine Life

Description	Present area (Hect.)	Area at the end of life of quarry (ha)
Area under quarry	Nil	1.47.00
Infrastructure	Nil	0.02.0
Roads	Nil	0.03.0
Green Belt + Earth bund + Dump	Nil	0.42.52
Un-Utilized Area	2.00.0	Nil
Drainage & Settling Tank	Nil	0.05.48
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, mine closure plan is not proposed for now. Based on the progressive mine closure plan for the scheme period, the mine closure cost is given in Table 2.10.

Table 2.10 Mine Closure Budget

Activity	Capital Cost
1000 plants inside the lease area	3,00,000
500 plants outside the lease area	1,50,000
Wire Fencing	4,00,000
Renovation of Garland Drain	40,000
Total	8,90,000

Source: Environment Management Plan



Figure 2.6 Mine Layout Plan and Land Use Pattern

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 is provided in Table 2.11.

Table 2.11 Ultimate Pit Dimension

Pit	Length (m)	Width (m)	Depth (m)
I	140	105	51

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.

2.6.8 Water Requirement

Details of water requirement in 3.5 KLD is given in Table 2.12.

Table 2.12 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.5 KLD	Existing bore wells nearby the lease area
Green Belt development	1.0 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.0 KLD	Existing bore wells and approved water vendors
Total	3.5 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 2.13 Around **12,43,410 litres of HSD** will be used for rough stone extraction during 10 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.13 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (293695m³)	Topsoil (14700m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	14,685	245	---
Total Diesel Consumption for 10 years (litre)	2,34,956	2,450	2,37,406
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	25	---	---
Total Diesel Consumption for 10 years (litre)	27,000	---	27,000
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	23	---	---
Carrying Capacity in m ³	6	---	---
Number of Trips / days	20	---	---
Number of Trips / 10 years	54,000	---	---
Total Diesel Consumption for 10 years (litre)	10,15,352	---	10,15,352
Total Diesel Consumption by Excavator, Compressor and Tipper			12,79,758

2.6.10 Capital Requirement

The project proponent will invest Rs. 8,55,27,057 to the project. The breakup summary of the investment has been given in Table 2.14.

Table 2.14 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset	8,10,56,857
2	Machinery	20,00,000
3	EMP	24,70,200
	Total Project Cost	8,55,27,057

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 2.15.

Table 2.15 Employment Potential for the Proposed Project

S. No.	Category	Role	Nos
1	Highly Skilled	Mines Manager	1
		Mine Engineer	1
		Blaster	1
2	Unskilled	Musdoor/ Labours	15
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 in Table 2.16.

Table 2.16 Expected Time Schedule

S. No.	Particulars	Time Schedule (in Months)							Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	
1	Baseline Environmental Study for preparing EIA report based on the Standard and Specific ToR Conditions								Soil, Water, Air, Noise, Socio Economics, Ecological Biodiversity and Traffic studies to be carried out by NABL accredited Laboratory and FAE's.
2	Draft EIA Report								Submission to TNPCB

3	Public Hearing Meeting								Minutes will be provided by the Tamil Nadu Pollution Control Board.
4	Final EIA Report (including Public reviews)								Submission to PARIVESH 2.0 Portal for obtaining EC
5	SEIAA Meeting								For environmental clearance
Note: 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

3.1 BASELINE ENVIRONMENTAL STUDIES

Baseline environmental studies were carried out within 5km radius of the extraction of rough stone quarry to assess the existing environmental scenario in the area by **Green Link Analytical & Research Lab**, which is MoEF recognized and NABL certified lab. For the purpose of EIA studies, Quarry lease area of rough stone quarry was considered as the core zone and area outside the mine upto 5km radius was considered as buffer zone. The baseline environmental monitoring for various components of environment viz. air, noise, water, land was carried out during **Post Monsoon Season (October to December 2025)** in the study area covering 5km radius distance from the rough stone quarry. Other environmental data on flora and fauna, land-use pattern, forest etc. Were also generated through field surveys and secondary information collected from different departments of State Govt. socio-economic survey was conducted, through interaction with the people, medical officers by floating questionnaires and collection of information is supported by census data for demographic structures, amenities and infrastructure availability within the study area.

Study Area

The study area was divided into two zones:

- core zone– Project site cluster and
- buffer zone - 5km radius from the periphery of the cluster

Study area covers 5km radius from the mine located at S.F.No. 738 (Part- 2) of Thandarai Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu. Except for ecological study, which considers 10km as buffer zone. Both core and buffer zones are taken as the study area briefly given in Table 3.1 & 3.2. The study area map on Topo- sheet is represented in Figure 3.1.

Table 3.1 Classification of study Area

Sl. No	Classification of Study area	Type of Baseline data collection	Environmental Attributes
1	Core Zone (Cluster Lease Area)	Primary Data	Soil Environment, Water Quality, Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study.
2	Extended Core Zone (upto 500m radius from the Cluster lease boundary)	Primary and Secondary Data	Soil Environment, Water Quality, Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study.

3	Buffer Zone (Cluster lease boundary of 500m to 10km radius)	Primary and Secondary Data	Meteorological Data, Soil Environment, Water Quality (Surface/ Groundwater), Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study.

Table 3.2 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	6 (2 surface water & 4 ground water)	IS 10500 2012 & CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/ automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ NO _x	24 hours, twice a week	5 (1 core & 4 buffer)	S 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
Noise Levels	Ambient noise	Hourly observation for 24 hours per location	5 (1 core & 4 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 Quadrant & 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 the monitoring and testing have been carried out as per the Guidelines of CPCB and MoEF & CC.*

Components and Methodology

To achieve the objectives of ToR, NABET approved in Functional Area Experts (FAE) of Geo Technical Mining Solutions- members visited the study area and monitored the environmental parameters in accordance with the Guidelines of EIA, issued by the Ministry of Environment, Forests and Climate Change (MoEF and CC) Government of India. The components of the study are given in Table no. 3.3.

Table No. 3.3 Component of the EIA/EMP studies

Sl. No	Component	Sl. No	Component
1.	Geology & Geomorphology	7.	Air Quality and Meteorology
2.	Land Use & Land Cover	8.	Noise Environment
3.	Hydrogeology	9.	Biological Environment
4.	Soil Environment	10.	Socio-economic Environment
5.	Water Environment	11.	Solid and Hazardous waste
6.	Air Environment	12.	Risk Assessment

3.2 LAND ENVIRONMENT

3.2.1 Geology

Study area is mainly composed of Grey Hornblende biotite gneiss and Biotite hornblende genesis as shown in Figure 3.2. Grey hornblende biotite gneiss is a metamorphic rock characterized by its grey colour, prominent foliation and the presence of hornblende and biotite minerals. It's a type of gneiss have a distinct banded or layered appearance due to the alignment of minerals during metamorphism. This foliated metamorphic rock usually forms at convergent plate boundaries and recrystallizes with immense heat and pressure. It is predominantly composed of

- quartz (13-20%),
- plagioclase (33-39%),
- biotite (20-27%),
- microcline (2- 7%),
- titanite (5-10%),
- hornblende (1-10%) and

as accessories may contain metamorphic clinopyroxene, zircon, apatite and opaque minerals.

Source: Krishnagiri District annual mining report.

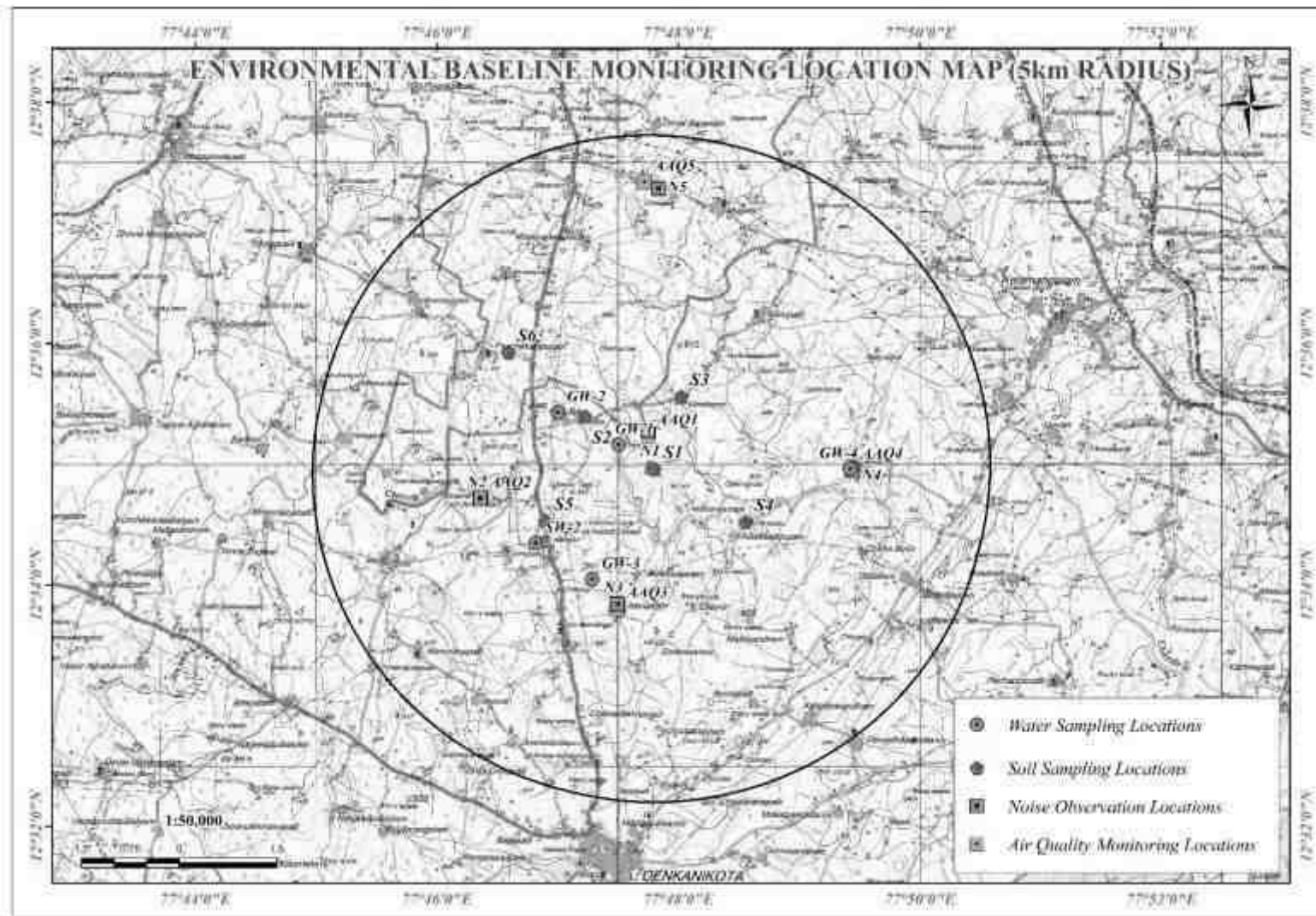


Figure 3.1. Topographical Map of 5km Radius Study Area

3.2.2 Geomorphology:

The project site is a pediment- pediplain complex as shown in Figure 3.3. It is a landscape feature in arid and semi-arid regions formed by the erosional processes of pedimentation and pediplanation. Pediments are gently sloping slightly concave erosional surfaces found at the base of hills or mountains while a pediplain is a much larger broader plain formed by the coalescence of multiple pediments and a pediplain is the end result of the long-term erosion and weathering that creates pediments gradually reducing mountain ranges into a vast flat surface.

3.2.3 Land Use/ Land Cover

The study utilizes the reclassified LULC dataset derived from the Advanced Wide Field Sensor (AWiFS) of the Indian Remote Sensing satellite Resourcesat-1 (P6). The data is accessed through the Bhuvan data portal (<http://bhuvan.nrsc.gov.in>). Sentinel 2-A images acquired in May-June are used for identifying changes. These images are pre-processed to correct atmospheric and radiometric errors ensuring data accuracy. The method calculates the number of changed pixels within the LULC dataset to assess the intensity of land use and land cover changes. This provides insights into the spatial extent of these changes. Land Use and Land Cover (LULC) map as shown in Figure 3.4 & 3.4a was prepared using Sentinel II image for the study area of 5 km radius. LULC maps were created at five-year intervals from a table (Table 3.4) to track the growth of the built-up area and changes in crop land. Totally 7 LULCs for 5year interval were mapped and the areal extent of each LULC was provided in Table 3.4 & 3.4a is used to study the growth in the built area and crop land changes. To compute the change in percentage (%) using the formula

$$\text{Change in percentage (\%)} = \frac{\text{Present LULC area} - \text{Previous LULC area}}{\text{Previous LULC area}} \times 100$$

In 2015 agriculture was identified as the main land use in the study area is 6034ha. Bare lands were identified as the second largest 1690ha land use followed by built-up area of 546 ha. Following a similar structure as that used in 2015 the unsupervised LULC classification from the satellite images in 2020 and 2025 resulted in the identification of 6 LULC types. More than 60% of the area was dominated by dry agricultural lands. Comparisons between the multiple-temporal datasets 2015, 2020 & 2025 revealed several changes in land-use configuration. The reason for the fall in crop land is due to the decreased agricultural facility and people getting involved in the industries than agriculture and also the decreasing price of crops. The minor change that has occurred in this study area is the buildup area. The reason behind this change may be the fast and good transportation system and the good environment for industrial development. Despite of increasing wetland area due to abandoned.

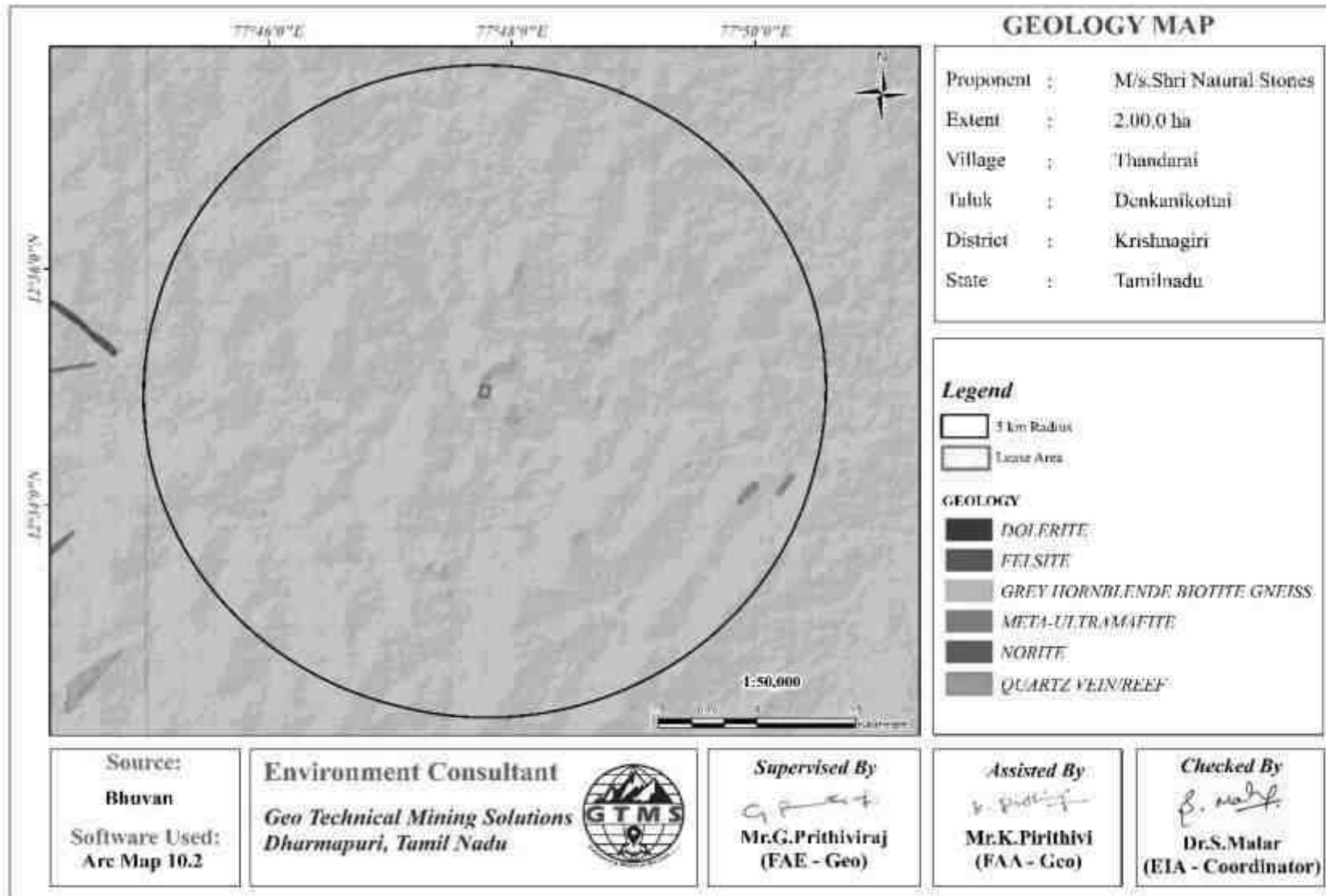


Figure 3.2 Geology Map of 5km Radius from the Proposed Project Site

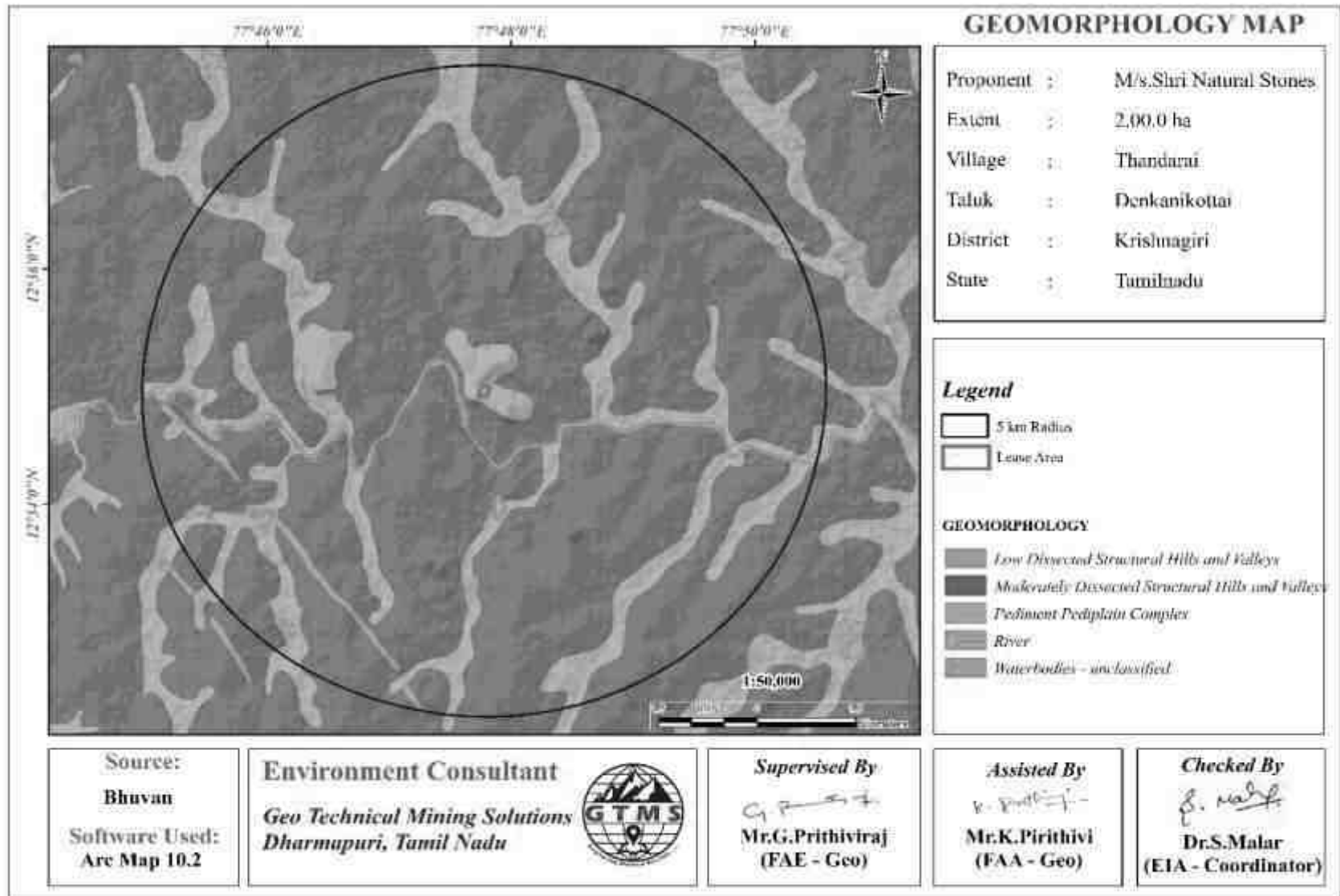


Figure 3.3 Geomorphology Map of 5km Radius from the Proposed Project Site

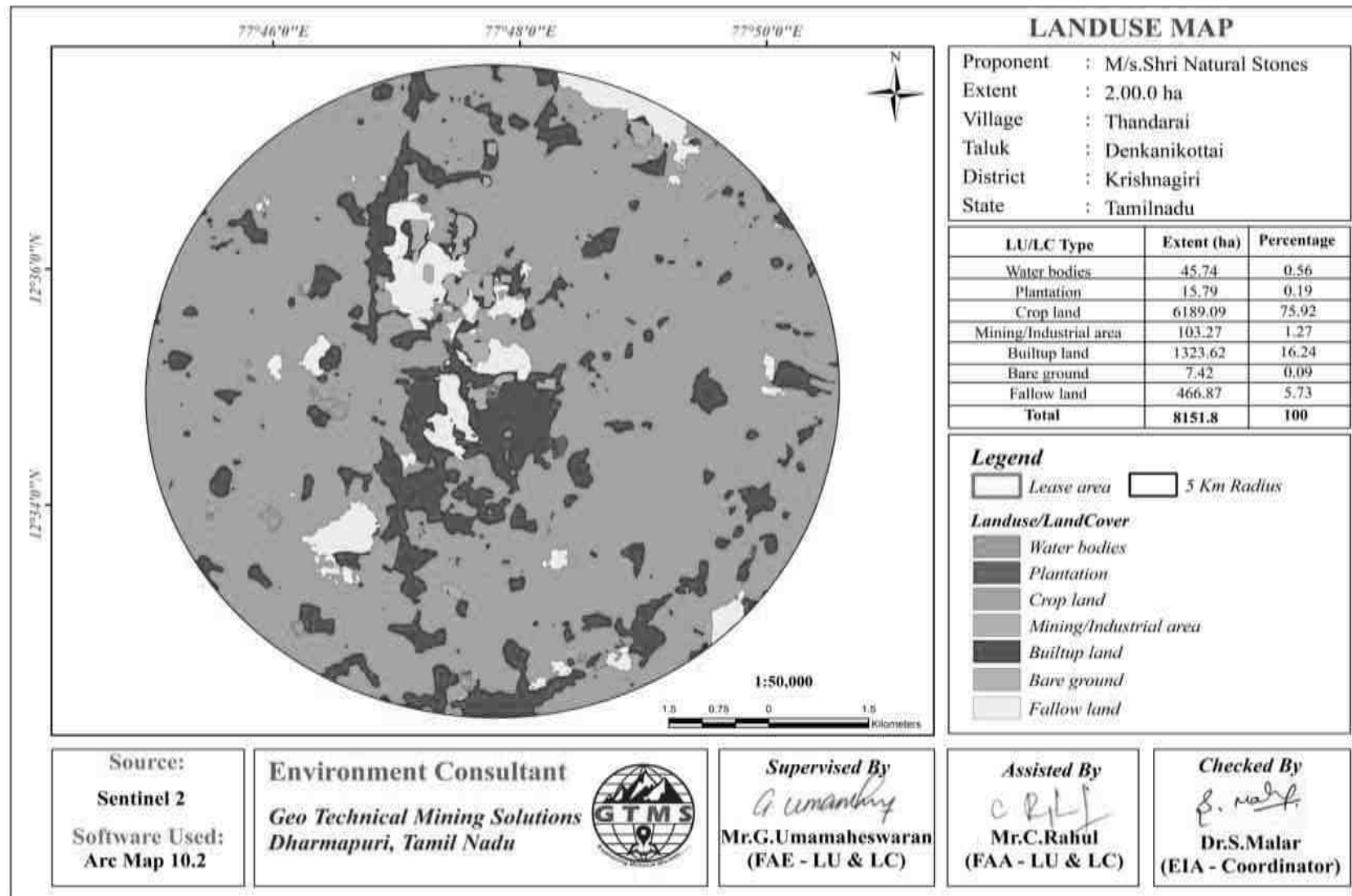


Figure 3.4 LULC Map of 5km Radius from the Proposed Project Site

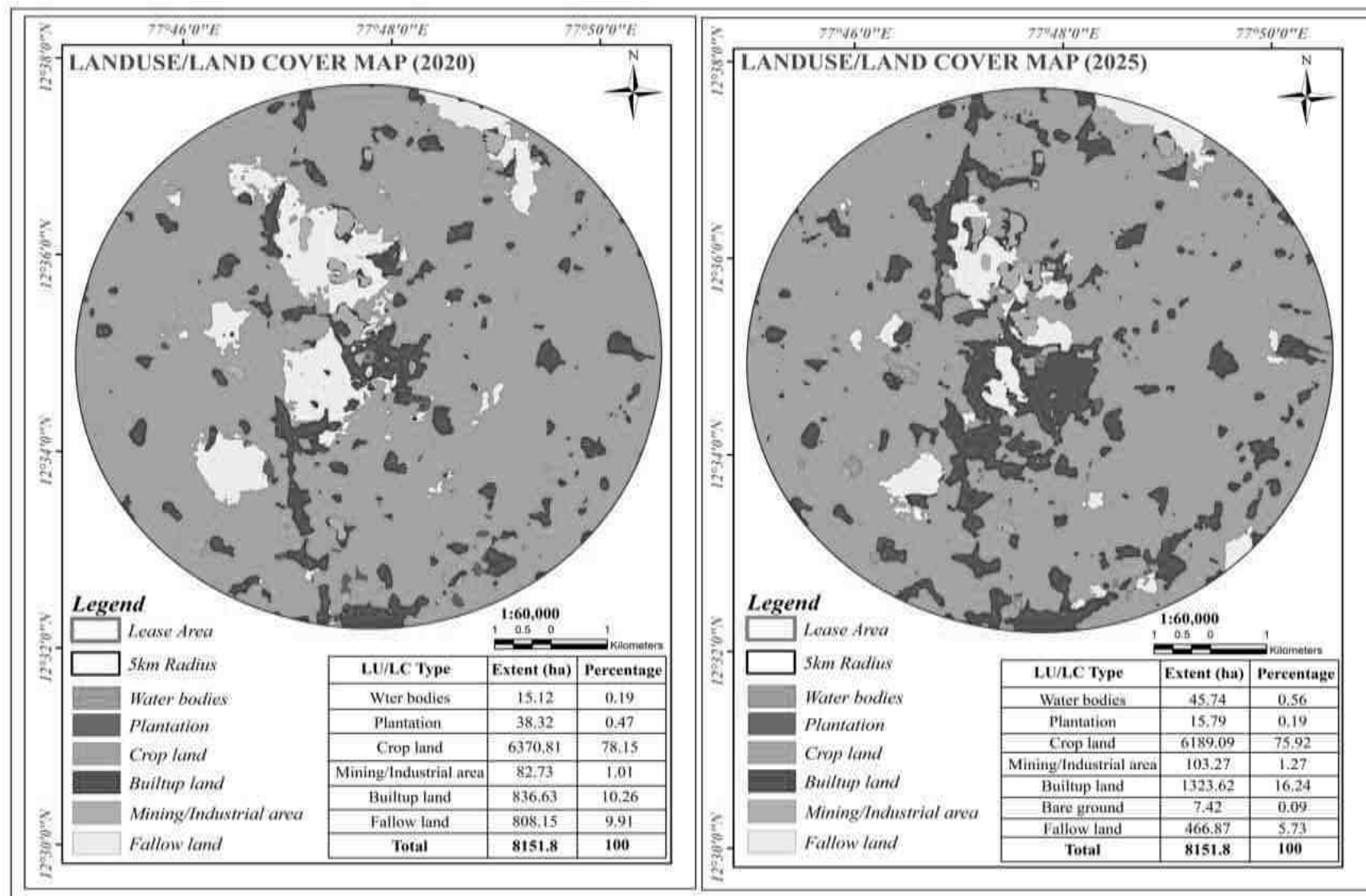


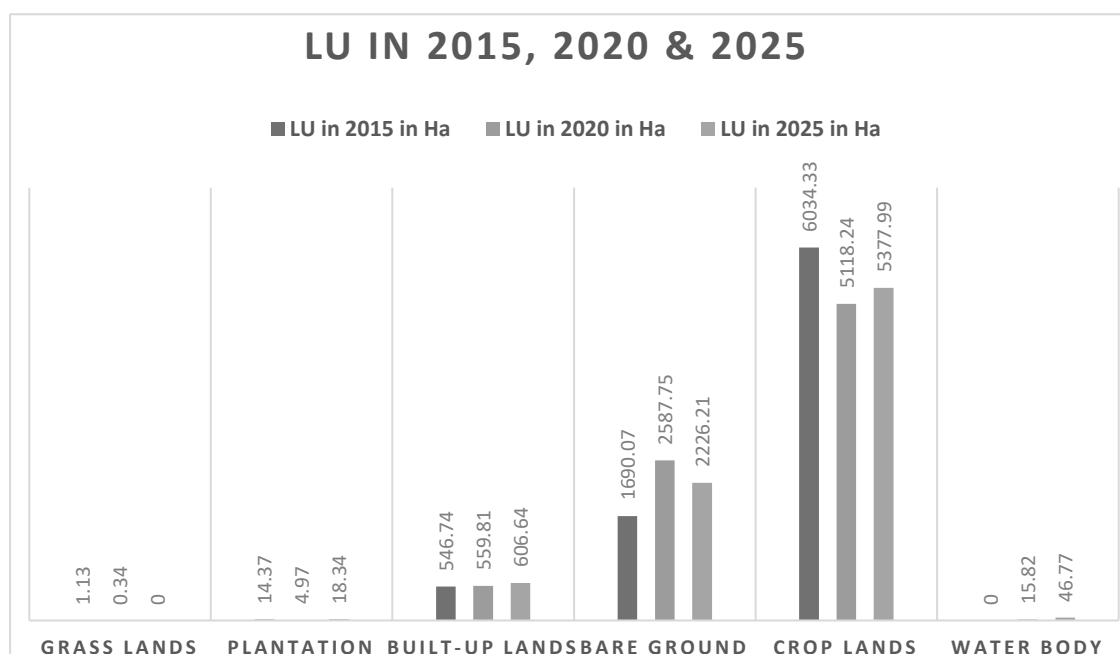
Figure 3.4a LULC Map of 5km Radius from the Proposed Project Site (2020- 2025)

mine or expired mine pit as the building material is essential for industrial growth now getting very much popular among the general masses.

Table 3.4 LULC Statistics of the Study Area

S. No.	Classification	LU in 2015 in Ha	LU in 2020 in Ha	LU in 2025 in Ha	Change in percentage
1	Grass lands	1.13	0.34	0.00	Negative
2	Plantation	14.37	4.97	18.34	27.60
3	Built-up lands	546.74	559.81	606.64	10.95
4	Bare ground	1690.07	2587.75	2226.21	31.72
5	Crop lands	6034.33	5118.24	5377.99	10.87
6	Water body	5.28	15.82	46.77	785
Total		8286.63	8286.63	8286.63	No Change

Source: Sentinel II Satellite Imagery



3.2.4 Topography

The lease area is characterized by undulating terrain and a one-meter difference in elevation across the site. The maximum elevation is 884m above mean sea level was observed at the centre of the lease area.

3.2.5 Drainage Pattern

Drainage pattern of the 5km radius study area majorly has dendritic or pinnate drainage pattern in nature indicating the uniform lithology beneath the surface as shown in Figure 3.5. This uniformity implies that the streams and their tributaries are primarily controlled by the slope of the land rather than by variations in rock resistance or structural features like faults or joints.

3.2.6 Seismic Sensitivity

The proposed lease area is situated in a Seismic Zone II as defined by National Centre for Seismology (Official Website of National Centre of Seismology) is shown in Zone II is characterized by low earthquake activity and minimal risk of significant damage. In this region earthquakes typically register as 4.9 or lower on the Richter scale. These are considered low-intensity earthquakes usually causing minor or no damage. Such tremors are often felt by people indoors but rarely cause significant harm A substantial portion of India particularly the peninsular region falls under Zone II.

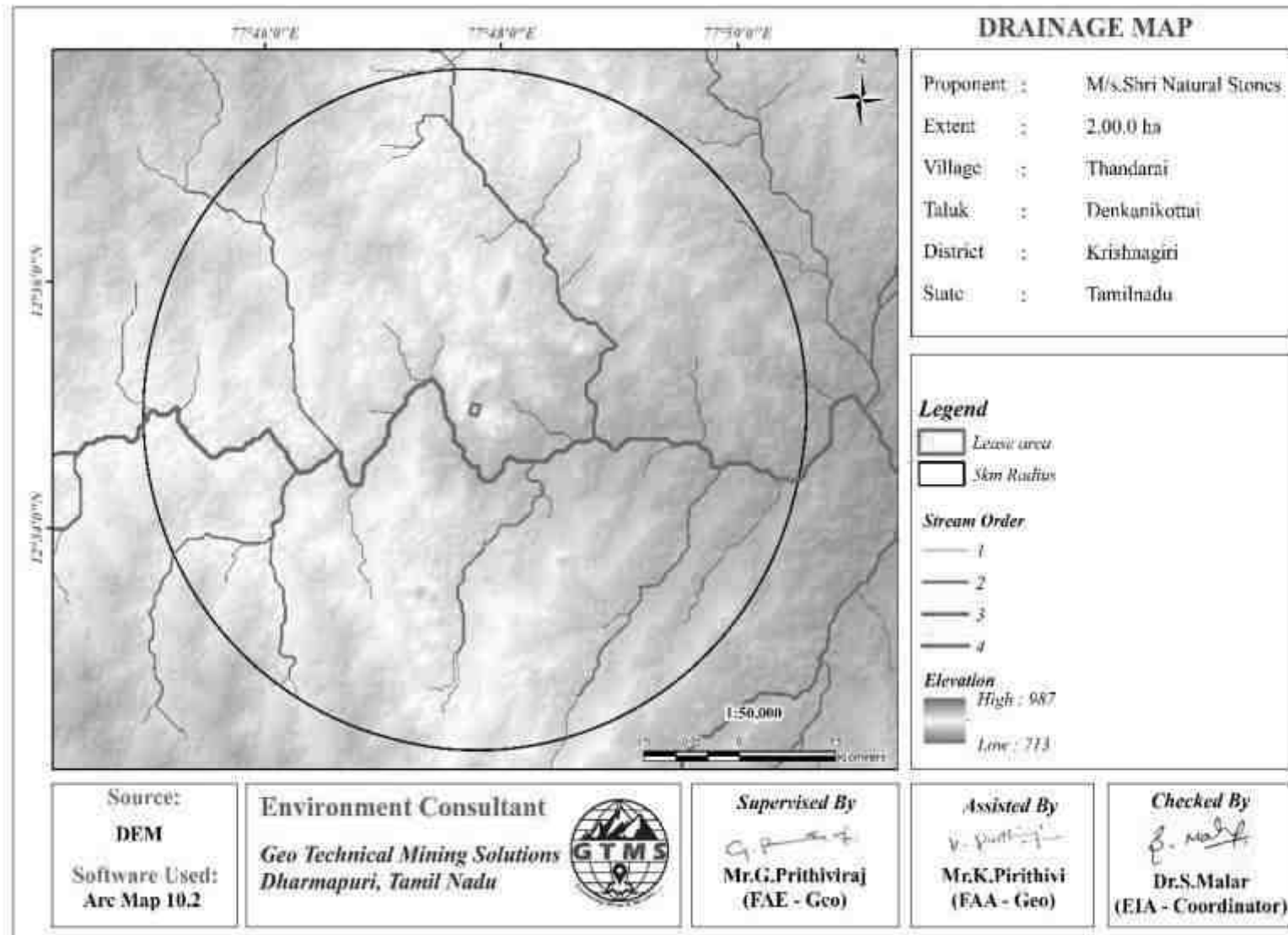


Figure 3.5 Drainage Map of 5km Radius from Proposed Project Site

3.3 SOIL ENVIRONMENTAL

The composite soil samples were collected from the 6 locations of the study area and analysed for different parameters. Auger instrument is used to collect samples at the desired depth typically 6-8 inches. The soil samples were placed in rigid paper bags, labelled and then subjected to air drying and sieving in the laboratory. This process ensures the samples are suitable for assessing macro and micronutrients as well as physicochemical properties. The locations of the sampling sites were given in Table 3.5 and shown in Figure 3.7.

Table 3.5 Soil Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
S01	Core	---	---	12°34'57.51"N, 77°47'48.34"E
S02	Koratagiri	1.18	NW	12°35'23.82"N, 77°47'13.68"E
S03	Jagirkarupalli	1.12	NE	12°35'33.60"N, 77°48'1.50"E
S04	Adaikalapuram	1.55	SE	12°34'31.33"N, 77°48'33.53"E
S05	Islampura	1.68	SW	12°34'31.78"N, 77°46'54.00"E
S06	Panchakshipuram	2.69	NW	12°35'55.57"N, 77°46'35.65"E

Source: On-site monitoring/sampling Green Link Analytical & Research Lab, in association with GTMS.

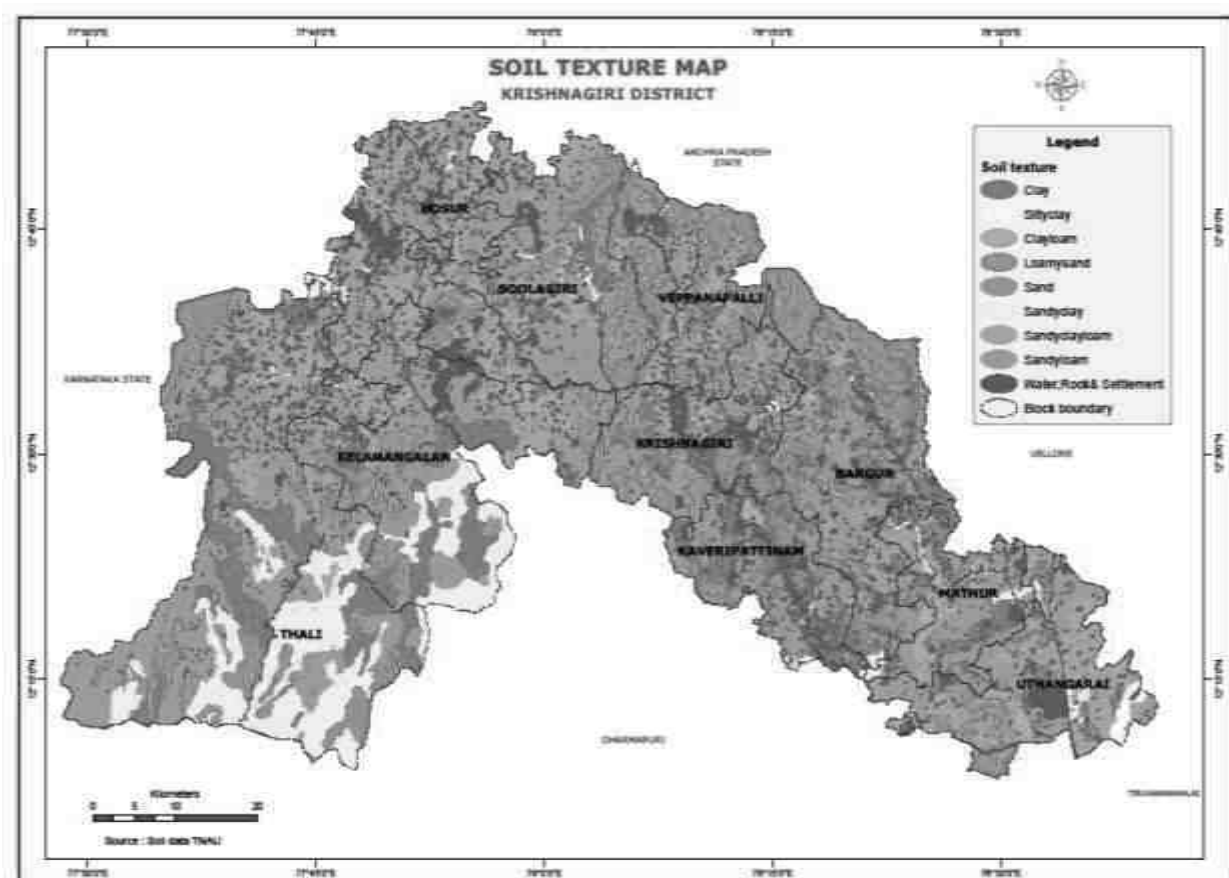


Figure 3.6 Soil Map of Krishnagiri District

3.3.1 Physical Characteristics & Chemical Characteristics

1. Soil pH and Electrical Conductivity (EC):

- **pH** ranged from 7.0 to 7.75 indicating that the soil is **neutral to slightly alkaline**, which is favourable for most crops.
- **EC** value ranged from 47.0 to 164.0 $\mu\text{S}/\text{cm}$, suggesting low salt concentration and non-saline soil across the sampling area.

2. Physical Properties

- **Bulk Density** values ranged from 0.98 to 1.05kg/cc, which are within the typical range for loamy soils and support good root penetration and aeration.

3. Soil Fertility Status:

- **Total Organic matter** levels ranged from 0.89 to 1.05% by weight, classifying soils as low to moderately fertile in terms of organic matter.
- **Nitrogen (N)** content varied from 96.0 to 210.0kg/ha by mass indicating moderate nitrogen availability.
- **Potassium (K)** ranged from 43.5 to 112.8kg/ha by mass moderate fertility potential in terms of potassium.

4. Base Elements and Cation Ratios:

- **Calcium (Ca)** levels were highest with 2204mg/kg and lowest with 601.0 mg/kg.
- **Magnesium (Mg)** ranged from 182.25 to 624.0mg/kg.

Conclusion:

The soils in the study area are generally non-saline, neutral to slightly alkaline, and moderately fertile with low contamination levels. They exhibit good permeability, porosity, and suitable textural classes for agriculture and greenbelt development. The absence of heavy metals confirms that baseline soil conditions are unpolluted and safe for reclamation and vegetation growth.

Table 3.6 Soil Quality of the Study Area

S. No	Parameters	Unit	S1	S2	S3	S4	S5	S6
Physical Parameters								
1	pH @25°C	-	7.75	7.00	7.56	7.28	7.51	7.35
2	Electrical Conductivity	$\mu\text{S}/\text{cm}$	69.0	47.0	100.0	82.0	164.0	140.0
3	Total Organic Carbon	%	0.37	0.57	0.78	0.84	1.36	1.28
4	Available Nitrogen	Kg/ha	125.0	96.0	162.0	128.0	210.0	185.0
5	Available Potassium	Kg/ha	68.0	43.5	78.9	69.5	112.8	104.7

6	Available Phosphorous	mg/kg	43.2	7.93	36.08	28.7	18.63	20.5
7	Available Calcium	mg/kg	1002.0	601.0	803.6	742.0	2204.0	1860.0
8	Available Magnesium	mg/kg	182.25	243.0	486.0	428.0	547.0	624.0
9	Moisture	%	9.5	6.08	8.0	7.12	11.34	10.85
10	Organic Matter	%	0.96	0.89	1.02	0.98	1.03	1.05
11	Chloride	mg/100g	38.7	28.9	40.2	36.74	52.8	48.70
	Non- NABL Parameters							
12	Bulk Density	kg/cm ³	0.98	1.02	1.05	0.98	1.01	1.00
13	Sand	%	23.12	24.51	22.61	24.63	21.68	23.56
14	Clay	%	24.26	23.18	24.27	21.36	24.35	22.18
15	Slit	%	22.81	21.87	23.57	22.87	23.70	24.59
16	Porosity	%	22.18	22.63	20.17	23.26	22.37	21.35
17	Copper as Cu	Ppm	10.60	11.58	14.56	13.57	15.68	10.28
18	Nickel as Ni	Ppm	0.196	0.212	0.228	0.198	0.230	0.187
19	Zinc as Zn	Ppm	10.45	11.62	12.68	10.61	11.57	10.23
20	Iron as Fe	Ppm	968.0	1040	1180	870	930.0	760
21	Lead as Pb	Ppm	15.28	14.62	16.87	13.57	11.57	10.57

Source: Sampling Results by Green Link Analytical & Research Lab, in Association with GTMS

Table 3.6a Assigning Scores to Soil Quality Indicators

S. No.	OM	BD	PH	EC	Total Score	Recommendation
S1	33	2	13	11	59	The soil requires major and immediate treatment
S2	33	2	7	11	53	
S3	33	2	13	11	59	
S4	33	2	13	11	59	
S5	33	2	13	11	59	
S6	33	2	13	11	59	

Organic Matter- (%- 0.1 to 2.0- 15), (2.5 to 3.5- 20), (3.5 to 5.0- 25), Bulk Density- (0.64 to 0.92- 6), (0.92 to 0.98- 3), (0.98> - 1) pH- (5.8 to 7.3- 9), (7.3 to 8.0- 6), (8.0> - 3), Electrical Conductivity-dS/m (<0.98- 5), (0.98 to 1.71- 3), (1.71> - 1)

OM (Organic Matter) BD (Bulk Density) pH (Potential of Hydrogen) EC (Electrical Conductivity)

Source: PSS-2262_Soil_Quality_Monitoring.pdf(okstate.edu)

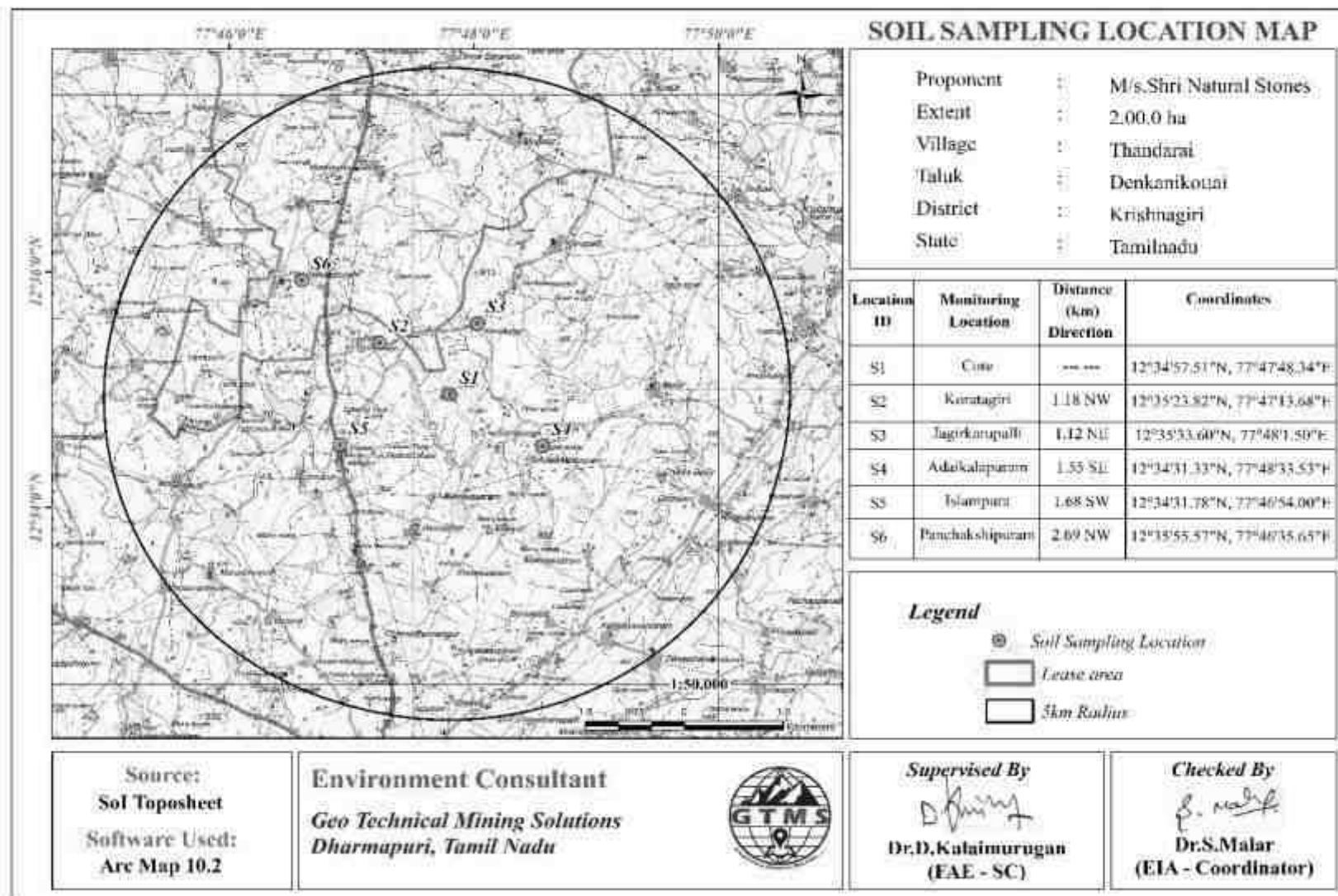


Figure 3.7 Topo Map Showing Soil Sampling Locations within 5km Radius

3.4 WATER ENVIRONMENT

The study aims to establish a baseline understanding of the current water quality both surface and groundwater in the area recognizing the crucial role these resources play in its development. This involves assessing the existing water quality to understand its suitability for various uses and to identify potential issues or areas of concern. The water sample collected locations were given in Table 3.7 as well as in Figure 3.8.

Table 3.7 Water Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
GW 1	Nearby Harish lease	0.53	NW	12°35'9.74"N, 77°47'30.38"E
GW 2	Korattagiri PUP School	1.57	NW	12°35'25.88"N, 77°47'0.04"E
GW 3	Alenatham Govt. School	1.81	SW	12°34'2.91"N, 77°47'17.30"E
GW 4	Govt. High School, Doddabelur	2.90	E	12°34'57.80"N, 77°49'25.37"E
SW 1	Thandarai lake	2.07	W	12°34'50.98"N, 77°46'35.74"E
SW 2	Sanathkumar Nadhi	1.98	SW	12°34'20.84"N, 77°46'49.11"E

Source: Sampling Results by **Green Link Analytical & Research Lab**, in Association with GTMS.

The analysis of water samples involved several steps sample storage, field measurements and laboratory titrations. Polypropylene containers were used for storage pre-washed with hydrochloric acid and distilled water. Standard methods (APHA 1999) were applied for water analysis including pH and electrical conductivity (EC) measurements in the field and titrimetric analysis for hardness, calcium, magnesium and chloride. Sodium and potassium were quantified using a flame photometer. All results except pH and EC are reported in mg/l with EC measured in $\mu\text{S}/\text{cm}$ at 25°C.

3.4.1 Water Consumption and Sources:

The water consumption in this opencast mine is mostly used for dust suppression by water sprinkling on haulage road, afforestation and domestic use etc.

Sl. No	Activities	Average demand (m³ /day)	Peak demand (m³ /day)
1	Drinking water	0.2	0.2
2	Utilized Water	0.8	0.8*
3	Dust suppression	1.5*	2.5
4	Green Belt	1.0*	0.5*
Total		3.5*	4.0*

*Water for dust suppression and afforestation may not be required for four to five months during the monsoon

- The water required for quarrying activities shall be drawn from the Rainwater Harvesting Ponds and from nearby old pits.
- 4-5 months during the monsoon season, water is not required for dust suppression.
- Packed drinking water shall be provided at site for workers.

Table 3.8 Nearest Water Bodies

S. No	Location	Distance (km)	Direction
1	Thandarai Lake	2.07km	W
2	Sanathkumar Nadhi	1.98km	SW
3	Chinnatti Dam	6.0km	West
4	Ponnaiyar River	14.84km	NE

3.4.2 Ground Water Quality Result

3.4.2.1 Physical Parameters:

The observation from the lab results given in Table 3.9 are as follows. The lab results for the water samples collected from the site as per IS 10500:2012 indicate that the basic physical and chemical parameters are within acceptable and permissible limits with some minor exceptions. The water is generally considered potable but there are potential issues related to hardness and alkalinity that could affect taste and potentially cause scaling in domestic equipment.

- The **pH** value ranges from 7.24 to 7.85 mg/L. The World Health Organization (WHO) and the Bureau of Indian Standards (BIS) recommend a pH range of 6.5 to 8.5 for drinking water and the values are within the acceptable limits.
- **Turbidity** is measured by a nephelometric turbidimeter. NTU is the current standard for measure the intensity of scattered light caused by these particles rather than the amount of light transmitted through the sample. The **turbidity** value is less than 1 NTU in open well and bore well water. In surface water it is 5NTU.
- The **TDS levels** ranged from 670 to 1070 mg/L. In bore well water the TDS is higher than the WHO recommendation of 500 mg/l for drinking water. High TDS levels can affect the taste of water potentially making it salty or bitter. In the long-term excessive TDS can irritate the stomach and according to some health sources may lead to kidney stones and cardiac issues.

3.4.2.2 Chemical Parameters:

- The **calcium** levels range from 76 to 112.2 mg/L which is within the permissible limit of 200 mg/L but slightly above the acceptable limit of 75 mg/L. High calcium levels can cause scaling in domestic equipment, reduced detergent efficiency and potential health issues like constipation, gas and bloating.
- The **magnesium** levels range from 12.16 to 94.8 mg/L which is within both the acceptable and permissible limits. However, elevated magnesium levels can cause diarrhea and vomiting in children.
- The **chloride** levels range from 50 to 190 mg/L which is within the acceptable and permissible limits of 250 mg/L and 1000 mg/L respectively. Chloride levels exceeding permissible limits can cause a bitter taste in the water and contribute to corrosion.
- The **total alkalinity** levels ranging from 242 to 390 mg/L are slightly above the acceptable limit of 200 mg/L but within the permissible limit of 600 mg/L. Excessive alkalinity can impart a soda taste to the water.
- The **hardness** levels ranging from 320 to 600 mg/L, are within the permissible limit but higher than the acceptable limit. Hardness can lead to corrosion and scaling problems, increased soap consumption and a salty taste.

Overall, the water quality of Borewell and open well based on the analysed parameters is generally suitable for drinking purposes as per IS 10500:2012. However, the higher levels of calcium and hardness could potentially lead to some undesirable effects such as scaling in domestic appliances and a salty or soda taste. Further treatment might be needed to address these issues especially if the water is to be used for a wider range of applications.

Table 3.9 Ground Water Quality Result

S. No.	Parameters	Units	Results				As per IS 10500:2012	
							Acceptable Limit	Permissible Limit
1	pH @25°C	-	7.60	7.34	7.24	7.85	6.5-8.5	6.5-8.5
2	Total Dissolved Solids	mg/L	670.0	890.0	810.0	1070.0	500	2000
3	Electrical Conductivity@25°C	µS/cm	1090.0	1440.0	1290.0	1710.0	-	-
4	Turbidity	NTU	<0.1	<0.1	<0.1	<0.1	1.0	5.0
5	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	5.0	15
6	Calcium as Ca	mg/L	76.0	84.16	112.2	108.0	75	200
7	Magnesium as Mg	mg/L	60.8	94.8	58.36	12.16	30	100
8	Chloride as Cl	mg/L	50.0	105.0	96.0	190.0	250	600
9	Sulphate (as SO ₄)	mg/L	66.0	109.5	78.0	62.6	250	600
10	Silica (as Na)	mg/L	10.8	22.7	18.9	30.5	-	-

11	Total Residual Chlorine	mg/L	BDL[DL-0.1]	BDL[DL-0.1]	BDL[DL-0.1]	BDL[DL-0.1]	0.2	1.0
12	Sodium (as Na)	mg/L	30.2	45.6	45.6	48.7	-	-
13	Total Hardness (as CaCO ₃)	mg/L	440.0	600.0	520.0	320.0	200	600
14	Total Alkalinity (as CaCO ₃)	mg/L	360.0	330.0	242.0	390.0	200	600
15	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
16	Taste	-	Disagreeable	Disagreeable	Disagreeable	Disagreeable	Agreeable	Agreeable
17	Total Solids	mg/L	688.0	914.0	836.0	1096.0	-	-
18	Dissolved Oxygen	mg/L	5.0	5.2	5.4	5.0	-	-
19	Phosphorous	mg/L	1.0	1.2	1.4	1.0	-	-
20	Potassium	mg/L	16.8	21.8	26.8	23.5	-	-
21	Nitrite as NO ₂	mg/L	BDL[DL-0.1]	BDL[DL-0.1]	BDL[DL-0.1]	BDL[DL-0.1]	-	-
22	Phenolphthalein Alkalinity (as CaCO ₃)	mg/L	BDL[DL-2.0]	BDL[DL-2.0]	BDL[DL-2.0]	BDL[DL-2.0]	200	600

Source: Sampling Results by **Green Link Analytical & Research Lab**, in association with GTMS

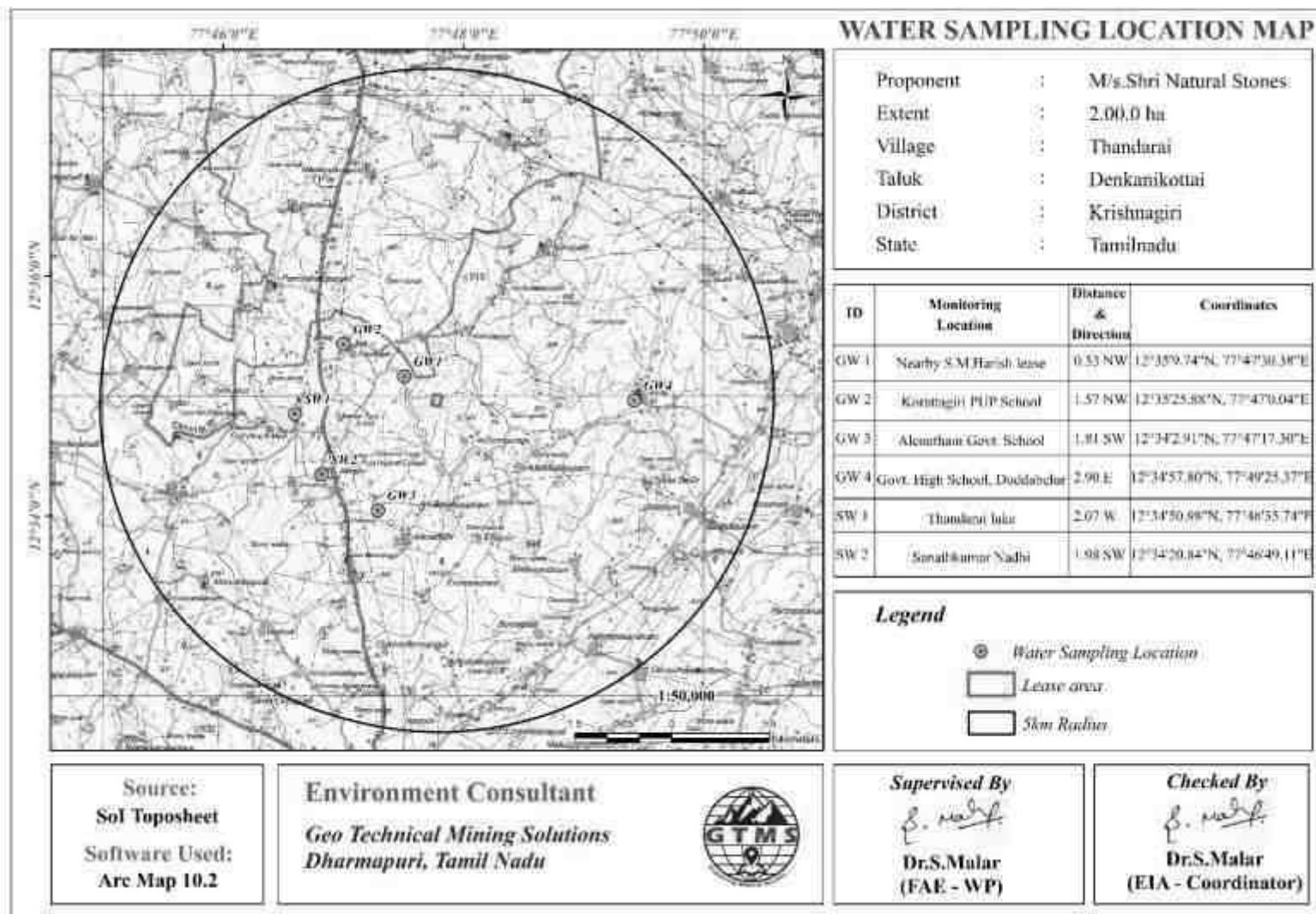


Figure 3.8 Topo Map showing water sampling locations within 5km radius

3.4.3 Surface water

WATER BODIES NEAR MINE LEASE AREA

S. No	Name of the Water bodies	Distance in km	Direction	Elevation of the lease area	Elevation of the water body area
1	Odai	-	-	-	-
2	Pond	-	-	-	-
3	Thandarai lake	2.07km	W	891	874
4	Sanathkumar Nadhi	1.98km	SW	891	849

Source: Primary and Secondary data collection

There are no seasonal or perennial Odai and pond within the mine lease area. The drainage pattern of the region is plane to sub-dendritic. There is Thandarai lake is located at a distance of 2.07km in West direction of lease area and extent of 13.46heactares is a key surface water body in the area is characterized as Sanathkumar Nadhi is located at a distance of 1.98 km in Southwest direction of lease area. Water table is found at a depth of 70m in summer and 75m in rainy seasons. Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the mining lease. Surface run-off water of the mine lease area is drained through proposed drainage and collected in the bottom of the quarry and collected water will be used for same quarry operation such as plantation & dust suppression. The baseline water quality assessment as detailed in Table 3.9a.

Table 3.9a Surface Water Quality Result

S. No.	Parameters	Units	Results		As per IS 10500:2012	
			SW1	SW2	Acceptable Limit	Permissible Limit
1	pH @25 ⁰ C	-	8.5	8.41	6.5-8.5	6.5-8.5
2	Total Dissolved Solids	mg/L	390.0	362.0	500	2000
3	Electrical Conductivity@25 ⁰ C	μS/cm	630.0	580.0	-	-
4	Turbidity	NTU	<0.1	<0.1	5	15
5	Colour	Hazen	<1.0	>1.0	5.0	15
6	Calcium as Ca	mg/L	42.0	36.07	75	200
7	Magnesium as Mg	mg/L	17.0	17.02	30	100
8	Chloride as Cl	mg/L	57.0	48.0	250	600
9	Sulphate (as SO ₄)	mg/L	46.0	36.0	250	600
10	Silica (as Na)	mg/L	5.8	6.5	-	-

11	Total Residual Chlorine	mg/L	BDL[DL-0.1]	BDL[DL-0.1]	0.2	1.0
12	Sodium (as Na)	mg/L	20.4	16.2	-	-
13	Total Hardness (as CaCO ₃)	mg/L	175.0	160.0	200	600
14	Total Alkalinity (as CaCO ₃)	mg/L	160.0	128.0	200	600
15	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
16	Taste	-	Disagreeable	Disagreeable	Agreeable	Agreeable
17	Total Solids	mg/L	408.0	390.0	-	-
18	Dissolved Oxygen	mg/L	5.8	6.0	-	-
19	Phosphorous	mg/L	1.0	1.2	-	-
20	Potassium	mg/L	12.8	10.4	-	-
21	Nitrite as NO ₂	mg/L	BDL[DL-0.1]	BDL[DL-0.1]	-	-
22	Phenolphthalein Alkalinity (as CaCO ₃)	mg/L	BDL[DL-2.0]	BDL[DL-2.0]	200	600
23	BOD	-	BLQ(LOQ: 1.0)	BLQ(LOQ:1.0)	-	-
24	COD	-	BLQ(LOQ: 5.0)	BLQ(LOQ:5.0)	-	-
25	E. Coli	CFU/ml	Absent	Absent	Absent	Absent
26	Total Coliform	CFU/ml	Absent	Absent	Absent	Absent

BDL: Below Detectable Level, CFU: Colony forming Unit,

Source: Sampling Results by **Green Link Analytical & Research Lab**, in association with GTMS

3.4.4 Hydrogeological Studies

The area within a 1.0km radius has numerous open and deep wells and groundwater level data were collected from both types of wells across two monsoon seasons. This data collection approach allows for a comprehensive understanding of groundwater behaviour in the region considering the variations in well types and seasonal influences.

3.4.4.1 Rainfall

Rainfall data for the study area were collected for the period of 1981- 2022 (POWER | Data Access Viewer (nasa.gov)). Long term monthly average rainfall was estimated from the data of 2014- 2024 and compared with the monthly rainfall for the year 2024, shown in Figure 3.7. The Figure 3.9 shows that monthly rainfall in 2024 is generally high in the months of June, August, October when compared to the long term monthly average rainfall.

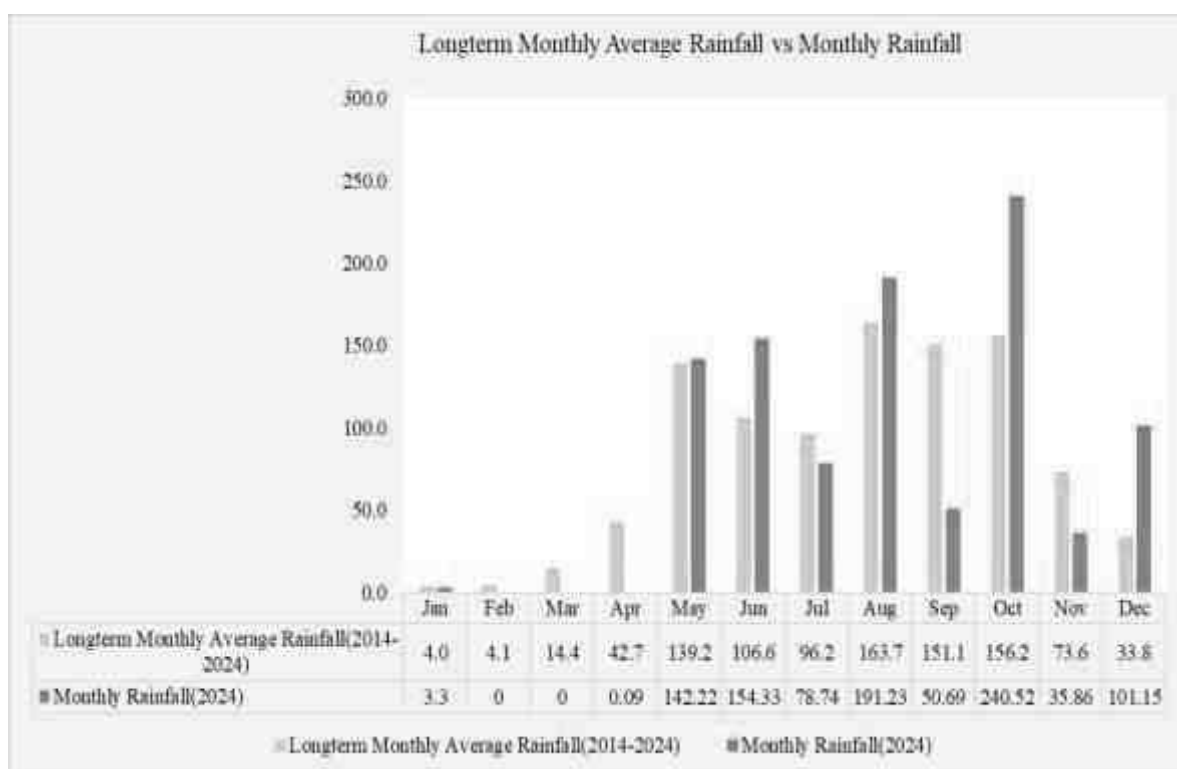


Figure 3.9 Long- Term Monthly Average Rainfall Vs Monthly Rainfall

3.4.4.2 Groundwater Levels and Flow Direction

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May 2025 (Pre-Monsoon Season) and from October through December 2025, (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.10 and 3.11. According to the data, average depths to the static water table in open wells range from 12.10 to 15.17 m BGL in pre monsoon and 9.27 to 11.50 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.12 and 3.13. The average depths to static potentiometric surface in bore wells for the period of October through December (Post-Monsoon Season) vary from 51.37 to 56.33 m and from 56.73 to 60.0 m for the period of March through May, (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines.

Table 3.10 Pre- Monsoon Water Level of Open Wells within 2km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Oct-25	Nov-25	Dec-25	Average		
OW01	13.4	13.8	14.1	13.8	12°34'52.30"N	77°46'47.95"E
OW02	12.1	12.6	13.2	12.6	12°34'11.25"N	77°48'11.39"E
OW03	11.8	12.2	12.8	12.3	12°35'18.85"N	77°48'48.56"E
OW04	14.2	14.5	14.7	14.5	12°34'49.23"N	77°47'19.11"E
OW05	11.6	12.1	12.6	12.1	12°34'35.98"N	77°48'22.63"E
OW06	12.6	13.2	13.7	13.2	12°35'9.15"N	77°48'4.83"E
OW07	14.8	15.1	15.6	15.2	12°35'54.69"N	77°47'41.55"E
OW08	13.7	14.2	14.8	14.2	12°35'39.14"N	77°47'22.04"E
OW09	13.2	13.8	14.2	13.7	12°34'27.26"N	77°47'26.72"E

Source: Onsite monitoring data

Table 3.11 Post-Monsoon Water Level of Open Wells within 2km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Mar-2025	Apr-2025	May-2025	Average		
OW01	11.5	11.2	10.5	11.1	12°34'52.30"N	77°46'47.95"E
OW02	10.4	10.2	9.7	10.1	12°34'11.25"N	77°48'11.39"E
OW03	9.6	9.4	9.1	9.4	12°35'18.85"N	77°48'48.56"E
OW04	12.4	11.5	10.4	11.4	12°34'49.23"N	77°47'19.11"E
OW05	9.5	9.2	9.1	9.3	12°34'35.98"N	77°48'22.63"E
OW06	10.2	9.5	9.2	9.6	12°35'9.15"N	77°48'4.83"E
OW07	12.4	11.6	10.5	11.5	12°35'54.69"N	77°47'41.55"E
OW08	11.5	10.4	9.6	10.5	12°35'39.14"N	77°47'22.04"E
OW09	11.1	10.2	9.8	10.4	12°34'27.26"N	77°47'26.72"E

Source: Onsite monitoring data

Table 3.12 Pre- Monsoon Water Level of Bore Wells within 2km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-25	Nov-25	Dec-25	Average		
BW01	57.4	57.8	58.3	57.8	12°34'50.95"N	77°47'25.48"E
BW02	56.8	57.2	58.1	57.4	12°34'40.08"N	77°47'56.79"E
BW03	56.2	56.6	57.4	56.7	12°34'50.53"N	77°48'15.29"E
BW04	57.3	57.8	58.1	57.7	12°35'27.32"N	77°47'56.10"E

BW05	58.2	58.5	59.2	58.6	12°35'46.06"N	77°48'12.38"E
BW06	59.4	60.1	60.5	60.0	12°35'19.22"N	77°46'59.78"E
BW07	57.2	58.4	59.3	58.3	12°34'58.77"N	77°47'5.93"E
BW08	57.8	58.6	59.2	58.5	12°34'25.73"N	77°47'23.64"E
BW09	56.6	57.5	58.4	57.5	12°34'25.60"N	77°48'33.97"E

Source: Onsite monitoring data

Table 3.13 Post-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL (m)				Latitude	Longitude
	Mar-2025	Apr-2025	May-2025	Average		
BW01	52.2	51.5	50.4	51.4	12°34'50.95"N	77°47'25.48"E
BW02	54.4	53.2	52.1	53.2	12°34'40.08"N	77°47'56.79"E
BW03	54.1	52.8	51.5	52.8	12°34'50.53"N	77°48'15.29"E
BW04	55.3	54.1	53.5	54.3	12°35'27.32"N	77°47'56.10"E
BW05	56.2	55.4	54.3	55.3	12°35'46.06"N	77°48'12.38"E
BW06	57.3	56.3	55.4	56.3	12°35'19.22"N	77°46'59.78"E
BW07	55.4	54.2	53.4	54.3	12°34'58.77"N	77°47'5.93"E
BW08	55.7	54.6	53.2	54.5	12°34'25.73"N	77°47'23.64"E
BW09	54.2	53.5	51.1	52.9	12°34'25.60"N	77°48'33.97"E

Source: Onsite monitoring Data

The water samples were collected from both borewells and dug wells during the pre-monsoon and post-monsoon in order to understand the water table dynamics within 2km radius of the lease area. After interpreting the observed values of water table depths in the sampling locations gradual variations in the depths were inferred from pre-monsoon to the post monsoon (Table 3.12 to 3.13). But this variation might be the usual due to differential downpour in the region. The uncertainty of the monsoon plays a vital role in the fluctuation of water depths in and around the lease area. As mentioned in rainfall data (1981-2021) and 2022, the region experiencing higher rainfall during the months of September to November than the other months of the year. The difference in depth of water table of open wells and borewells in the sampling locations exposes a gradual increase during the pre-monsoon and evidencing the decrease in depth during the post monsoon. This shows the rainfall influencing the water table of the region by the recharging the water bearing bodies naturally and regularly. And can be concluded that, mining activities has no impact on the quality and quantity of ground water in and around the lease area.

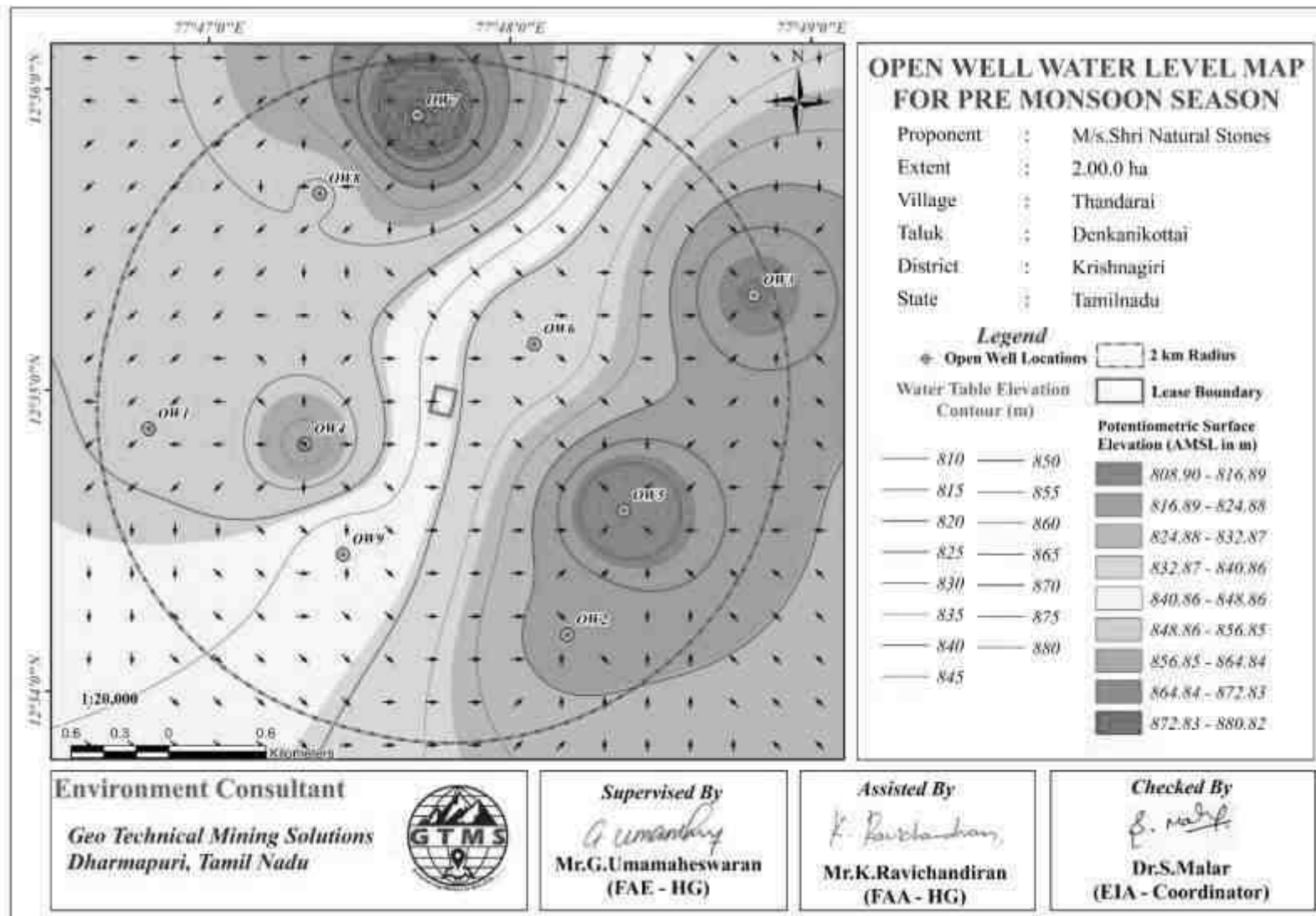


Figure 3.10 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre- Monsoon Season

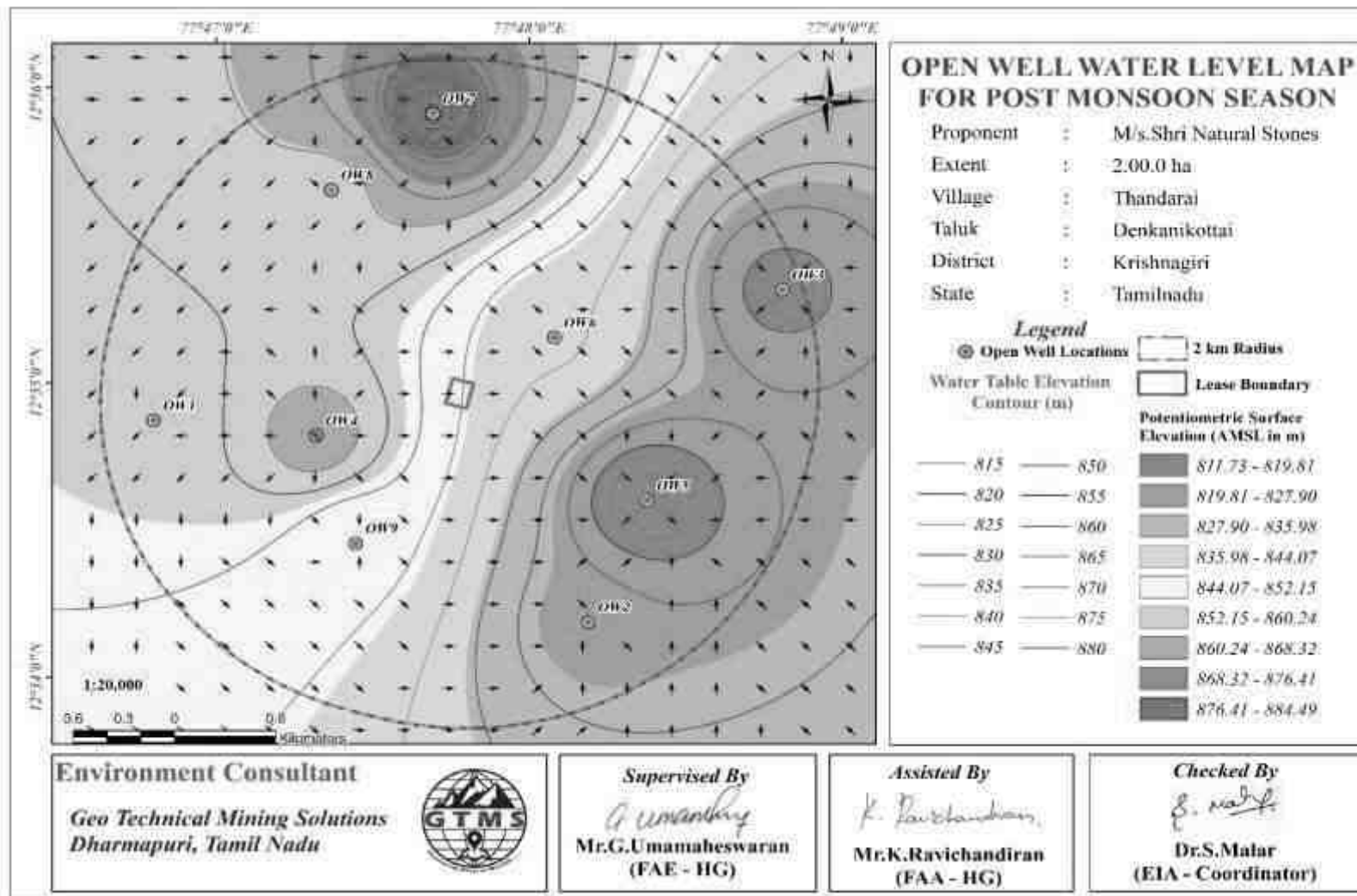


Figure 3.11 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

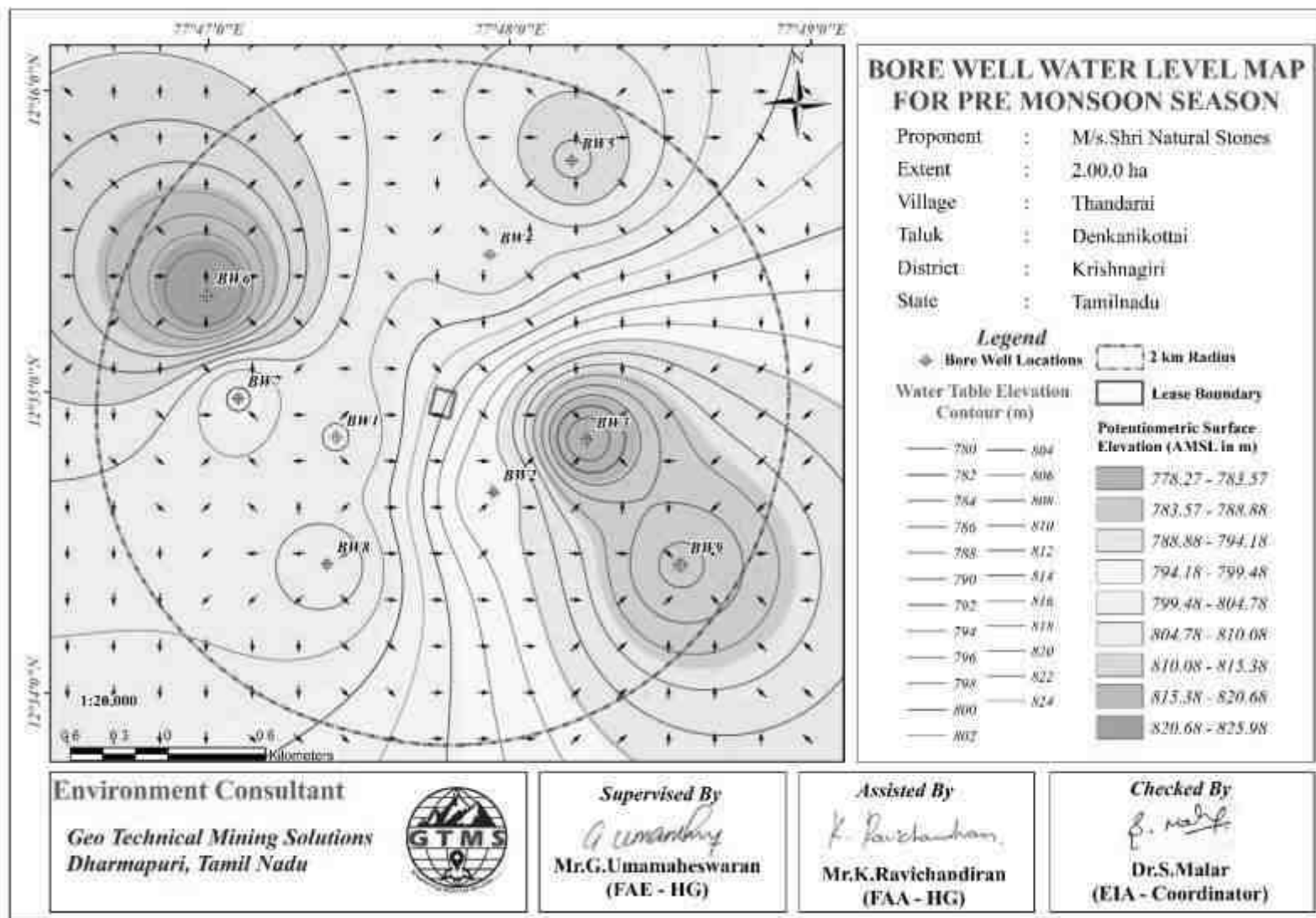


Figure 3.12 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

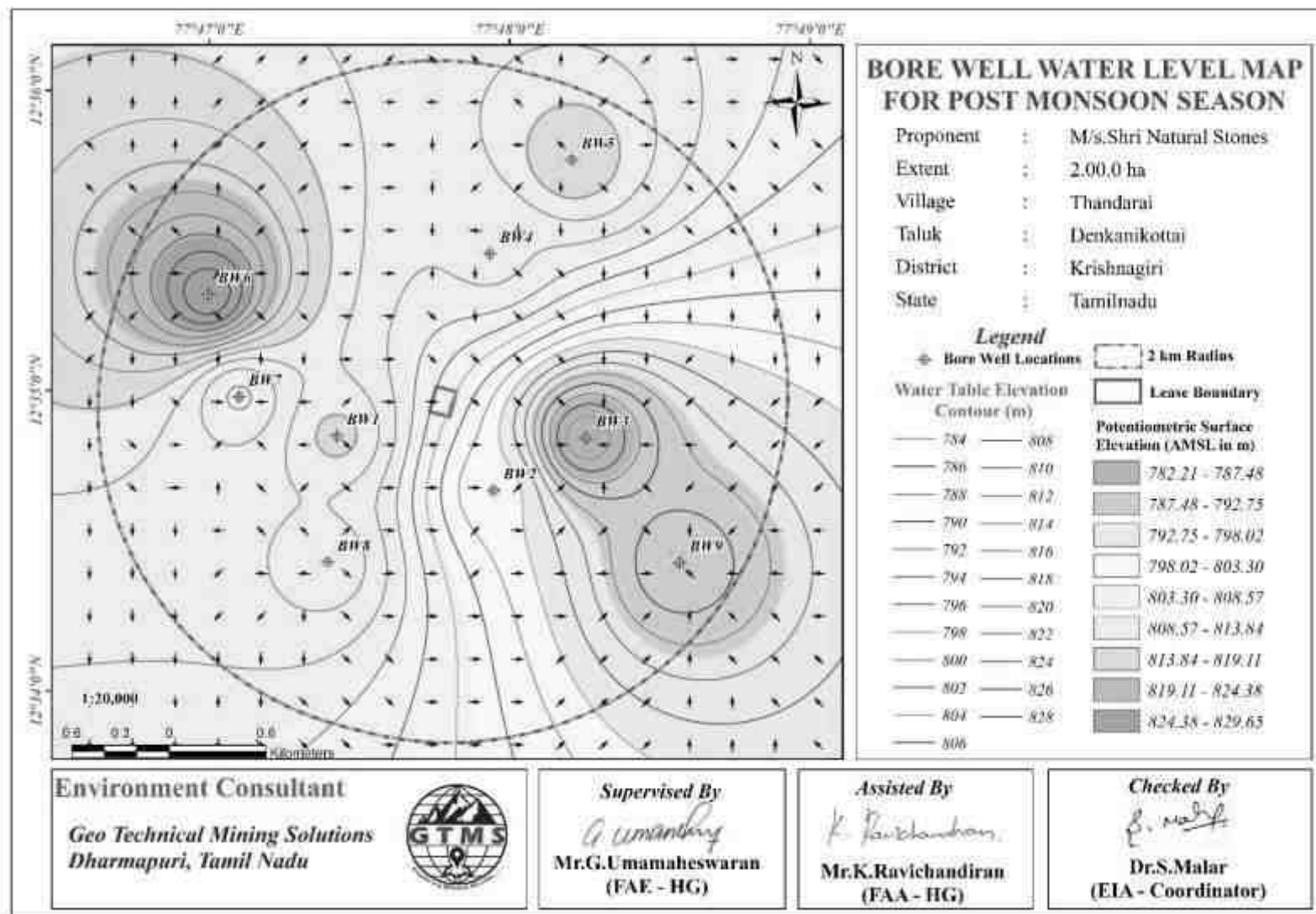


Figure 3.13 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

Water Balance management in site

A sustainable eco-friendly water management strategy will be adopted in this project. Since the water requirement during the mining period is estimated about 3.5KLD for drinking, domestic and sanitary needs, creation and maintenance of green belt and for sprinkling purposes. The drinking water must be pure and safe, so it will be outsourced from nearby vendors/ RO- water plant will be installed in the site. The artificial rainwater harvesting structures are planned in and around the site. The excavated pits nearby the site will be connected by the garland drain system and water will be stored and this water will be utilised for the green belt maintenance and dust suppression sprinkling purpose. The rooftop harvesting structure is also planned from the labour sheds and other structures will be connected to the nearby excavated pits and utilised. These implementations will reduce the dependency of water from the nearby borewells and open wells. According to the soil resistivity data of the region, few locations are porous and permeable in nature. It will help in infiltration of rainwater and recharge the aquifer naturally during monsoon. This sustainable strategy will be helpful in maintaining the water balance within 2km radius of project site.

3.4.4.3 Electrical Resistivity Investigation

Electrical resistivity investigation, using vertical electric sounding (VES) and a four-electrode setup, is valuable for mapping subsurface layers and aquifers in areas lacking well data by measuring differences in electrical resistance. This method sends current through outer electrodes and measures the resulting voltage with inner electrodes, revealing variations in geological materials like weathered zones or fractured rock. These resistivity differences can help locate potential groundwater zones and identify different subsurface layers without needing exploratory wells. The geophysical VES data obtained from the project site was given in Table 3.14. The plot for the purpose of interpretation has been shown in Figure 3.14.

Table 3.14 Vertical Electrical Sounding Data

Location Coordinates - 12°34'57.97"N 77°47'48.81"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	2	2	11.78	12.44	146.5
2	4	2	49.46	7.42	367.04
3	6	5	112.26	4.98	559.28
4	8	5	200.18	2.86	572.71
5	10	5	75.36	8.49	640.03
6	15	10	173.49	4.53	786.42

7	20	10	310.86	3.18	987.56
8	25	10	487.49	2.29	1118.76
9	30	10	274.75	5.28	1451.78
10	35	10	376.8	4.22	1590.54
11	40	10	494.55	3.33	1649.12
12	45	10	628	2.75	1729.18
13	50	10	777.15	2.39	1857.16
14	65	20	453.6	4.50	2041.05
15	70	20	989.1	2.17	2149.5
16	80	20	1256	1.25	1567.45
17	90	20	1554.3	1.69	2630.93
18	100	20	1653.6	1.62	2680.44

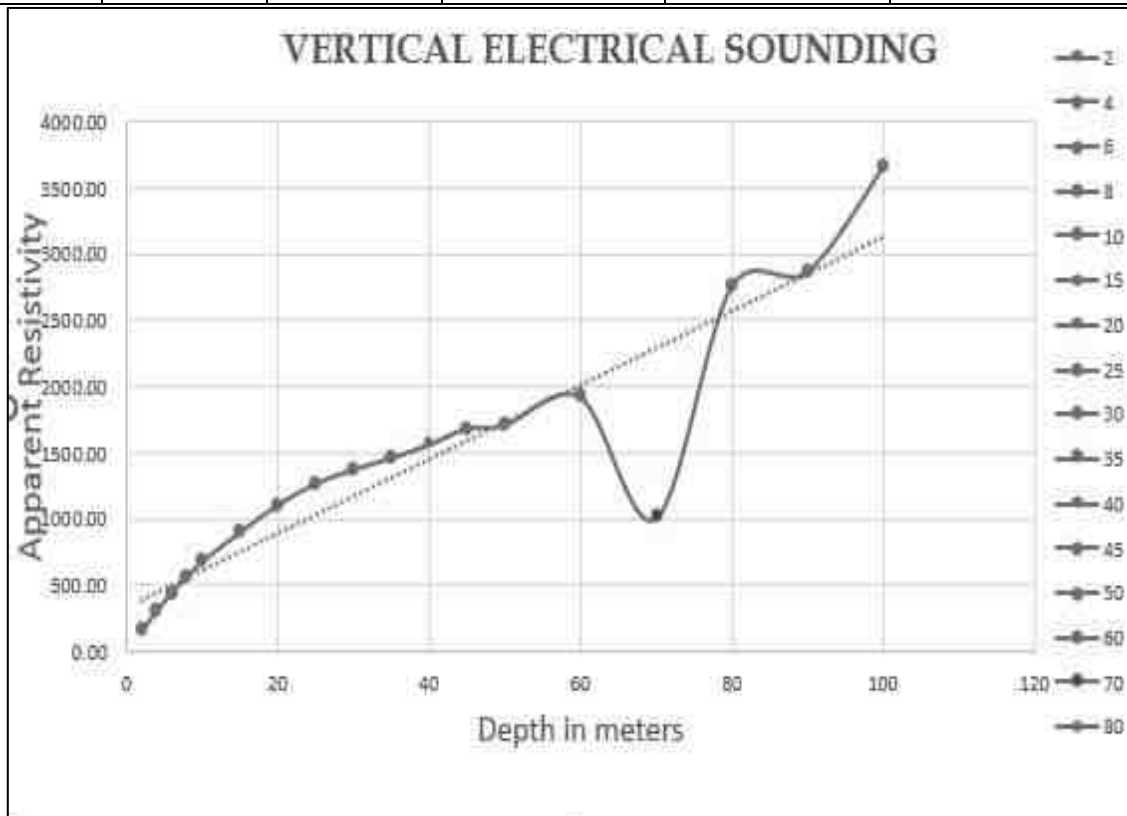


Figure 3.14 Graph showing occurrence of water bearing fracture zones at the depth in the proposed project site

The low resistance values indicate occurrence of water at the depth of about 70m below ground level. The maximum depth proposed for the proposed project is 51m (35m BGL and 16m AGL). Therefore, the mining operation will not affect the aquifer throughout the entire mine life period

3.5 AIR ENVIRONMENT

Baseline studies on the air environment involve identifying specific pollutants and their concentrations in the ambient air of a region. The primary sources of air pollution are identified as vehicular traffic, dust from unpaved roads and domestic and agricultural activities. These sources contribute to the overall air quality and can be further investigated to understand the specific pollutants and their impact.

3.5.1 Meteorology

3.5.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3m above the ground level as there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.15.

Table 3.15 Onsite Meteorological Data

S. No.	Parameters		Oct,2025	Nov,2025	Dec,2025
1	Temperature (°C)	Min	19.53	13.97	11.57
		Max	31.01	30.4	29.28
		Avg	24.21	22.19	20.87
2	Relative Humidity (%)	Min	48.78	35.27	44.7
		Max	100	100	100
		Avg	83.79	79.27	83.68
3	Wind Speed (m/s)	Min	0.04	0.09	0.18
		Max	5.43	4.58	4.52
		Avg	1.80	1.87	1.57
4	Wind Direction (degree)	Min	2.4	0.7	0.6
		Max	359	359.6	359.5
		Avg	178.86	111.85	83.89
5	Surface Pressure(kPa)	Min	92.48	92.72	92.96
		Max	93.39	93.56	93.67
		Avg	92.91	93.18	93.23

Source: Sampling Results by Green Link Analytical & Research Lab, in association with GTMS.

3.5.1.2 Wind Pattern

Wind rose diagrams are used to analyse wind patterns for their impact on air pollutant and noise dispersion from a project site. Two sets of wind roses were created one with historical data (October- December 2021-2024) and another for the current study period (October-December 2025) allowing for comparison. The analysis showed a moderate overall wind speed of 1.74 m/s and identified a prevalent wind direction from the Northeast to Southwest sectors.

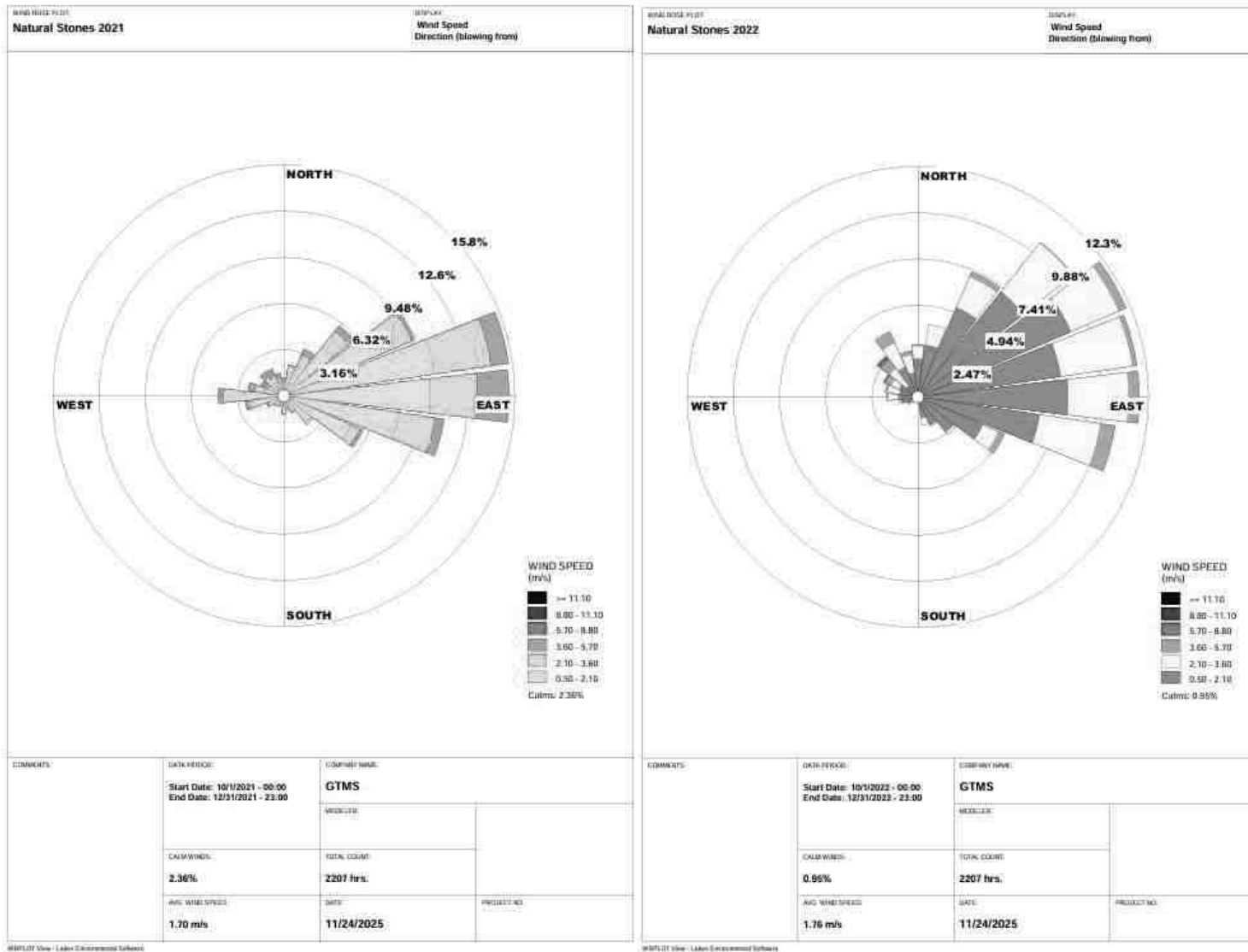


Figure 3.15 Windrose Diagram for 2021& 2022 (October to December)

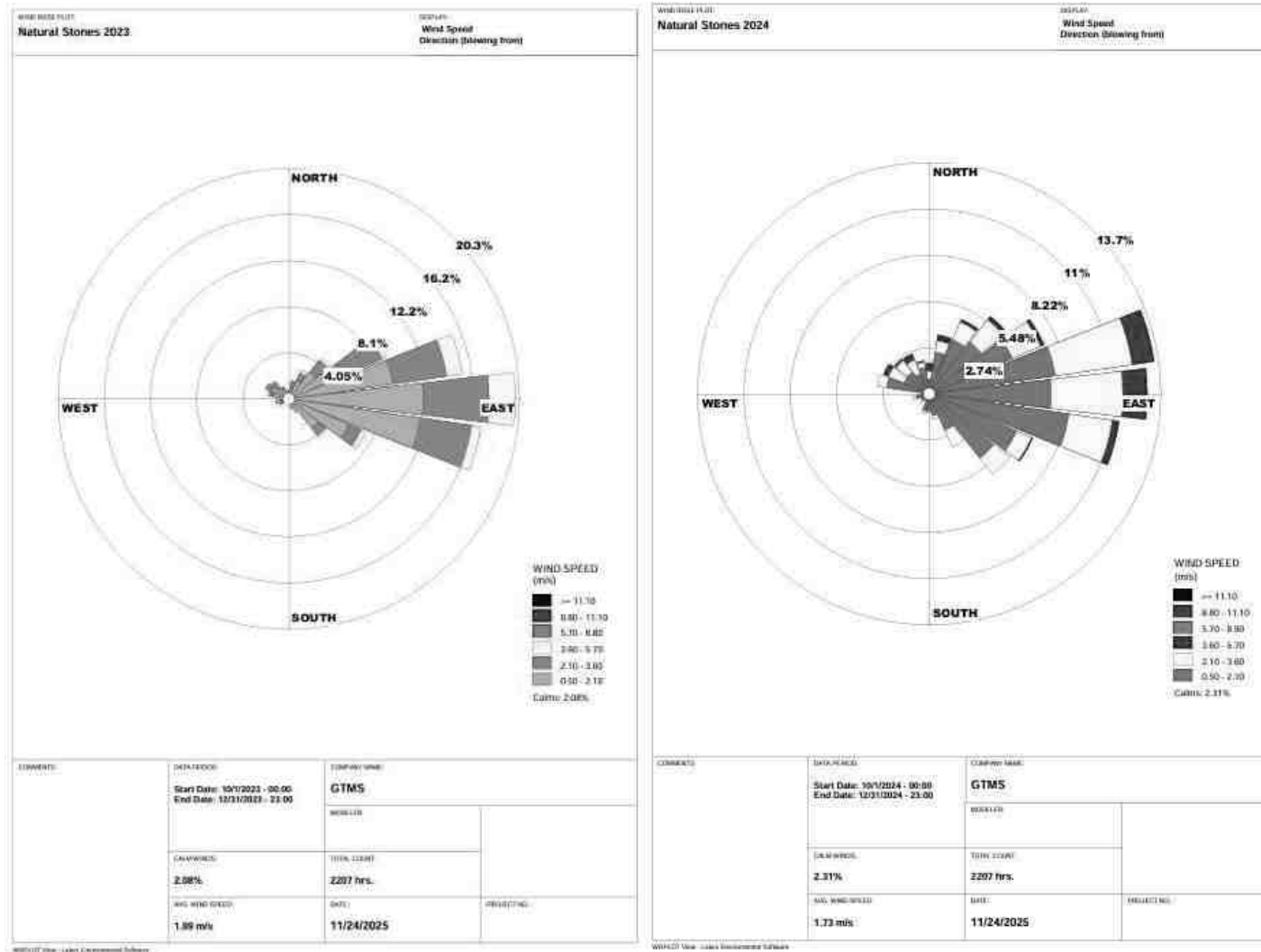


Figure 3.16 Windrose Diagram for 2023 & 2024 (October to December)

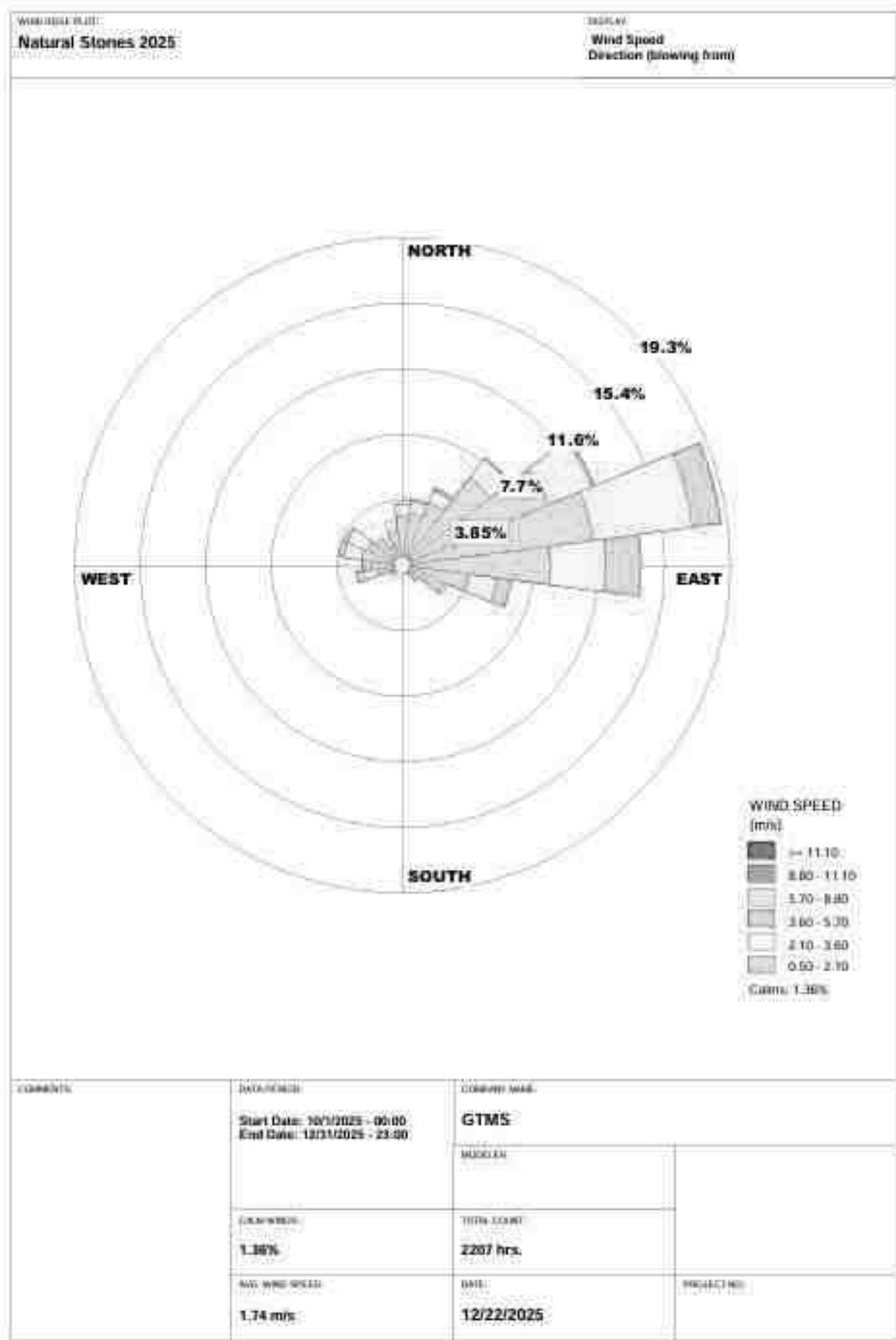


Figure 3.17 Onsite Wind Rose Diagram 2025

3.5.2 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 3.16 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method attenuation method	Beta Fine Particulate Sampler
PM ₁₀	Gravimetric method attenuation method	Beta 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

Table 3.17 National Ambient Air Quality Standards

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

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

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at five (05) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period **October to December 2025**, 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 (NO_x). The sampling locations are shown in Figure 3.18 and average concentrations of air pollutants are summarized in Tables 3.19 and are shown in Figures 3.15 - 3.17.

Table 3.18 Ambient Air Quality (AAQ) Monitoring Locations

Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
				Latitude	Longitude
AAQ1	Harish Core	0.43	N	12°35'14.32"N	77°47'44.92"E
AAQ2	PUP School	2.50	W	12°34'43.27"N	77°46'21.93"E
AAQ3	Alenatham Government School	2.11	S	12°33'48.57"N	77°47'29.93"E
AAQ4	Govt. High School, Doddabelur	2.94	E	12°34'57.46"N	77°49'26.46"E
AAQ5	Nearby Onnupalli Village	4.30	N	12°37'20.44"N	77°47'43.36"E

Source: On-site monitoring/sampling by **Green Link Analytical & Research Lab** in association with **GTMS**

Results

As per the monitoring data PM_{2.5} ranges from 21.48µg/m³ to 30.56µg/m³, PM₁₀ from 42.79µg/m³ to 53.52µg/m³, SO₂ from 8.13µg/m³ to 12.93µg/m³, NO_x from 12.21µg/m³ to 19.62g/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 46 causing minimal impact to human health.

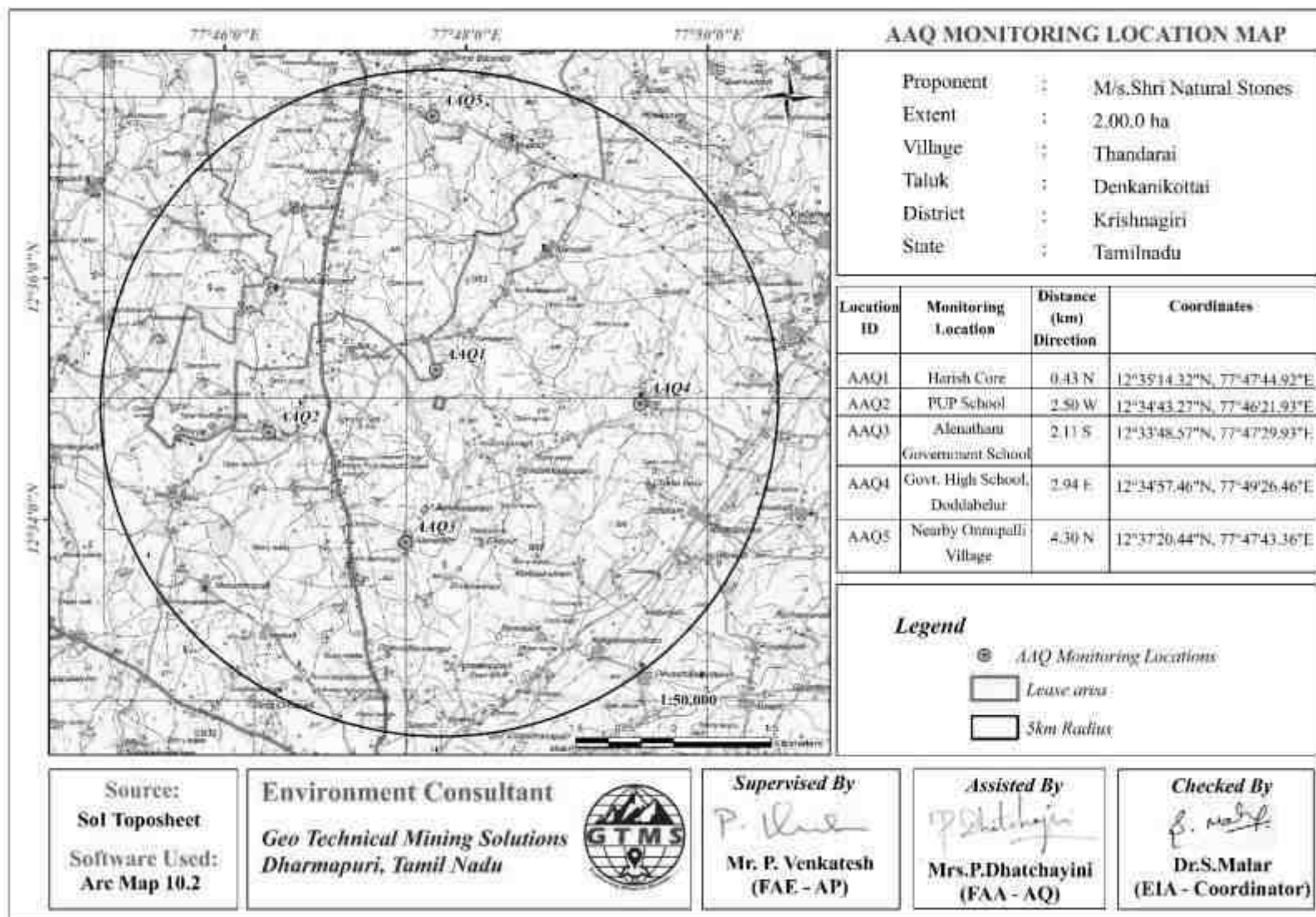


Figure 3.18 Map Showing Ambient Air Quality Monitoring Station Locations

Table 3.19 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98th Percentile	Max	Min	Mean	98th Percentile
AAQ1	29.90	20.12	23.78	28.73	50.60	41.35	44.82	49.57
AAQ2	31.20	24.26	27.00	30.24	54.80	45.29	48.34	53.19
AAQ3	32.40	23.48	26.87	28.55	56.80	46.12	49.07	54.95
AAQ4	31.20	21.45	25.21	30.41	54.60	40.06	43.84	51.79
AAQ5	28.10	18.10	21.26	27.18	50.80	41.12	44.44	50.33
SO ₂					NO _x			
AAQ1	12.27	8.62	10.36	12.21	18.00	11.27	14.33	17.66
AAQ2	13.50	8.16	10.03	12.57	20.00	13.25	16.15	19.31
AAQ3	14.32	8.49	10.33	13.91	21.40	14.48	17.13	20.43
AAQ4	12.68	8.21	9.69	12.12	20.00	11.01	14.60	19.37
AAQ5	11.86	7.16	8.49	11.12	18.70	11.05	14.71	18.16

Free silica:

Crystalline silica is SiO₂ in a specific structural form distinct from the pure non-combined SiO₂ known as free silica. Sources like stone quarries sand mining and stone crushing can generate finely divided crystalline silica dust. Crystalline silica particles in these environments can be very small less than 4µm (PM₄). There are no generally accepted methods of monitoring in ambient PM₄ air.

Health Risks of Crystalline Silica Exposure

- **Inhalation:**

Over time, inhaling very small quantities of finely divided crystalline silica dust can lead to severe respiratory and other health problems.

- **Diseases:**

Exposure can result in silicosis (a type of scarring and inflammation of the lungs), bronchitis, and even cancer.

Exposure Limits and Regulations

- **ACGIH Recommendations:**

The American Conference of Governmental Industrial Hygienists recommends 0.1mg/m³ (10µg/m³) crystalline silica as respirable free silica as exposure limits.

- **Directorate General of Mines safety (India):**

Free silica content should not exceed 5% as prescribed by Directorate General of Mines Safety.

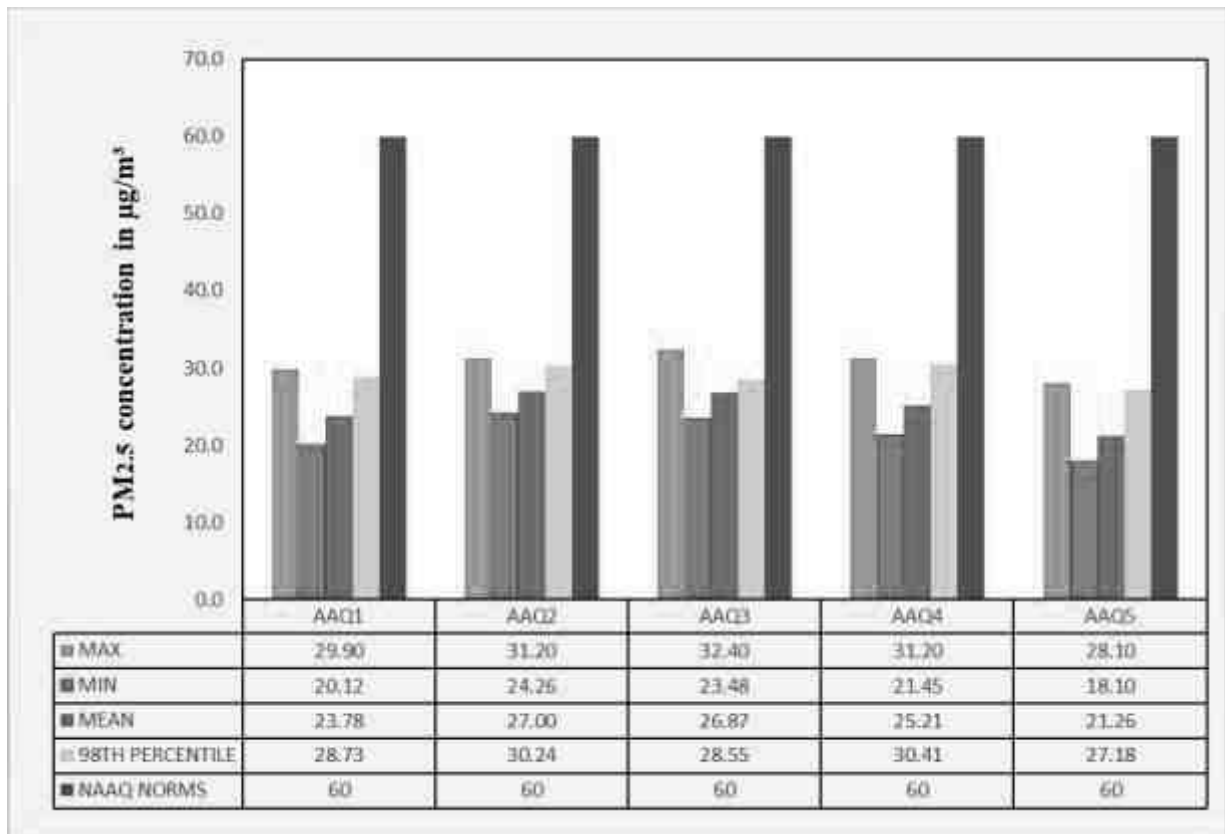


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 5 Air Quality Monitoring Stations within 5 km Radius

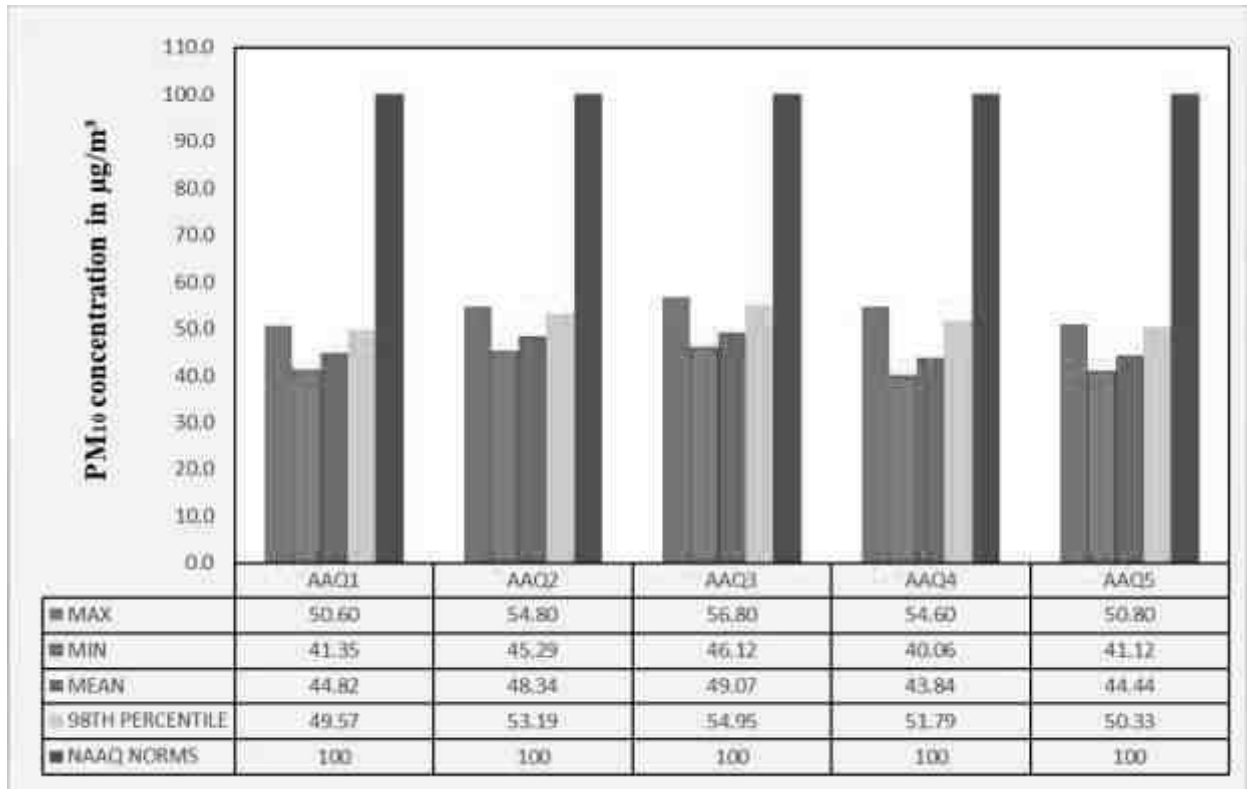


Figure 3.20 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 5 Air Quality Monitoring Stations within 5 km Radius

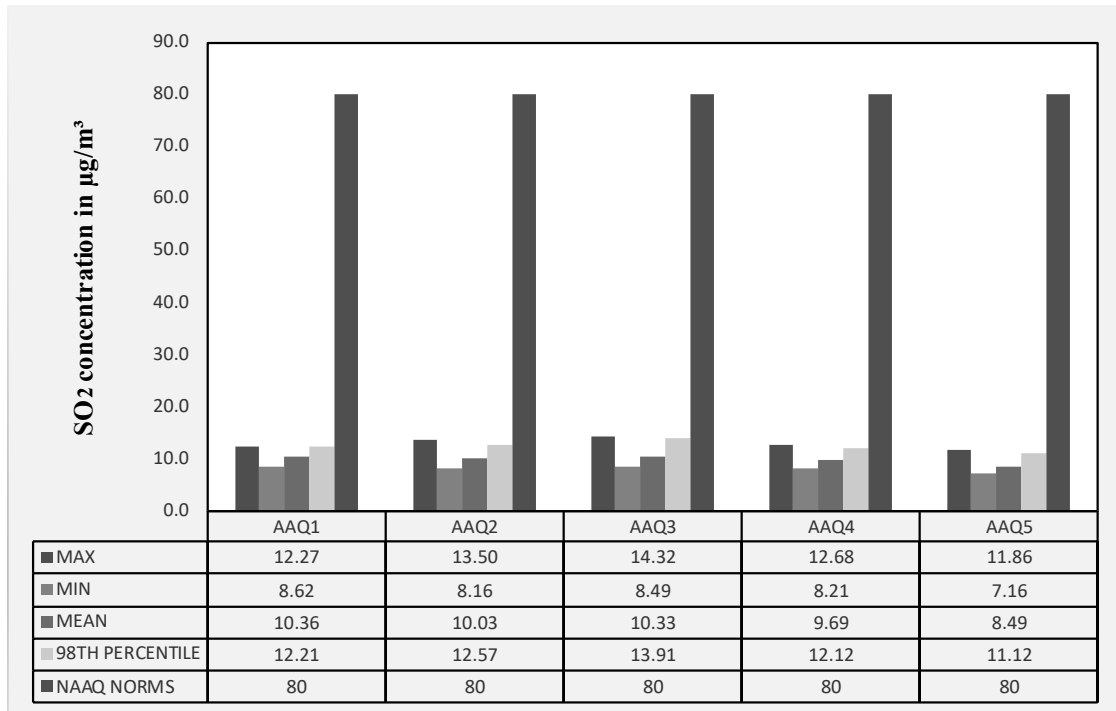


Figure 3.21 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 5 Air Quality Monitoring Stations within 5 km Radius

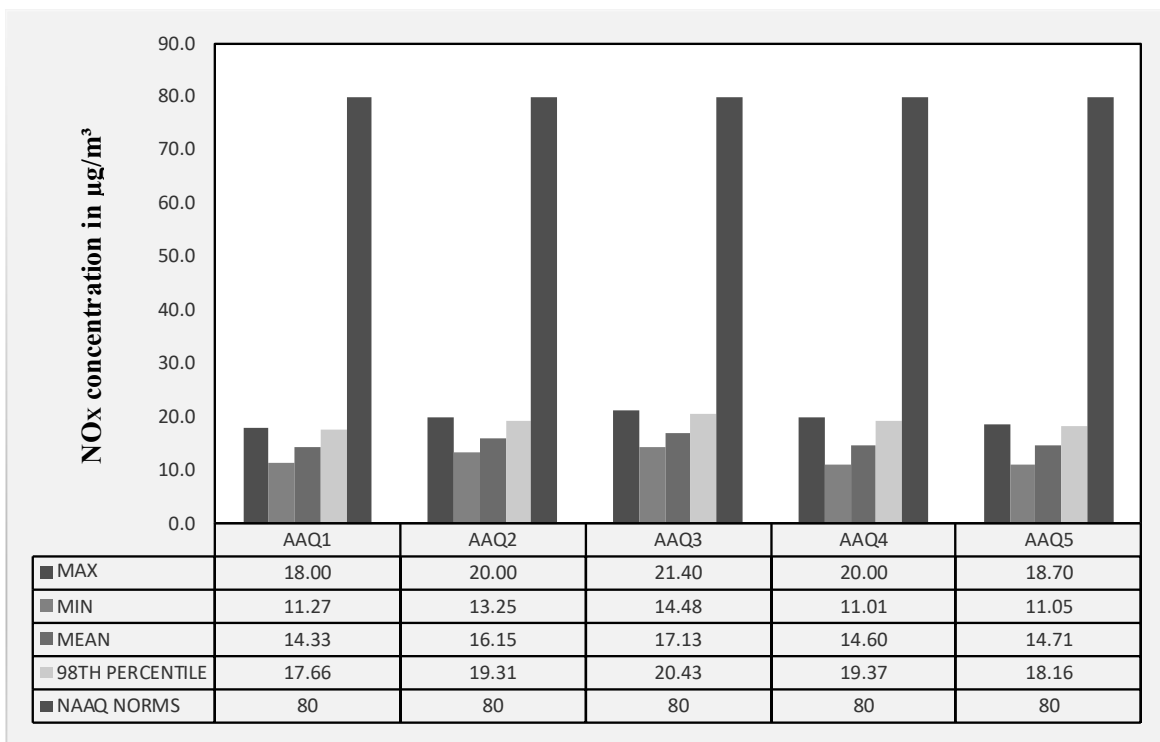


Figure 3.22 Bar Chart Showing Maximum, Minimum, and Average Concentrations of NO_x Measured from 5 Air Quality Monitoring Stations within 5km Radius

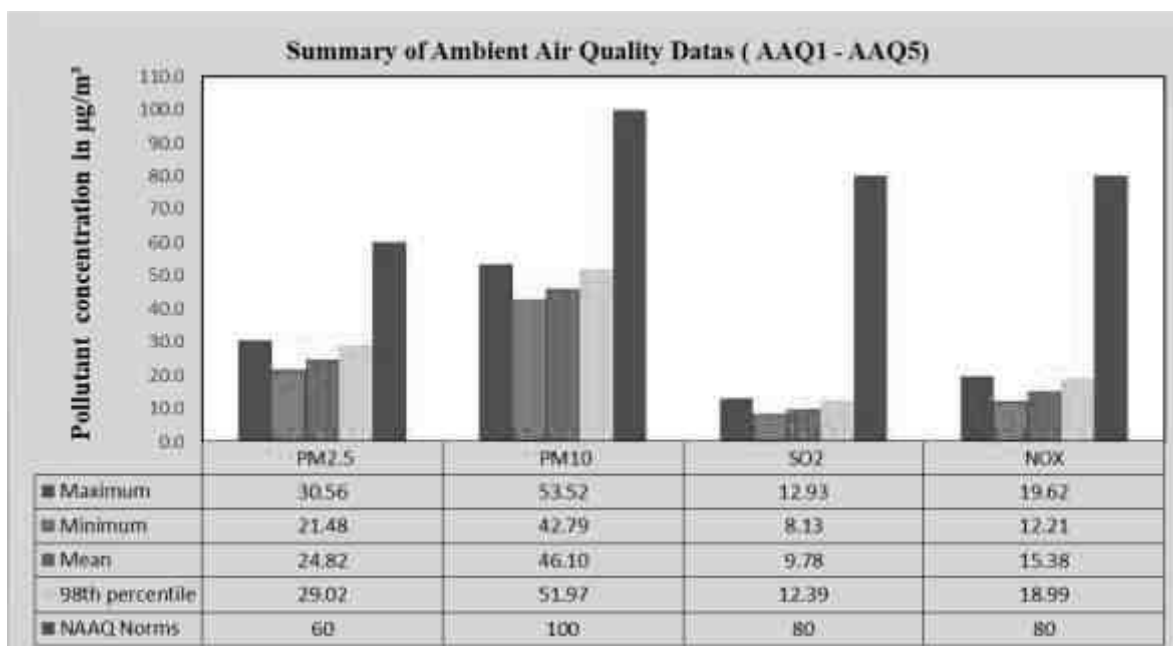


Figure 3.23 Bar Chart Showing Maximum, Minimum, And Average Concentrations of Pollutants in Atmosphere within 5 km Radius

3.6 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 five (5) locations covering commercial, residential, rural areas within the radius of 5km. Details of noise monitoring locations are provided in Table 3.20 and spatial occurrence of the locations are shown in Figure 3.24.

Table 3.20 Noise Monitoring Locations

S. No.	Location Code	Monitoring Location	Distance (km)	Direction	Coordinates	
					Latitude	Longitude
1	N1	Harish Core	0.5	N	12°35'16.67"N	77°47'45.13"E
2	N2	PUP School	2.52	W	12°34'43.17"N	77°46'21.57"E
3	N3	Alenatham Government School	2.04	S	12°33'50.70"N	77°47'29.98"E
4	N4	Govt. High School, Doddabelur	2.94	E	12°34'56.88"N	77°49'26.58"E
5	N5	Nearby Onnupalli Village	4.19	N	12°37'17.05"N	77°47'50.20"E

Table 3.21 Ambient Noise Quality Result

Station ID	Location	Environmental setting	Average day noise level (dB (A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (Leq in dB (A))	
N1	Harish Core	Industrial Area	47.3	44.0	75	70
N2	PUP School	Residential Area	47.3	44.1	55	45
N3	Alenatham Government School		46.5	43.9		
N4	Govt. High School, Doddabelur		47.8	44.4		
N5	Nearby Onnupalli Village		47.3	43.6		

Source: On-site Monitoring/Sampling by **Green Link Analytical & Research Lab** in Association with GTMS

The table 3.21 shown that noise level in core zone was 47.3dB (A) Leq during day time and 44.0dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 46.5 to 47.8dB (A) Leq and during night time from 43.6 to 44.4dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.25 and 3.26.

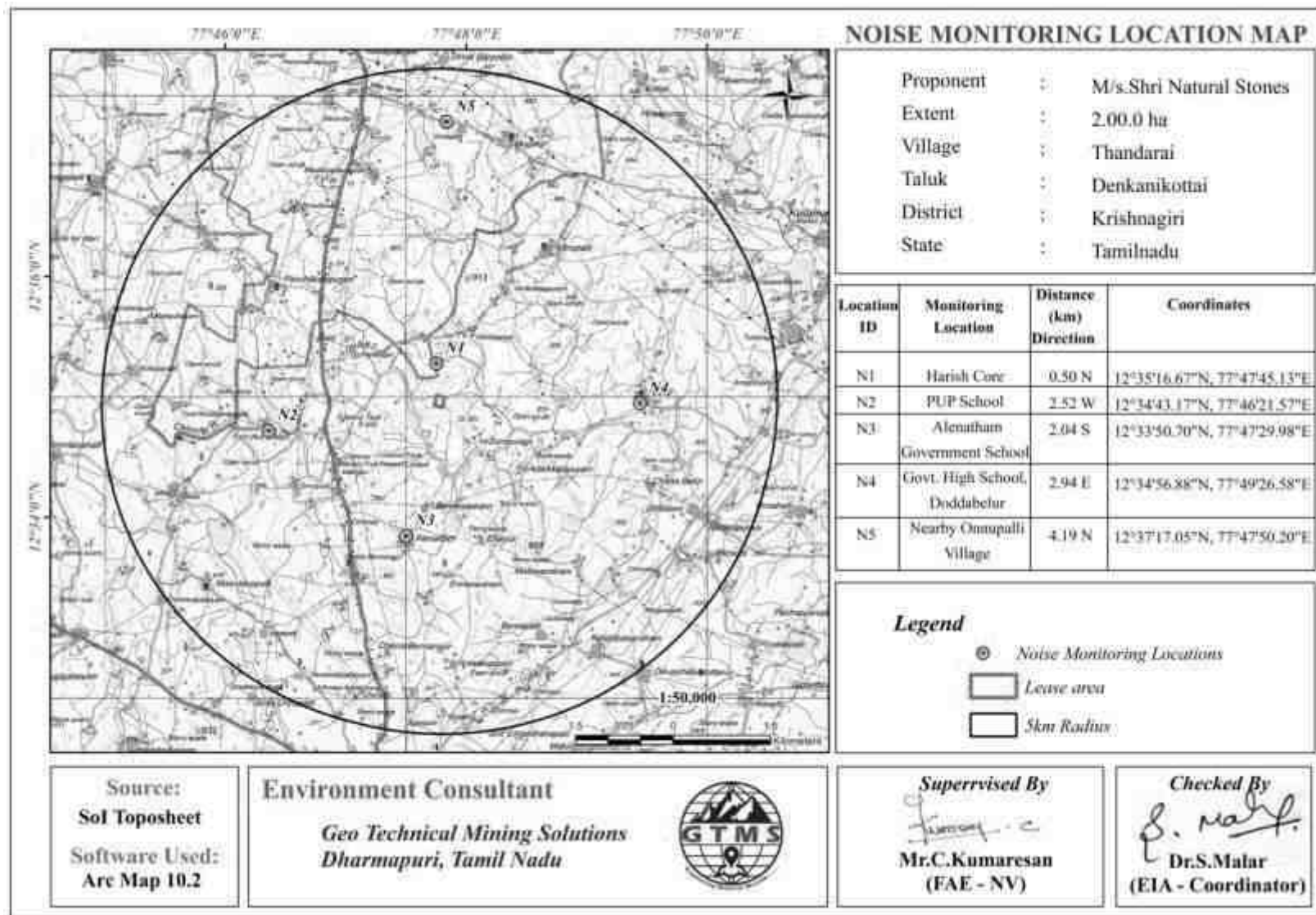


Figure 3.24 Map Showing Noise Level Monitoring Station Locations

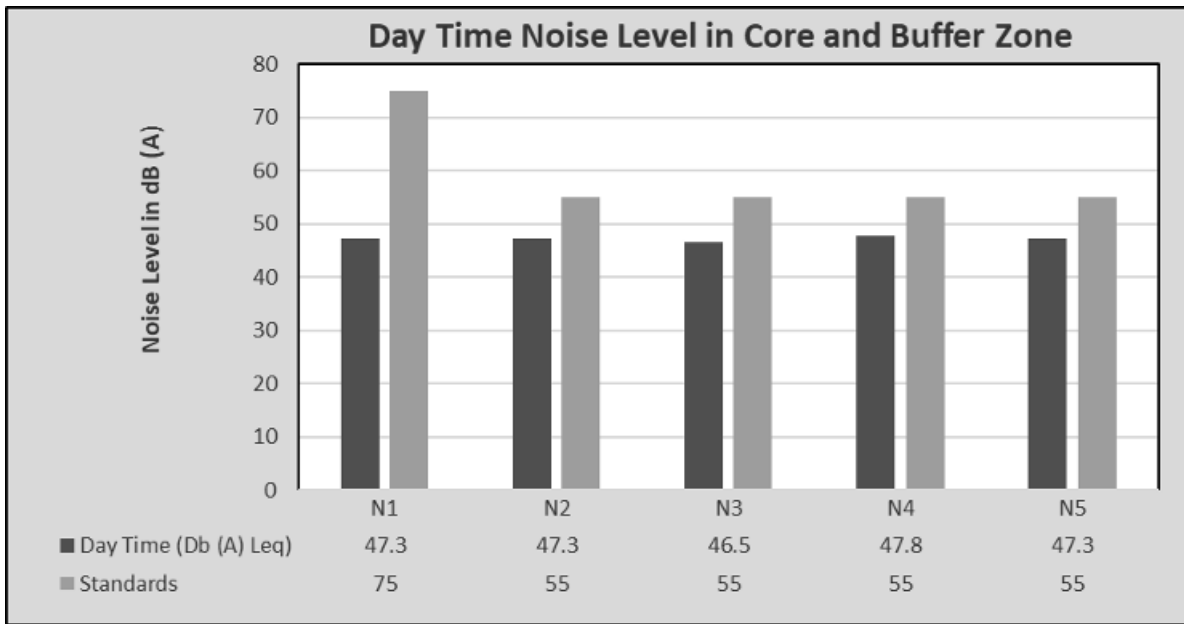


Figure 3.25 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

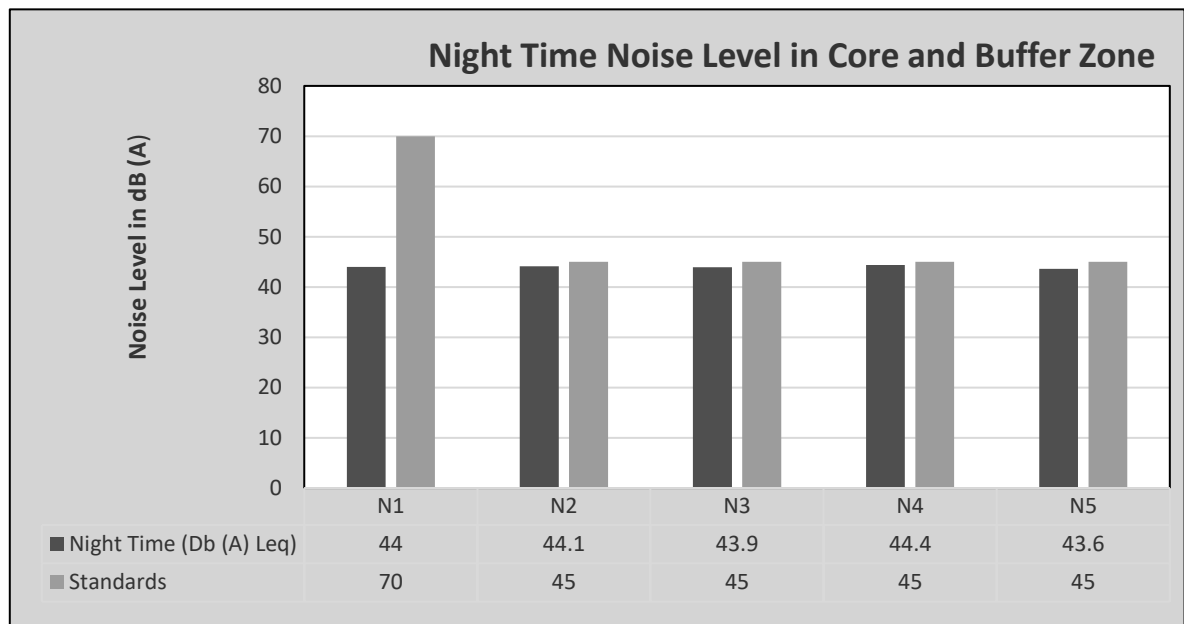


Figure 3.26 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

3.7 BIOLOGICAL ENVIRONMENT

Biological study of the ecosystem is essential to understand the impact of rough stone quarry on existing flora and fauna of the study area. Studies on various aspects of ecosystem play an important role in identifying sensitive issues for undertaking appropriate action to mitigate the impact, if any. A survey was conducted to study the flora and fauna in 10km radius by direct and indirect sightings/ data. Some of the information was gathered from the local

habitants. All the collected data were classified to interpret the impact of pollution on the flora and fauna of that region. Survey of the wild plants as well as cultivated crop plants was made, and all the available information was recorded.

3.7.1 Biodiversity assessment methods

The Rapid Biodiversity Assessment (RBA) provides information about individual flora and fauna species and their habitats, ecosystems and communities, and threatening processes. It reviews existing information and the results of priority taxa and communities.

A major systematic program of fauna survey has been undertaken during the preparation of this RBA. Analysis of data involves the information identifying the flora and selected fauna groups in relation to different environmental strata across the site, and analysis of species and their responses to disturbance.

The RBA has focused primarily on the ecosystem and species levels of biodiversity because information about genetic variation within species is limited. The trees in each plot have been marked with metal plates so as to cater further field inspection easier. Physical marking of biodiversity has been dealt with for flora only, because of logical reasons. Floristic studies are dealt with in detail in the second part of the RBA.

The biodiversity information presented here is intended to reflect the best understanding of the available information, including information obtained through data audit, expert scientific opinion, and analysis of available data. It also points to deficiencies in existing information. The data presented will be used in the development of the restoration plans, including configuration of the quarry closure, and in the formulation of management recommendations by the experts.

The study has covered the following aspects to appraise the biodiversity of the site

S. No	Floral Component	Fauna elements
1	Plantations/ Agro- forestry	Total Listing of major Faunal elements
2	Natural Vegetation/ Forest type	Endangered Species/ Endemic Species
3	Flora Identification- Trees	Wildlife Schedules
4	Flora Identification- Shrubs	Migratory Species
5	Flora Identification- Herbs	Migratory corridors or Paths
6	Flora Identification- Climbers	Breeding & Spawning Grounds

The objective of this Section is to characterize and understand the present status of the ecosystems in the study area to assess the bio- diversity and to identify the critical areas. The present study was undertaken as a part of EIA report to understand the present status of

ecosystem prevailing in the study area, to compare it with the past condition with the help of available data, to predict changes as a result of present activities and to suggest measures for maintaining the conditions.

3.7.2 Objectives of Biological Studies

The present study was undertaken with the following objectives:

- ❖ To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measure, if required, for vulnerable biota.
- ❖ To assess the nature and distribution of vegetation (Terrestrial and Aquatic) in and around the mining activity.
- ❖ Detail of flora and fauna, Endemic, Rare, Endangered and Threatened (RET Species) separately for core and buffer area based on such primary field survey and clearly indicating the Schedule of fauna present. In case of any schedule- 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.
- ❖ Devise management & conservation measures for biodiversity.

3.7.3 Methodology

A methodology of Sampling Flora and fauna studies were carried out to assess the list of terrestrial plant and animal species that occur in the core area and the buffer area up to 10km radius from the project site. No damage is created to flora and fauna during the sampling.

3.7.4 Flora Study

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was done based on the reference materials and also by examining the morphological characteristics and reproductive materials i.e. flowers, fruits and seeds. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers. Transect method is used in the floral documentation in the buffer zone. Six transects were selected for the study. Each transects were occupied within 10km radius. For trees plots of (10x10m), shrubs (5x5m) and herbs (1x1m) were used and recorded.



3.7.5 Fauna Study

The faunal elements of core and buffer zone were identified by direct sightings or indirect evidences by recording occurrences such as holes, markings, hairs, spines, scats, pellets, droppings and quills (Menon 2003). Standard binocular was used for the observations. The authenticity of faunal elements occurrence was confirmed by interaction with the local people. Avifauna identification was done with pictorial descriptions of published literature. Information pertaining to existence of any migratory corridors and paths were obtained from local inhabitants. The status of each faunal element was determined and wildlife schedule category was ascertained as per the IUCN- Red Data Book and Wildlife protection (Amendment) Act 2022. The Birds, butterflies, reptiles and odonates were mainly focused during faunal assessment, in which transect method was employed for birds and butterflies. Transect is a path along which one counts and records the occurrence of an individual for study. A straight-line walk covering one km, within a time span of one hour to 30 minutes was carried out in each of the habitats. Each transects were occupied within the 10km radius of the site. Bird species were recorded during the hours of peak activity 07 am to 12 am and evening 3.00 pm to 5.00 pm. Direct observations and bird calls used for bird documentation. Same transects were used for counting birds and butterflies. Opportunistic observations were made for Amphibians, reptiles and odonates. Presence of mammals were recorded by indirect signs. They were classified into species level as and when possible. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

Important Value Index (IVI)

The concept of 'Important Value Index (IVI)' has been developed for expressing the dominance and ecological success of any species, with a single value (Mishra, 1968, Sharma, 2005). This index utilizes three characteristics, they are (i) Relative frequency and (ii) Relative

density. The three characteristics computed using frequency, density and abundance for all the species falling in all the quadrat by using the following formula. The relative frequency, relative density and relative abundance has been calculated to calculate the IVI value

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

$$\text{Relative Value Index (RVI)} = \text{Relative Density} + \text{Relative Frequency} [\text{RD} + \text{RF}].$$

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

Shannon- Wiener Index, Evenness and Richness

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

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

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

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

- Where, n_i is individual density of a species and n is total density of all the species
- The Evenness Index (E) is calculated by using Shannon's Evenness formula (Magurran, 2004).
- The higher the value of H, the higher the diversity of species in a particular community

The lower the value of H, the lower the diversity. A value of $H = 0$ indicates a community that only has one species

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

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

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

3.7.6 Floral diversity Analysis

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

3.7.6.1 Flora Composition in Core Zone

The core zone presents in tree, shrubs, herbs and grasses. Taxonomically total of 17 species belonging to 9 families 45 Plant have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were Herbs 3 followed by Trees 3 Shrubs 4 and Climbers 2. The result of core zone of flora studies shows that Fabaceae and Solanaceae are the main dominating species in the study area it mentioned in Table 3.22 & 3. 23. No species found as threatened category.

3.7.6.2 Flora Composition in buffer Zone

There are 144 different species identified in the buffer zone. Among the identified, floral (144) species were 34 trees, 19 herbs & climbers, 21 shrubs, 15 Creepers & grasses. According to the findings of the buffer zone flora studies, the dominant species in the study area are Fabaceae, Asteraceae, and Euphorbiaceae, as shown in Table 3.25. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Details of flora with the scientific name were mentioned in Table 3.25. A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.25.

Table 3.22 Number of flora life in study area

S. No	Plant Life form	Number of Species	Number of Plant
1.	Trees	3	9
2.	Shrubs	4	16
3.	Herbs	6	13
4.	Climber	2	4
5.	Creepers	-	1
6.	Grasses	2	2
Total No. of Species		17	45

Table 3.23 Flora in mine lease area

S.no	Local name	Scientific name	Family name	IUCN- Conservation Status
Trees				
1.	Manjal Konrai	<i>Senna siamea</i>	Meliaceae	Not Listed
2.	Arapu maram	<i>Albizia amara</i>	Fabaceae	Not Listed
3.	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	Not Listed
4.	Wetpalai maram	<i>Wrightia tinctoria</i>	Apocynaceae	Not Listed
Shrubs				
3	Avaram chadi	<i>Senna auriculata</i>	Fabaceae	Not Listed
4	Unni chadi	<i>Lantana camara</i>	Verbenaceae	Not Listed
5	<u>Thazhuthaalai</u>	<i>Chromolaena odorata</i>	Asteraceae	Not Listed
6	Thuthi	<i>Abutilon indicum</i>	Meliaceae	Not Listed
Herbs				
7	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	Not Listed
8	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae	Not Listed
9	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae	Not Listed
10	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	Not Listed
11	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae	Not Listed
12	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	Not Listed
13	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	Not Listed
14	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae	Not Listed
Climber				
15	Veliparuthi	<i>Pergularia daemia</i>	Apocynaceae	Not Listed
16	Kovakka	<i>Coccinia grandis</i>	Cucurbitaceae	Not Listed

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

Table 3.24 Species Richness (Index) in mine lease area

Details	H	H max	Evenness	Species Richness
Trees	0.99	1.0	0.68	0.75
Shrubs	1.34	1.47	0.54	1.31
Herbs	1.29	1.68	0.77	1.19



Figure 3.27 Species Richness (Index) in Mine Lease area

Table 3.25 Flora in Buffer Zone

S. No	Local name	Scientific name	Family Name	IUCN Conservation Status
Trees				
1.	Manjal Konrai	<i>Senna siamea</i>	Meliaceae	Not Listed
2.	Arapu maram	<i>Albizia amara</i>	Fabaceae	Not Listed
3.	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	Not Listed
4.	Pongam oiltree	<i>Pongamia pin nata</i>	Fabaceae	Not Listed
5.	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	Not Listed
6.	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	Not Listed
7.	Vembu	<i>Azadirachta indica</i>	Meliaceae	LC
8.	Manga maram	<i>Mangifera indica</i>	Anacardiaceae	Not Listed
9.	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	Not Listed
10.	Wetpalai maram	<i>Wrightia tinctoria</i>	Apocynaceae	Not Listed
11.	Unjai maram	<i>Albizia amara</i>	Fabaceae	Not Listed
12.	Neruppu Kondrai	<i>Delonix regia</i>	Fabaceae	LC
13.	Kodukkapuli maram	<i>Pithecellobium dulce</i>	Fabaceae	Not Listed
14.	Teak	<i>Tectona grandis</i>	Lamiaceae	Not Listed
15.	Savukku	<i>Casuarina equisetifolia</i>	Casuarinaceae	Not Listed
16.	Thailamaram	<i>Eucalyptus</i>	Myrtaceae	Not Listed
17.	Puliyamaram	<i>Tamarindus indica</i>	Fabaceae	Not Listed
18.	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	Not Listed
19.	Punnaimaram	<i>Calophyllum inophyllum</i>	Calophyllaceae	Not Listed
20.	Athi	<i>Ficus recemosa</i>	Moraceae	Not Listed
21.	Vazhaimaram	<i>Musa</i>	Musaceae	Not Listed
22.	Kadukkai	<i>Terminalia chebula</i>	Combretaceae	Not Listed
23.	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	Not Listed
24.	Sapota	<i>Manilkara zapota</i>	Sapotaceae	Not Listed
25.	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae	Not Listed
26.	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	Not Listed
27.	Alamaram	<i>Ficus benghalensis</i>	Moraceae	Not Listed
28.	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	Not Listed
29.	Vadanarayani	<i>Delonix elata</i>	Fabaceae	Not Listed
30.	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	Not Listed
31.	Manja kadambai	<i>Adina cordifolia</i>	Rubiaceae	Not Listed
32.	Pappali maram	<i>Carica papaya L</i>	Caricaceae	Not Listed
33.	Vilvam	<i>Aegle marmelos</i>	Rutaceae	Not Listed
34.	Kariveppilai	<i>Murraya koenigii</i>	Asclepiadaceae	Not Listed
Shrubs				
35.	Unichedi	<i>Lantana camara</i>	Verbenaceae	Not Listed
36.	Sundaika	<i>Solanum torvum</i>	Solanaceae	Not Listed
37.	Erukku	<i>Calotropis gigantea</i>	apocynaceae	Not Listed

38.	Avarai	<i>Senna auriculata</i>	Fabaceae	Not Listed
39.	Sappathikalli	<i>Cereus pterogonus</i>	Cactus	Not Listed
40.	Kattamanaku	<i>Jatropha gossypifolia</i>	Euphorbiaceae	Not Listed
41.	Nochi	<i>Vitex negundo</i>	Lamiaceae	Not Listed
42.	Idlipoo	<i>xoracoc cineia</i>	Rubiaceae	Not Listed
43.	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	Not Listed
44.	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	Not Listed
45.	Thuthi	<i>Abutilon indicum</i>	Meliaceae	Not Listed
46.	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	Not Listed
47.	Arali	<i>Nerium indicum</i>	Apocynaceae	Not Listed
48.	Icham	<i>Phoenix pusilla</i>	Arecaceae	Not Listed
49.	Karunochi	<i>Vitex negundo</i>	Lamiaceae	Not Listed
50.	Arali (White)	<i>Nerium oleander</i>	Apocynaceae	Not Listed
51.	Peacock flower	<i>Caesalpinia pulcherrima</i>	Fabaceae	Not Listed
52.	Yellow Trumpet	<i>Tecoma stans</i>	Bignoniaceae	Not Listed
53.	Indian Nightshade	<i>Solanum violaceum</i>	Solanaceae	Not Listed
54.	Pomegrante	<i>Punica granatum</i>	Lythraceae	Not Listed
55.	Rangoon Creeper	<i>Combretum indicum</i>	Combretaceae	Not Listed
Herbs/ Climber				
56.	Ponnangani	<i>Alternanthera pungens</i>	Amaranthaceae	Not Listed
57.	Wild thulasi	<i>Hyptis suaveolens (L.)</i>	Lamiaceae	Not Listed
58.	Gopuram Tangi	<i>Andrographis echioides</i>	Acanthaceae	Not Listed
59.	Amman Paccharisi	<i>Euphorbia hirta</i>	Euphorbiaceae	Not Listed
60.	Paca poondu	<i>Pavonia gallaensis</i>	Malvaceae	Not Listed
61.	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	Not Listed
62.	Vishnukrandai	<i>Evolvulus alsinoides</i>	Convolvulaceae	Not Listed
63.	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae	Not Listed
64.	Sirupunaikkali	<i>Passiflora foetida</i>	Passifloraceae	Not Listed
65.	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	Not Listed
66.	Thumbai	<i>Leucas aspera</i>	Lamiaceae	Not Listed
67.	Kantang kathrikai	<i>Solanum virginianum</i>	Solanaceae	LC
68.	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae	Not Listed
69.	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	Not Listed
70.	Thottalchinungi	<i>Mimosa pudica</i>	Fabaceae	Not Listed
71.	Anachundaikai	<i>Solanum violaceum</i>	Solanaceae	Not Listed
72.	Kombumul	<i>Acanthospermum hispidum</i>	Asteraceae	Not Listed
73.	Wild thulasi	<i>Hyptis suaveolens (L.)</i>	Lamiaceae	Not Listed
74.	Agave	<i>Agave sisalana</i>	Asparagaceae	Not Listed
Creepers/ Grasses				
75.	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	Not Listed
76.	Vallarai	<i>Merremia gangetica</i>	Convolvulaceae	Not Listed
77.	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae	Not Listed

78.	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	Not Listed
79.	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	Not Listed
80.	Malli	<i>Jasminum augustifolium</i>	Oleaceae	Not Listed
81.	Sangupoo	<i>Clitoria ternata</i>	Fabaceae	Not Listed
82.	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	Not Listed
83.	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae	Not Listed
84.	Korai	<i>Cyperus rotundus</i>	Poaceae	Not Listed
85.	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	Not Listed
86.	Arugampul	<i>Cynodon dactylon</i>	Poaceae	Not Listed
87.	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	Not Listed
88.	Nagathali	<i>Opuntia dillenii</i>	Nagathali	Not Listed
89.	Kala Pullu	<i>Eragrostis ferruginea</i>	Poaceae	Not Listed

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

3.7.7 Fauna Study

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.

Table 3.26 Methodology applied during survey of fauna

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

3.7.7.1 Fauna in Core Zone

A total of 24 varieties of species were observed in the Core zone (Table.3.27). Among them are 8 Insects, 5 Reptiles, 4 Mammals and 9 Avian. 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 3.27.

3.7.7.2 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 3.27 Fauna in Core Zone

S. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife protection act 1972	IUCN Red List data
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
Insects					
1	Plain Tiger	Nymphalidae	<i>Dananeuschrysippus</i>	NL	LC
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
7	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus vicinus</i>	NL	NL
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 macrocerus</i>	NE	LC
3	Koel	Cuculidae	<i>Dynamism 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

Table 3.28 Fauna in Buffer Zone

S. No	Common name/ English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	UCN 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	LC
7	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
8	Ant	Formicidae	<i>Camponotus vicinus</i>	NL	LC
9	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	LC
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	Scincidae	Viperidae	<i>Vipera russelli</i>	Sch II (Part II)	LC
13	Common skink		<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

Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. Fish is commonly found in all types of natural water bodies and very common source of food in Eastern South India. The local fishermen were enquired and also the secondary resources were reviewed to collect information on the fishes found in the study area. Few common species are; *Catla (Catla catla)*, *Channa striata*, *Oreochromis niloticus*.

Table 3.29 Aquatic Fauna and Flora

Sl. No	Common Name	Scientific name	Family Name	IUCN Red List of Threatened Species
Flora				
1	Water hyacinth	<i>Eichornia crassipes</i>	Pontederiaceae	NA
2	Blue waterlily	<i>Nymphaea nouchali</i>	Nymphaeaceae	LC
3	Cross Grass	<i>Carex cruciata</i>	Cyperaceae	NA
4	Scutch grass	<i>Cynodon dactylon</i>	Poaceae	LC
Fauna				
5	Thilopia	<i>Oreochromis niloticus</i>	Cichlidae	LC
6	Catla	<i>Catla</i>	Cyprinidae	LC
7	Koravi meen	<i>Channa striata</i>	Channidae	LC
8	Roghu	<i>Labeo rohita</i>	Cyprinidae	LC

*LC- Least Concern, NA-Not yet assessed

Phytoplankton's:

Microcystis, Nitzschia, Oscillatoria, Navicula and Pediatrum sps.

Zooplanktons:

These consist of microscopic organisms from groups Protozoa, Rotifers, Cladocera and Copepoda etc. Some common species of zooplanktons are; *Deflandre*, *Arcella vulgaris*, *Centropyxis spinosa*, *Arcella discoides*, *Arcella hemispherica*, *Centropyxis aculeate*, *Trigonopyxis arcula*, *Brachionus calyciflorus*, *Lecane curvicornis*, *Brachionus angularis*, *Polyarthra vulgaris*, *Filinia longiseta*.

Food chain

The food chain in aquatic ecosystems often begins with the algae or phytoplankton producers, and then the zooplankton that feed on them. This type of food chain is found in nearby lakes and rivers with phytoplankton, zooplankton, fish *Artiola gray* and humans.

Ex: Phytoplankton → Zooplankton → small fish → large fish → Human

3.7.8 Agriculture & Horticulture in Krishnagiri district:

Major horticulture crops cultivated in this district are fruits crops like mango, banana, sapota, amla and guava, vegetables like brinjal, bhendi, capsicum, onion and chillies, spices like turmeric and pepper, and flower crops like rose, gerbera and carnations.

3.7.8.1 Major Agricultural Crops

Major horticulture crops cultivated in this district are vegetables crops like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and Agricultural in 1km radius is given in Table. 3.30.

Table 3.30 Major Crops in 1km radius

S. No	Major crops	Scientific name	Families
1	Sorghum	<i>Sorghum bicolor</i>	Poaceae
2	Gingelly	<i>Sesamum indicum</i>	Pedaliaceae

3	Groundnut	<i>Arachis hypogaea</i>	Legumes
4	Millets	<i>Panicum miliaceum L</i>	Poaceae
5	Sesame	<i>Sesamum indicum</i>	Pedaliaceae
6	Cotton	<i>Gossypium herbaceum</i>	Malvaceae

3.7.8.2 Major Horticulture Crops

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

Horticulture

Major horticulture crops cultivated in Krishnagiri district are fruit crops like mango, banana, Sapota and guava, vegetables like tomato, brinjal, ladies finger, chillies, onion and tapioca, spices like turmeric. Details of major field crops and horticulture cultivation in 1km radius is given in Table 3.31.

Table 3.31 Major Field Crops & Horticulture cultivation in 1km radius.

S. No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Guava	<i>Psidium guajava</i>	Myrtaceae
2	Sapota	<i>Manilkara zapota</i>	Sapotaceae
3	Lemon	<i>Citrus × limon</i>	Rutaceae
4	Papaya	<i>Carica papaya</i>	Caricaceae
5	mango	<i>Mangifera indica</i>	Anacardiaceae
6	banana	<i>Musa × paradisiaca</i>	Musaceae
Vegetables			
7	Onion	<i>Allium cepa</i>	Amaryllidaceae
8	Tapioca	<i>Manihot esculenta</i>	Spurges
9	Brinjal	<i>Solanum melongena</i>	Nightshade
10	Tomato	<i>Solanum lycopersicum</i>	Nightshade
11	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
12	Ladies finger	<i>Abelmoschus esculentus</i>	Mallows
13	Moringa	<i>Moringa oleifera</i>	Moringaceae

3.8 SOCIO ECONOMIC ENVIRONMENT

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

3.8.1 Objectives of the Study

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

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

3.8.2 Methodology

The study employed cluster sampling to outline two zones around the proposed project site: Zone 1 (Core Zone, 0-1 km radius) and Zone 2 (Low Impact Zone, 1-5 km radius). The primary data collection was conducted through structured interviews, field observation, and focus group discussions with the local people of in Thandarai Village, Denkanikottai Taluk of Krishnagiri District, Tamil Nadu. The secondary data were collected from the Census report 2011 and official records, covering demographics and basic services including information on population, number of households, literacy rates, sex ratios, worker details and the availability of basic services. This study covers the positive and negative impacts of the project's establishment, and provides recommendations for analysing and mitigating adverse effects. The study areas are illustrated in Figure 3.28.

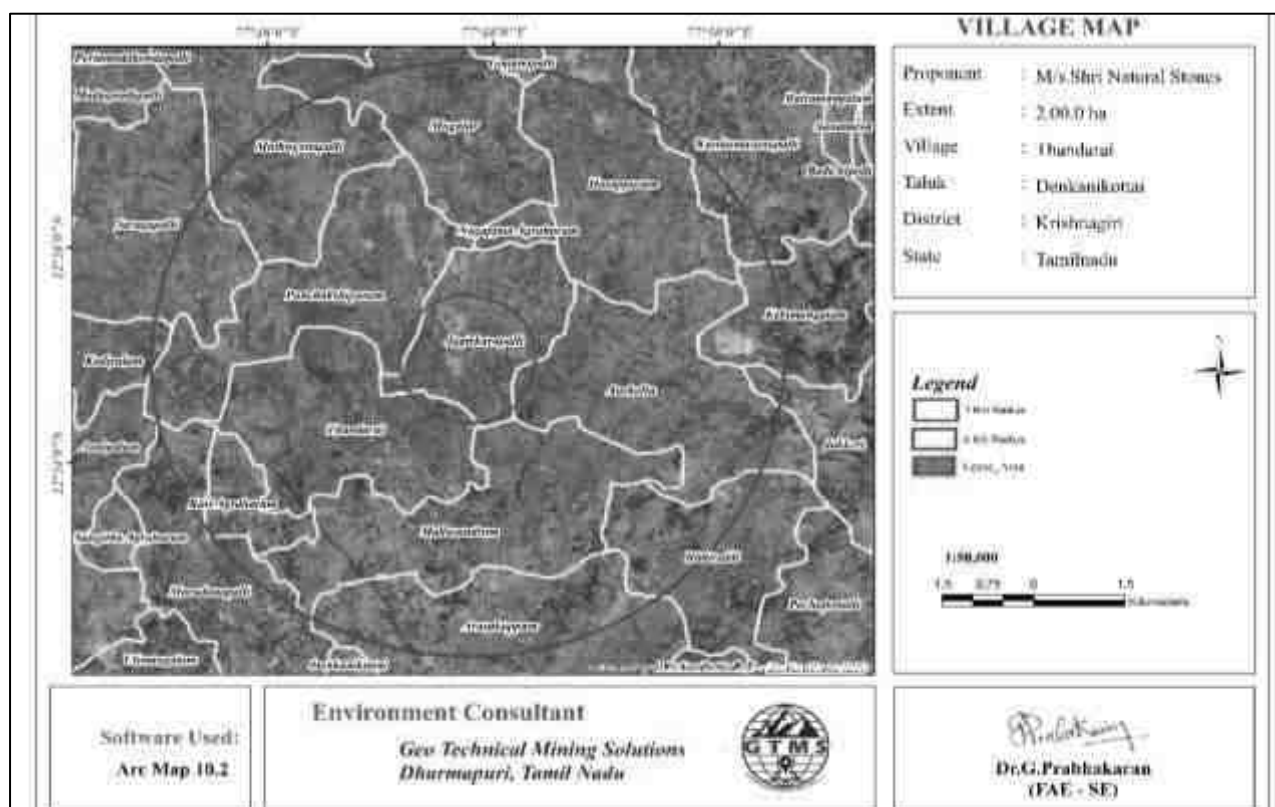


Figure 3.28 Details Village Boundaries within 1km and 5km Radius of the Project Lease area

3.8.3 Demographic Profile of Krishnagiri District

Krishnagiri district, located in Tamil Nadu is bordered by Vellore and Thiruvannamalai districts to the east, Karnataka to the west, Andhra Pradesh to the north, and Dharmapuri district to the south. The district covers an area of 5,143 sq. km and receives an average annual rainfall of 830mm. The primary languages spoken are Tamil, Telugu, and Kannada. According to the 2011 Census, the district had a total population of 1,879,809 (males: 960,232; females: 919,577), up from 1,561,118 in 2001. The overall literacy rate in 2011 was 71.46%, with male literacy at 78.72% and female literacy at 63.91%, reflecting significant improvement over 2001 levels (72.50% for males and 51.62% for females). The number of literates in 2011 was 1,187,958.

The sex ratio improved from 944 females per 1,000 males in 2001 to 958 in 2011, which is above the national average of 940. The child sex ratio also rose from 869 in 2001 to 926 in 2011. Children aged 0–6 years constituted 11.56% of the population in 2011 (217,323 children), slightly down from 13.77% in 2001 (214,954 children), indicating a 2.21% decrease. Hinduism is the major religion, practiced by 91.70% of the population, followed by Islam (6.13%). Scheduled Castes and Scheduled Tribes account for 14.22% and 1.19% of the population, respectively.

Source: <https://www.census2011.co.in/data/town/803410-krishnagiri-tamil-nadu.html>

3.8.4 Profile of Study Area - Thandarai Village

Thandarai is a large village located in Denkanikottai Taluka of Krishnagiri district, Tamil Nadu with total 605 families residing. The Thandarai village has population of 2664 of which 1349 are males while 1315 are females as per Population Census 2011. In Thandarai village population of children with age 0-6 is 305 which makes up 11.45 % of total population of village. Average Sex Ratio of Thandarai village is 975 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Thandarai as per census is 871, lower than Tamil Nadu average of 943.

Thandarai village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Thandarai village was 58.88 % compared to 80.09 % of Tamil Nadu. In Thandarai Male literacy stands at 66.10 % while female literacy rate was 51.58 %. The profile of Thandarai Village includes demographic details such as the number of households, population statistics, literacy levels, child population (0- 6 years), caste composition, and workforce, as presented in Table 3.32.

Table. 3.32 Demographic Status of Thandarai Village

Particulars	Total	Male	Female
Total No. of Houses	605	-	-
Population	2664	1349	1315
Child (0-6)	305	163	142
Schedule Caste	363	170	193
Schedule Tribe	4	2	2
Literacy %	58.88 %	66.10 %	51.58 %
Total Workers	1213	825	388
Main Worker	893	-	-
Marginal Worker	320	197	123

Source: <https://www.census2011.co.in/data/village/644008-thandarai-tamil-nadu.html>

3.8.5 Working Population- Thandarai Village

Thandarai village out of total population, 1213 were engaged in work activities. 73.62 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 26.38 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1213 workers engaged in Main Work, 227 were cultivators (owner or co-owner) while 399 were Agricultural labourer.

Benefits:

The table 3.33 presents a village-wise distribution of households, population, social composition, literacy, and workforce participation for 17 villages, covering a total of 10,933 houses. The total population of the study area is 47,268, consisting of 24,289 males and 22,979 females, indicating a slightly higher male population overall.

Among the villages, Arasakuppam, Jakkeri, Mallasandram, and Kundumaranapalli have comparatively larger populations, while Muthuganapalli and Gopanapalli are smaller villages. Gender distribution across villages is relatively balanced, though males marginally outnumber females in most villages. The total child population (0–6 years) is 5,045, with 2,577 male children and 2,468 female children. Villages such as Arasakuppam, Mallasandram, and Kundumaranapalli record higher numbers of children, indicating a younger population structure, whereas smaller villages show lower child population figures.

The Scheduled Caste (SC) population forms a significant portion of the total population, with 4,470 males and 4,329 females. Villages like Kundumaranapalli, Mugalur, Jakkeri, Hosappuram, and Saragapalli have a notably high SC population. The Scheduled Tribe (ST) population is relatively small across the study area, totaling 814 persons (421 males and 393 females). ST population is concentrated mainly in villages such as Marudanapalli, Arasakuppam, Bithireddi, Jakkeri, and Kodiyalam, while several villages report no ST population at all.

The total literate population consists of 27,081 persons, including 15,654 males and 11,427 females. Male literacy is consistently higher than female literacy across all villages, reflecting a clear gender gap in education. Larger villages such as Arasakuppam, Jakkeri, Kundumaranapalli, and Mallasandram contribute significantly to the literate population.

The total number of workers is 24,337, comprising 15,061 males and 9,276 females. Male participation in economic activities is substantially higher than female participation in every village. Villages with larger populations generally show higher workforce numbers, while smaller villages record lower levels of employment. The disparity suggests limited employment opportunities or social constraints affecting female workforce participation.

Overall, the table highlights moderate population growth, significant Scheduled Caste presence, minimal Scheduled Tribe population, and noticeable gender disparities in literacy and employment. While the study area shows substantial workforce participation, the lower female literacy and employment rates indicate the need for targeted interventions in education, skill development, and women's empowerment, particularly in larger and socially disadvantaged villages.

Table 3.33 Population Structure and Literacy Rate of Study Area

Village Name	No. of Houses	Population in Gender wise		Child (0-6)		Schedule Caste		Schedule Tribe		Literacy Rate		Total Workers	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Anekollu	628	1471	1387	179	157	64	72	1	0	861	621	918	795
Anniyalam	614	1308	1250	119	131	412	411	0	0	890	671	892	594
Arasakuppam	988	2148	2048	235	224	156	157	43	44	1378	1027	1332	919
Bithireddi	693	1585	1491	166	161	210	209	47	49	914	660	967	688
Gopanapalli	342	716	672	79	69	152	124	1	1	478	358	472	334
Hosappuram	763	1830	1731	211	181	399	374	0	0	1166	882	1115	707
Jagirkarupalli	393	1004	901	119	112	66	66	0	0	630	416	612	446
Jakkeri	914	1989	1968	190	193	420	424	67	60	1337	1010	1252	836
Kodiyalam	446	934	872	91	75	203	188	37	37	635	447	583	365
Kundumaranapalli	863	1972	1895	199	237	594	563	0	0	1342	901	1164	620
Mallasandram	907	2130	1932	224	256	172	171	10	16	1349	923	1210	735
Marudanapalli	736	1496	1402	131	132	76	67	213	184	1035	778	998	805
Mugalur	609	1352	1241	151	122	528	495	0	0	862	609	851	221
Muthuganapalli	281	581	554	70	59	198	210	0	0	365	269	371	228
Panchakshipuram	442	973	909	113	70	257	220	0	0	664	502	611	213
Saragapalli	709	1451	1411	137	147	393	385	0	0	964	748	888	382
Thandarai	605	1349	1315	163	142	170	193	2	2	784	605	825	388
Total	10933	24289	22979	2577	2468	4470	4329	421	393	15654	11427	15061	9276

Source: Tamil Nadu Census Reports – 2011

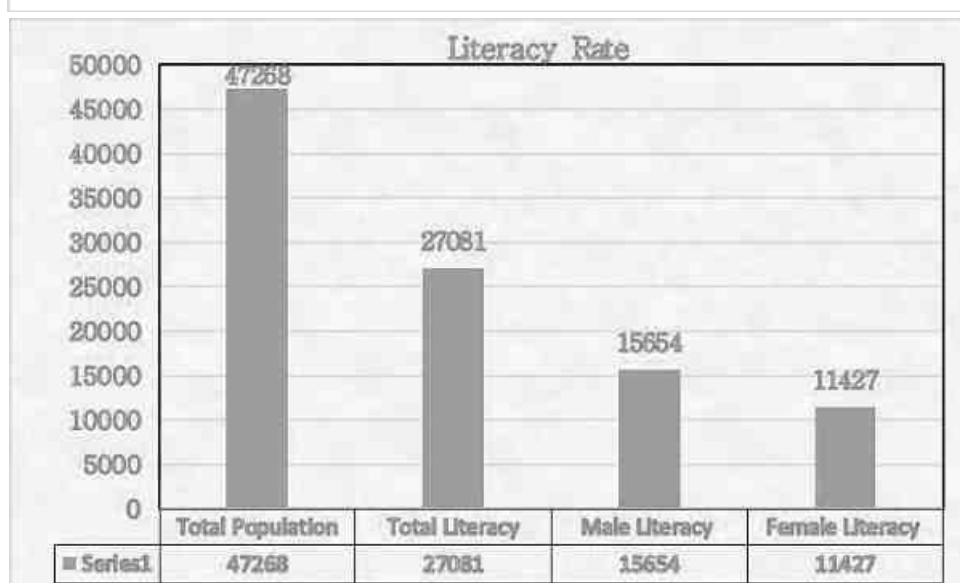
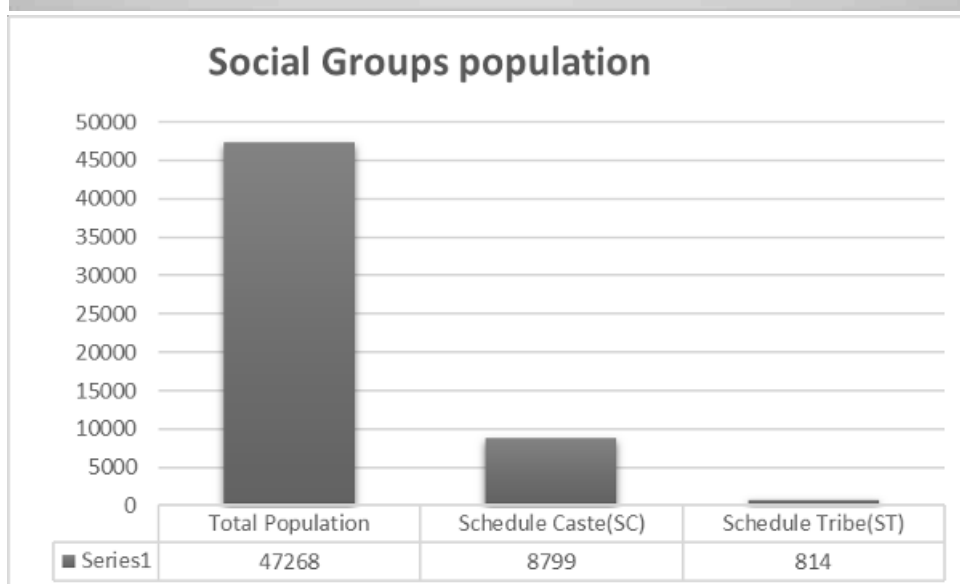
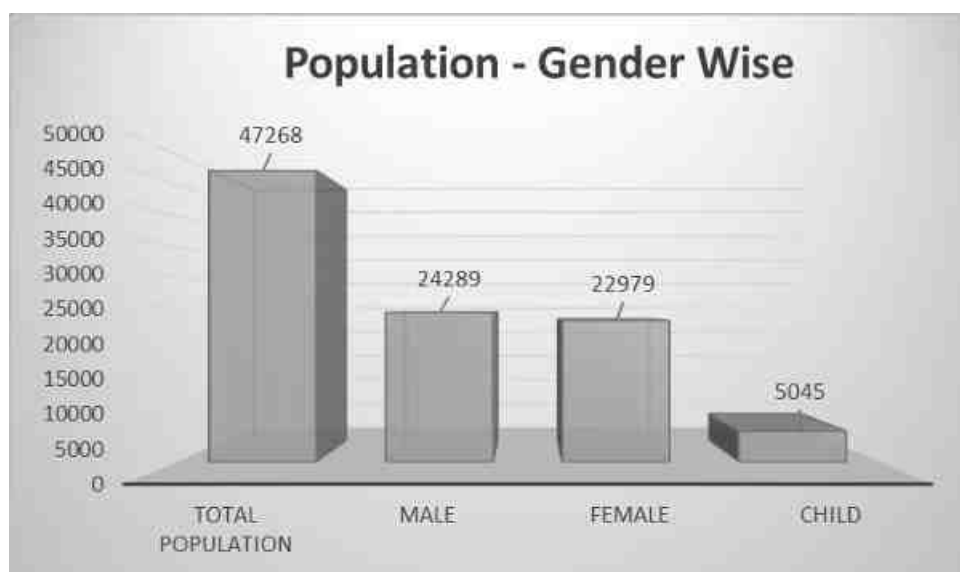


Figure 3.29 Demographic Details – Population, Social Groups, and Literacy Rate in the Study Villages

Table 3.34 Workforce Details of the Study Area (Percentage wise)

Village Name	Total Worker	Total Male Workers	Total Female Workers	Total Main Workers	Total Main Cultivators	Total Main Agricultural Labourers	Total Other Workers	Total Non-Workers
Anekollu	1713	918	795	1496	923	446	94	1145
Anniyalam	1486	892	594	1423	1120	92	201	1072
Arasakuppam	2251	1332	919	2169	1112	484	569	1945
Bithireddi	1655	967	688	1586	822	627	82	1421
Gopanapalli	806	472	334	748	407	256	85	582
Hosappuram	1822	1115	707	1693	427	1118	119	1739
Jagirkarupalli	1058	612	446	883	535	121	193	847
Jakkeri	2088	1252	836	1735	467	814	426	1869
Kodiyalam	948	583	365	835	320	428	69	858
Kundumaranapalli	1784	1164	620	1562	513	454	560	2083
Mallasandram	1945	1210	735	1720	848	402	446	2117
Marudanapalli	1803	998	805	1776	1405	191	175	1095
Mugalur	1072	851	221	1039	530	361	147	1521
Muthuganapalli	599	371	228	556	66	347	142	536
Panchakshipuram	824	611	213	801	521	172	97	1058
Saragapalli	1270	888	382	824	476	231	104	1592
Thandarai	1213	825	388	893	227	399	266	1451
Total	24337	15061	9276	21739	10719	6943	3775	22931

Source: Tamil Nadu Census Reports – 2011

3.8.6 Workforce Participation

The table 3.34 provides a village-wise distribution of workers and non-workers, along with the occupational structure of main workers, for the selected villages. Altogether, the study area has a total workforce of 24,337 persons, comprising 15,061 male workers and 9,276 female workers, indicating that males form a significantly larger share of the working population.

In all villages, male workers outnumber female workers, reflecting a clear gender disparity in workforce participation. Villages such as Arasakuppam, Jakkeri, Mallasandram, Kundumaranapalli, and Hosappuram show higher total worker strength, corresponding with their larger population sizes. Smaller villages like Muthuganapalli, Panchakshipuram, and Gopanapalli record comparatively fewer workers.

Out of the total workers, 21,739 are main workers, suggesting that a large proportion of the workforce is engaged in relatively stable or regular employment. Villages like Arasakuppam, Marudanapalli, Hosappuram, and Jakkeri have a particularly high number of main workers, indicating stronger employment bases in these settlements. Main cultivators number 10,719, forming the largest occupational group. Villages such as Marudanapalli, Anniyalam, Arasakuppam, and Mallasandram show a strong dependence on cultivation. Main agricultural labourers total 6,943, reflecting continued reliance on agricultural wage labour. This category is prominent in villages like Hosappuram, Jakkeri, Bithireddi, and Kodiyalam. Other workers (3,775) include those engaged in non-agricultural activities such as services, trade, and small-scale industries. Villages like Arasakuppam, Kundumaranapalli, Jakkeri, and Mallasandram show relatively higher diversification into non-agricultural occupations.

The total number of non-workers is 22,931, which is substantial and, in many villages, exceeds the number of workers. Villages such as Mallasandram, Kundumaranapalli, Jakkeri, and Arasakuppam report high non-working populations, likely comprising children, students, elderly persons, and those not engaged in economic activities. Overall, the table indicates that the rural economy of the study area is predominantly agrarian, with cultivation and agricultural labour forming the backbone of employment. While a segment of the population is engaged in non-agricultural activities, diversification remains limited. The consistently lower participation of females in the workforce and the high proportion of non-workers highlight the need for enhanced livelihood opportunities, skill development, and inclusive employment strategies, particularly targeting women and economically inactive groups.

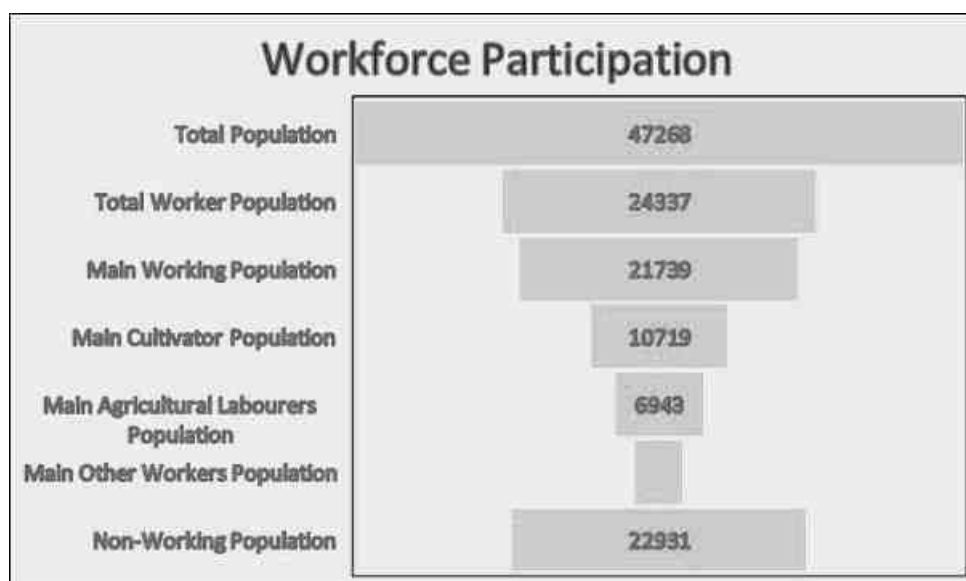


Figure 3.30 Details of Workforce in the Study Villages

As per SEAC recommendation the project proponent should spend minimum of 5 lakhs to the nearby school from the proposed project site as part of CER cost. Also, the village panchayat will get direct benefit from the government through District mineral Resource fund (DMF) for infrastructure development activities.

- ❖ Awareness and Opinion of the People About the Project, to assess public awareness and opinions regarding the proposed project, the following key observations were recorded:
- ❖ During the survey, it was observed that only residents of nearby villages were aware of the proposed project, while those in more distant villages were largely unaware.

People in the region expressed expectations that the project would generate employment opportunities and lead to improvements in education, transportation, and sanitation facilities provided by the project authorities.

Recommendation and Suggestion

The village development plans are made in consultation with the community through Gram Sabha; these appear to address the needs of the community. However, it may be noted that at the implementation stage these plans often are fraught with problem of inadequate funds, lack of proper planning, corruption, vested interests and political agendas. Hence while ascertaining the scope for convergence with the government activities, care must be taken to ascertain realistic possibilities for implementation.

- Women empowerment: Home based income generation activities, vocational training programs and common education centre for increasing the literacy rate.

- Education: Free uniform, construction of common rooms and library, computer education and physical education, furniture and equipment in schools, up-gradation of existing school infrastructure through the CSR funds.
- Agriculture/livestock: Infrastructure such as agricultural practices, electricity connections, assistance with buying improved tools and equipment, capacity building, supply and/or knowledge of better variety of seeds, pasture land development and trainings on animal husbandry & facility of veterinary doctor.
- Health: Improvements in sanitary conditions of villages, assistance with construction of latrines, improvement in drainage system, health camps and awareness campaigns for diseases like common cold, malaria, typhoid, tuberculosis, yellow fever and pneumonia. Repairing of PHCs and Anganwadi centres.
- People with disability: Establishment of centre for special education, sensitization of the community towards disabled and awareness on Government schemes.
- Marginalized Communities and Vulnerable Groups: While Developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.
- Connectivity: Transport connectivity to easiness accessibility to the region.
- Greenbelt: Establish a greenbelt and plant saplings around quarry boundaries, village schools, and village roads.

While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

Conclusion

This study was carried out the baseline socio-economic conditions of the study area. It examined parameters including the population, number of households, literacy rate, sex ratio, workforce details, and the availability of essential amenities like transportation, drinking water, road connectivity, and educational facilities. The study revealed both positive and negative socio-economic implications associated with the proposed project and cluster quarries. While potential environmental and social impacts must be addressed, the project is expected to provide significant economic benefits in terms of local employment and improved livelihood opportunities in directly and indirectly. Therefore, with the implementation of effective mitigation and management measures, the project can contribute positively to the socio-economic development of the area while minimizing adverse impacts.

3.9 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 Koratagiri – Jagirkarupalli as shown in Table 3.35 and in Figure 3.31. 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	Other District Road	1.18 Km-N	Koratagiri – Jagirkarupalli
TS2	SH-17A	1.78 Km- W	Hosur-Denkanikottai

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	21	63	29	29	72	36	128
TS2	61	183	115	115	318	159	457

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	18	54

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
TS1	128	54	182	1200
TS2	457	54	511	1500

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

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

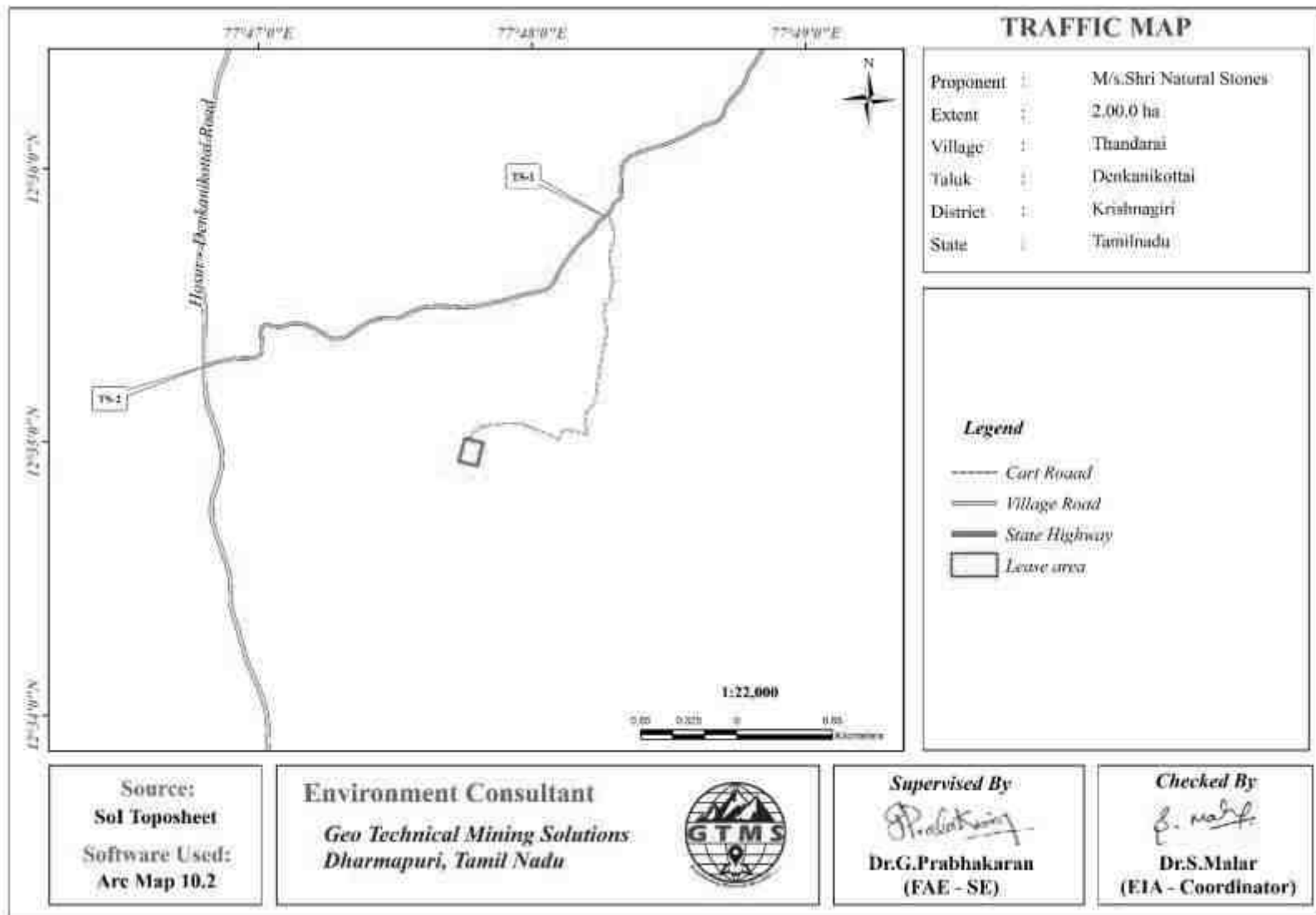


Figure 3.31 Traffic Density Map

3.10 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries and National Park within 25km 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., 25 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	Cauvery North Wildlife Sanctuary	31.35Km - S
		None	Nil within 10 km radius
2	Reserve Forest	Gullu RF	2.51Km - NE
		Midethepalli RF	4.75Km - SW
		Kodattur RF	3.62Km - S
		Kumbalam I RF	5.51Km - SE
		Chinnaradoddi RF	5.23Km - NE
		Berigai RF	5.61Km - SW
		Berigai EXTN RF	7.11Km - SW
		Athimugam II RF	8.61Km - SW
		Amudugondapalli RF	6.95Km - W
		Kariyanapalli I RF	9.8Km - S
		Theertham RF	12.88Km - SE
		Veppanapalli EXTN	12.93Km - E
		Kumbalam II	12.03Km - W
		Nariganapuram	12.18Km - SW
		Settipalli RF	10.82Km - S
		Sanamavu RF	14.53Km - S
3	Lakes /Reservoirs/ Dams/ Streams/ Rivers	Mudugurki Lake	0.50Km - S
		Kullur Lake	1.39Km - N
		Berikai Lake	5.18Km - W
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

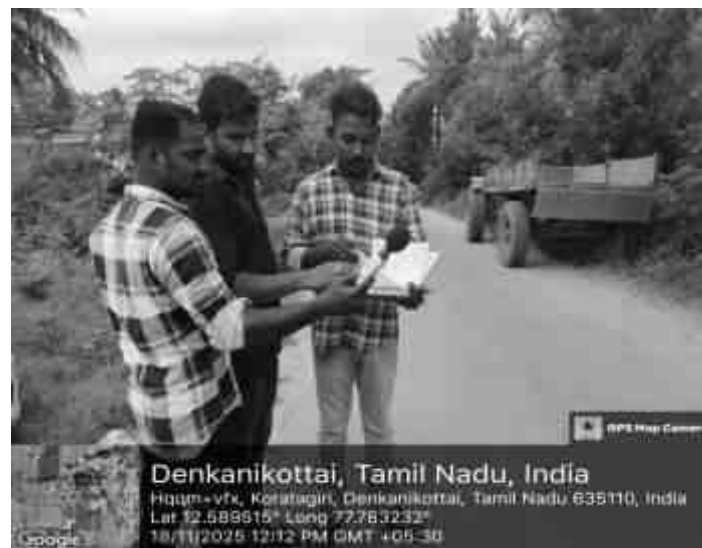


Figure 3.32 Field Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

The identification of potential environmental impacts is indeed the crucial first step in the Environmental Impact Assessment (EIA) process utilizing various techniques such as checklists, matrices and network diagrams to understand a project's effects. The matrix method used in this study provides a structured way to identify and assess the impacts ensuring the project can be implemented in an eco-friendly manner. This chapter discusses the anticipated impacts on land, soil, water, air, noise, biological and socioeconomic environments.

The proposed stone mining project involves blasting, drilling and screening operations which contribute to environmental impacts is given in Table 4.1. The project is designed to minimize these impacts by implementing mitigation measures and ensuring a marginal environmental footprint with a detailed analysis to follow in subsequent tables.

Table 4.1 Impact identification matrix.

Activities	Environmental Attributes								OHS
	Land	Soil	Water	Air	Noise	Ecology	Socio Economics	Aesthetics	
Site clearing & Site services	√	√		√		√			
Development of Greenbelt			√			√		√	
Operation Phase (Drilling, Blasting Loading and unloading, Transportation)	√	√	√	√	√	√			√
	√	√	√	√	√	√			√
	√	√	√	√	√	√			√
Employment and the material usage							√		
Mine closure (Removal of machineries, structures and Danger due to inadvertent entry)				√	√		√		√

√ Indicates Impact

4.1 LAND ENVIRONMENT

Anticipated Impacts

- ❖ Converting barren land of 2.00.0hectares to rough stone mining creates a significant and usually irreversible change in land use and land cover involving the physical alteration of the land's surface, potential deforestation, loss of biodiversity, altered topography from pits and spoil dumps.
- ❖ Heavy vehicle movement causes significant problems to nearby agriculture and human habitation. These pollutants can degrade soil quality and introduce heavy metals into the environment.
- ❖ During transportation the tippers damage the bituminous roads. The primary damage is caused by the fourth power law (*The law posits that if you double an axle's load, the damage caused to the pavement increases by a factor of 2x4 or 16 times*) where pavement damage increases with the fourth power of the axle load. The immense weight of heavy payloads on an axle exerts a concentrated and repetitive stress on the road surface leading to permanent strain, premature failure and a cumulative damage.
- ❖ Rain drops hitting stone crushing waste can break apart the particles and flowing water detaches them from the surface transports and redeposits these particles especially from sloped surfaces. This a form of splash erosion followed by sheet erosion which can lead to environmental issues.

Mitigation measures

- ❖ After mining there is a huge void of 2.00.0hectares upto a depth of 51m is useful for rain water storage structure has an advantage for local farmers. The artificial pond boundary shall be fences to avoid any mishaps.
- ❖ Union ministry of road transport and highways on July 16th 2018 increased the maximum cap of axle load limit by 20 to 25 percent cross various categories to keep the limit “at par with international standards”.

Maximum Safe Axle Weight		
Sl. No	Axle Tupe	Maximum safe Axle Weight
1	Single Axle	-
1.1	Single Axle with single tyre	3.0 tonnes
1.2	Single Axle with two tyres	7.5 tonnes
1.3	Single Axle with four tyres	11.5 tonnes*
2.	Tandem Axles (Two axles) (where the distance between two axles is less than 1.8 Mtr.)	-
2.1	Tandem axles for rigid vehiles, trailers and semi-trailers	21 tonnes*

2.2	Tandem axles for puller tractors for hydraulic and pneumatic trailers	28.5tonnes
3.	Tri-axles (Three axles) (where the distance between outer axles is less than 3 Mtr.)	-
3.1	Tri-axles for rigid vehicles, trailers and semi- trailers	27 tonnes*
4	Axle Row (two axles with four tyres each) in Modular Hydraulic trailers (9 tonnes load shall be permissible for single axles)	18 tonnes
*Note: If the vehicle is fitted with pneumatic suspension, 1 tonne extra Load is permitted for each axle.		

MoRTH knows that previously built Indian roads are made keeping standard axle loads.

The new national and state highways along with expressways can be built by using new norms but for the existing roads the life will be reduced on average by one year.

- ❖ 6-wheel tipper generally has a maximum legal speed limit which can be up to 60 km/h and speeds should be reduced for loaded conditions. The mine management should take care of the speed of vehicles i.e up to 40km/h in village roads constructed under Pradhan Mantri Gram Sadak Yojana and other district roads developed by Highways and Minor Ports Department, Government of Tamil Nadu as each time a truck passes the concentrated stress causes a small amount of permanent strain on the pavement. Over time these small strains accumulate and lead to significant fatigue and eventual failure.
- ❖ 6-wheel tippers of not more than 9tons payload capacity covered with tarpaulin to stop the spillage and dust should use.
- ❖ Protective measures such as establish plants like grasses, cover crops and trees to form a dense layer over the dump absorbing raindrop energy and holding particles in place.

4.2 SOIL ENVIRONMENT

Anticipated Impacts

- ❖ The fertility status of the soil near by the lease area may affect due to extra dust deposition on the soil. Dust deposition from a lease area can harm soil fertility by physically blocking soil pores, reducing aeration and water infiltration, and potentially altering the soil's chemical properties. This damage to the topsoil negatively impacts plant growth by interfering with photosynthesis and nutrient uptake ultimately decreasing crop production.
- ❖ Topsoil will be scraped from the area of 1.47.0hectares in the project site will store in safety area left for 7.5meters in the northern side as shown in mining plan.

Mitigation measures

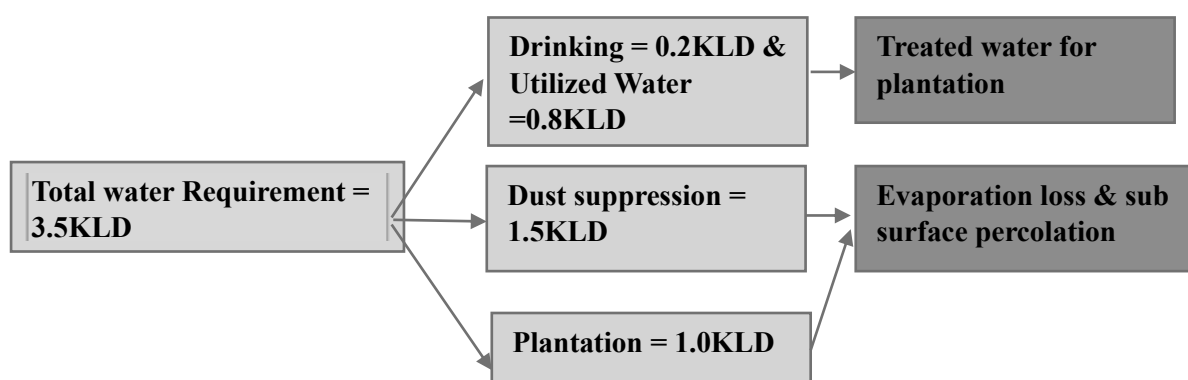
- ❖ When stock piling of top soil is done the mound should not be higher than 1.0m and Weathered Rock 3.0m.
- ❖ To minimize surface runoff and erosion the topography of a graded surface should be designed to create terraces or benches that follow land contours which intercept sheet flow. Additionally, a bulldozer's tracks can be used to create a fine-scale roughened surface perpendicular to the slope and stockpiles should be constructed with a rough surface to improve drainage, reduce erosion and encourage revegetation.
- ❖ Efforts will be made to minimize the storage time to prevent nutrient loss.
- ❖ To protect the quality of stockpiled topsoil immediate re-vegetation is crucial. Temporary seeding should be done within 30 days of stockpile formation to control erosion, prevent weed growth and maintain healthy soil microbes.
- ❖ If the stockpile will not be reused within 12 months it must be stabilized with permanent vegetation to ensure long-term erosion and weed control.
- ❖ The stored topsoil will be utilized for plantations in later phases during the progressive and final closure of the mine.

4.3 WATER ENVIRONMENT

Anticipated Impacts

- ❖ 3.5KLD water requirement for drinking, domestic, dust suppression and plantation.

Water Balance Chart of the Mine



- ❖ The domestic effluents being generated during mine operation.
- ❖ Major impact of opencast mining on groundwater regime is quality deterioration. The proposed mining activities shall be carried out upto a depth of 51m from average ground level. The specific water table depth in the core and buffer zone is between 65m and 70meters below ground level.

- ❖ The volume of rain water entering to the mine and accumulating in the quarry has been estimated on the basis of direct catchment area, maximum daily precipitation and the run-off coefficient. $(Q = A \times H \times \bar{d}) \text{cubic meters/day}$.

Where A- catchment area in m^2

H- Max daily precipitation in mm

$\bar{d}$ - Run-off Co-efficient.

The run off co-efficient for mined out area is 0.42.52. The all-time record for maximum daily precipitation in Krishnagiri district was 607.500mm on September 30, 2022 as reported by [CEIC Data](#). More recent rainfall records are 175.000mm on May 18, 2025 and 32.80 mm on May 19, 2025. The maximum broken area is 1.47hectares in the Five year and estimation for make of water done on the quarry parameters for Five year onwards.

$$Q = 1.47\text{hecatres} \times 10000 \times 0.147 \times 0.60\text{m}^3.$$

$$Q = 1296\text{m}^3.$$

Total accumulated water in the pit is 1296m^3 .

Additionally, 20% of water from seepage is 648m^3 .

Total water estimated for pumping requirement = **1296m^3** .

If we take the all-time record then the total water estimated for pumping = **6480m^3** .

To manage rain water runoff into quarry a 5HP diesel operated pump will be placed at the site during the monsoon.

Mitigation Measures

- ❖ The hard rock itself has very few interconnected pore spaces, limiting the amount of water it can store or transmit. Groundwater flow and storage occur primarily in secondary openings such as joints, cracks and fissures. The thickness of the weathered layer, where more significant porosity can develop, is typically limited to 1-3meters, particularly in low-lying topographic areas. The groundwater in these shallow zones is under unconfined (or water table) conditions, meaning it is directly connected to the surface and not confined by impermeable layers.
- ❖ The storm water discharge coming out of quarries and dump through a network of garland drains is expected to contain solid particles. These solid particles shall be removed by settling in the settling pond before being used for dust suppression and

plantation. Hence, there shall be no change in drainage system due to this mining project in buffer zone.

- ❖ Domestic sewage from site office will be discharged in MAK Anaerobic bacteria digestion bio-septic tank. The treated water will be utilized for watering and maintaining the green belt.
- ❖ Groundwater development efforts would need to focus on the weathered and fractured zones near the surface in the buffer zone.
- ❖ Periodic (every 6 month once) analysis of ground water level and quality from the open well DW7 and bore well BW3 as shown in Figure 3.10 to 3.13 to find the change due to quarrying.
- ❖ The average annual rainfall of the project area is 607.500mm and the runoff coefficient factors have been taken as per guidelines of Manual on Norms and Standards for Environmental Clearances by MoEF& CC, Govt. of India.

The total annual runoff can be calculated as:

$$\text{Runoff} = \text{Rainfall} \times \text{Catchment Area} \times \text{Runoff Coefficient}$$

Annual Rainfall = 607.5mm

Total Project Area = 2000sq.m

Coefficient of Run off for Rooftop (Inclined) = 0.90

Coefficient of Run off for Rooftop (Flat) = 0.80

Coefficient of Run off for Road/ Paved Area = 0.70

Coefficient of Run off for Open Area = 0.25

Coefficient of Run off for Greenbelt Area = 0.15
Rain water can effectively be collected from Maximum size of void in 5th year of mining = 14700sq.m.

Top soil dump area = 43680sq.m

Road & Infrastructure = 300sq.m

Runoff from Void pit area = $14700\text{sq.m} \times 0.607\text{m} \times 0.25 = 2230\text{m}^3$

Runoff from Top soil dump area = $0.607\text{m} \times 43680\text{sq. m} \times 0.25 = 6628\text{m}^3$

Runoff from Road & Infrastructure = $0.607\text{m} \times 300\text{sq. m} \times 0.70 = 127.47\text{m}^3$

Total Runoff from Project Area = 6755.47m^3

The annual runoff generated in the project site is 6755.47m^3 . By considering the loss of 20% due to evaporation, spillage and wastage the effective runoff that can be harvested inside the project area is **6628m^3** .

Daily water requirement (except drinking purpose) is 8m^3 . So, with 270 working days the water requirement will be $= 8\text{m}^3 \times 270 = 2160\text{m}^3$

The surface runoff being generated from the project area will be channelized to rain water harvesting pond of $2\text{m} \times 2\text{m} \times 2\text{m}$ through network of drainage system $1\text{m} \times 1\text{m}$. The bottom of the ponds is naked and natural seepage from the bottom will recharge the ground water regime. Hence the storage pond will act as recharging structure. Even though rain water will be sufficient to fulfil the daily requirement of water but in the initial years of mining when the mining pit is smaller in size or in the year with deficit rainfall surface water will be collected with due permission.

4.4 AIR ENVIRONMENT

Anticipated Impact

The main cause of air pollution in open-cast mining is the generation of airborne particulate matter (dust) from various mining activities including drilling, blasting, excavation, loading/unloading, vehicle movement on haul roads and the dumps. These activities release large quantities of fugitive dust which are then carried by the wind and can contribute to respiratory health problems for nearby communities and miners. The source of pollution is given in table below.

Activities	Air pollutants
Drilling	PM_{10} , $\text{PM}_{2.5}$
Blasting	PM_{10} , $\text{PM}_{2.5}$, SO_x , NO_x
Loading & unloading	PM_{10} , $\text{PM}_{2.5}$
Haul road	PM_{10} , $\text{PM}_{2.5}$
Transportation	PM_{10} , $\text{PM}_{2.5}$, SO_x , NO_x , CO
Waste/Top soil handling	PM_{10} , $\text{PM}_{2.5}$

The air dispersion modelling study was conducted using the AERMOD Cloud remote version for assessment of incremental Ground level concentration (GLC) for the proposed production. Area source model taken into consideration taking into consideration of the conceptual quarry area and dump area. Further line source model was taken into consideration for transportation of material through haul road.

Model Setup is given in Table below

Parameter	Details
Model Name	Aermod
Model Type	Steady state Gaussian plume air dispersion model

Topography	Plain terrain
Average Time	24 hours
Source Type	Area source
Boundary limit	5km X 5km
Surface Meteorological Data	Site specific data processed by AERMET
Receptor Height	0
Anemometer height	10m

The air pollution modelling correctly focuses on particulate matter as the key pollutant for a mining project given that dust from mining operations and transportation is the primary source of air pollution in such industries rather than SO_x or NO_x which are typically associated with vehicular emissions. The incremental Ground Level Concentrations (GLCs) predicted are specifically for particulate matter reflecting the anticipated contribution of the proposed mining project to local air quality.

Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formula developed by Chaulya et al.,2001 and Jyothi Prabha, Gurdeep Singh and I.N.Sinha, 2003 “Emission Factor Equations for Haul roads: The Indian Perspective”, Indian Journal of Air Pollution Control Vol. VI No. I March pp 37- 43. The equations used for fugitive emission estimation have been given in Table 4.2.

Table 4.2 Empirical Formula for Emission Rate from Overall Mine

	Pollutant	Source Type	Empirical Equation	Parameters
Overall Mine	SPM	Area	$E = [u^{0.4} a^{0.2} \{9.7 + 0.01p + b/(4+0.3b)\}]$	u = Wind speed(m/s). p = Mineral production (Mt/yr). b = Overburden handling (Mm ³ /yr). a = Lease area(km ²). E = Emission rate(g/s).
Transportation through roads	Fugitive dust	Line	$E = [\{(100-m)/m\}^{0.8} \{s/(100-s)\}^{0.1} u^{0.3} \{2663 + 0.1(v+fc)\} 10^{-6}]$	E = Emission Rate (g/sec/m) m = Moisture Content of the road = 10% s = Silt Content of the Road = 10% u = Wind Speed v = Average Vehicle Speed f = frequency of Vehicle movement in number per hour

				c = Capacity of the dumper in tons = 12 ton

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. It is important to note that PM₁₀ emission rate is derived from the SPM estimation in the background that PM₁₀ constitutes 52% of SPM emission. The PM_{2.5}, PM₁₀ emission results have been given in Table 4.3.

Table 4.3 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}	0.178	20000	8.984E-06
Overall Mine	PM ₁₀	0.356	20000	1.8E-005

4.4.1 Modelling of Incremental Concentration

The post project resultant concentrations of PM₁₀, PM_{2.5} is given in Tables 4.4 - 4.5.

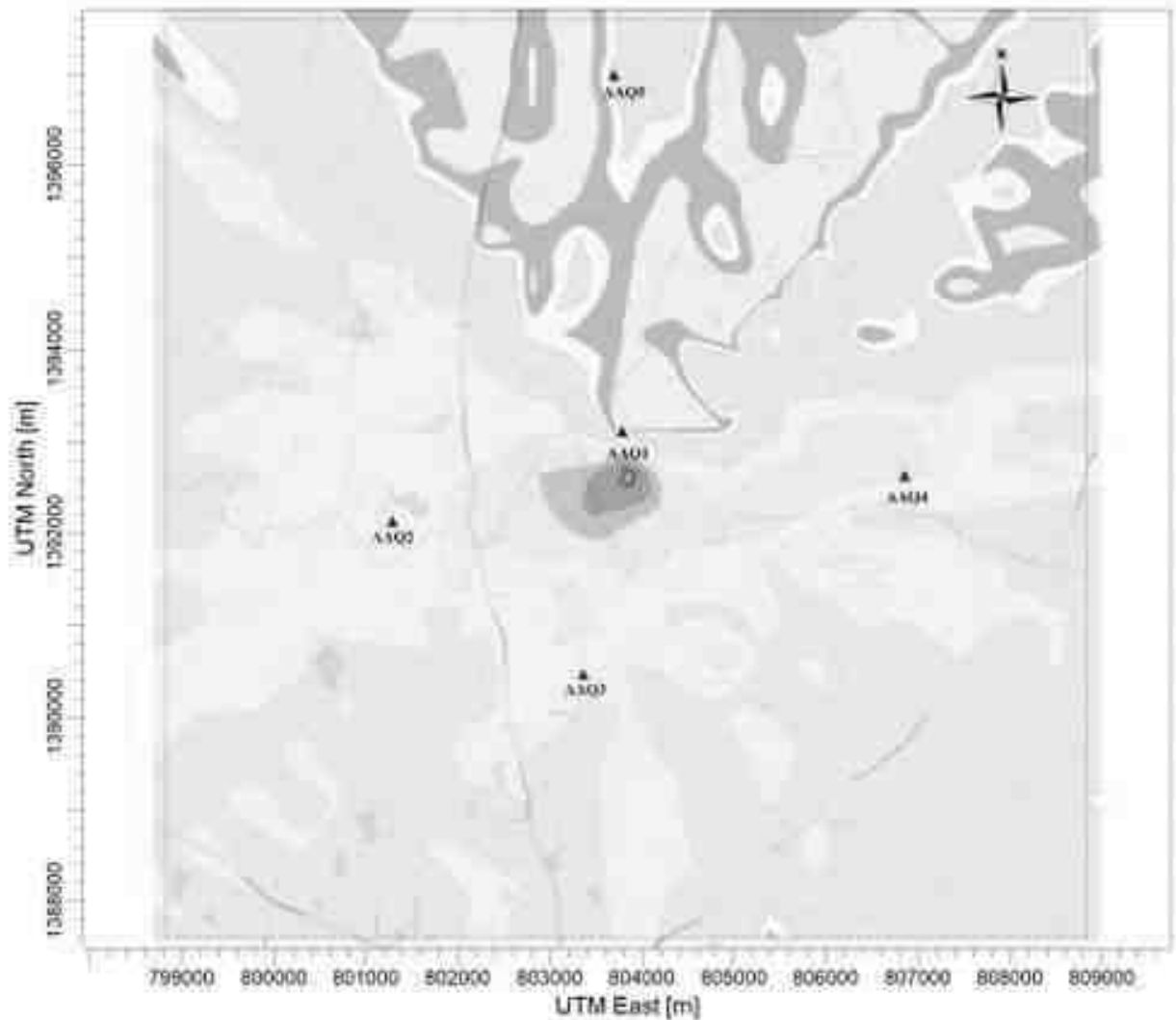
Table 4.4 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	PM _{2.5} concentrations(µg/m ³)				Comparison against air quality standard (60 µg/m ³)	Magnitude of change (%)	Limit
		Direction	Baseline	Predicted	Total			
AAQ1	0.43	N	23.78	6.9	30.68	Below standard	29.0	60
AAQ2	2.50	W	27.00	1	28		3.7	60
AAQ3	2.11	S	26.87	1	27.87		3.7	60
AAQ4	2.94	E	25.21	1	26.21		4.0	60
AAQ5	4.30	N	21.26	0.5	21.76		2.4	60

Table 4.5 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area (km)	PM ₁₀ concentrations(µg/m ³)				Comparison against air quality standard (100 µg/m ³)	Magnitude of change (%)	Limit
		Direction	Baseline	Predicted	Total			
AAQ1	0.43	N	44.82	14.7	59.52	Below standard	32.8	100
AAQ2	2.50	W	48.34	3	51.34		6.2	100
AAQ3	2.11	S	49.07	3	52.07		6.1	100
AAQ4	2.94	E	43.84	5	48.84		11.4	100
AAQ5	4.30	N	44.44	1	45.44		2.3	100

PROJECT TITLE:
Natural Stones Pm10



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL
Max: 14.7 [ug/m³] at (803837.73, 1392653.47)

ug/m³

0.5 0.8 1.0 3.0 5.0 8.0 10.0 14.7		
COMMENTS:	SOURCES: 1	COMPANY NAME:
	RECEPTORS: 5	MODELER:
OUTPUT TYPE: Concentration	SCALE: 0  2 km	1:74,302
MAX: 14.7 ug/m³	DATE: 12/22/2025	PROJECT NO.:

AIRMOD3 View - Larko Environmental Software

C:\Users\Design\Public\Natural Stones\Natural Stones.mxd

Figure 4.1 Predicted Incremental Concentration of PM10

PROJECT TITLE:
Natural Stones Pm2.5

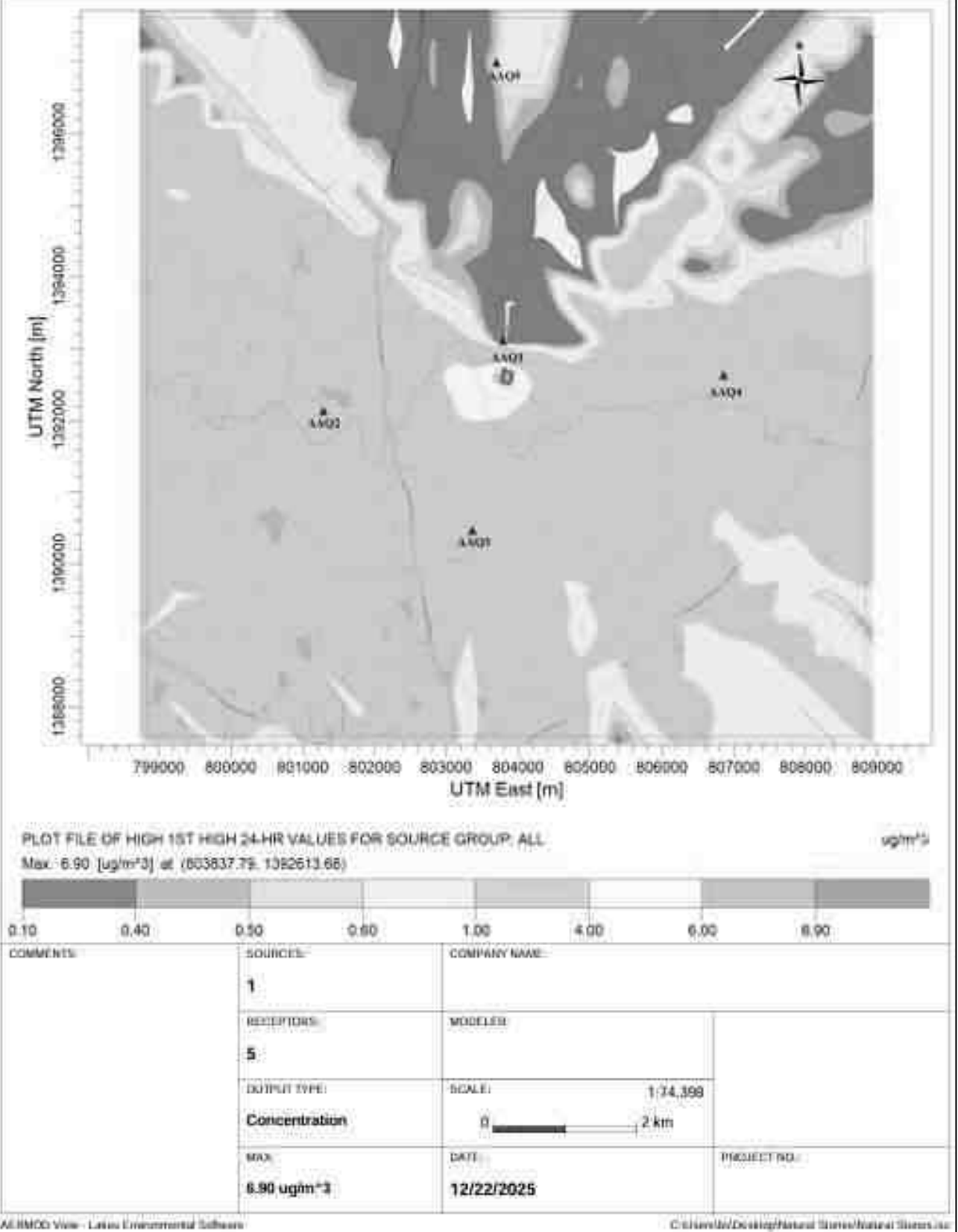
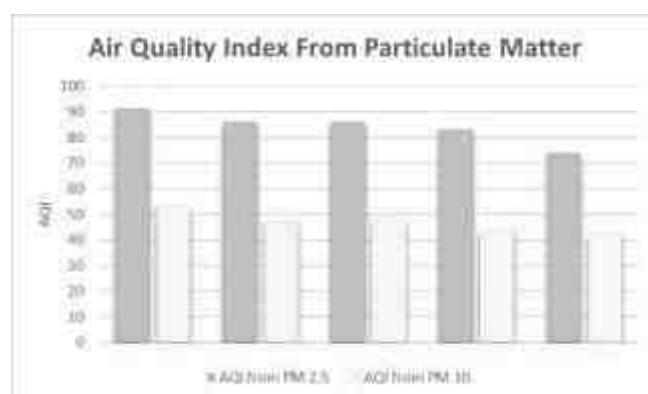


Figure 4.2 Predicted Incremental Concentration of PM2.5

The Air Quality index for the baseline and predicted values of PM_{2.5} and PM₁₀ are given in table below.

Station ID	Distance to core area (km)	Direction	PM _{2.5} (µg/m ³)		AQI for PM _{2.5}	PM ₁₀ (µg/m ³)		AQI for PM ₁₀
			Baseline Conc.	Total (Baseline + Predicted GLC)		Baseline Conc.	Total (Baseline + Predicted GLC)	
AAQ1	0.43	N	23.78	30.68	91	44.82	59.52	53
AAQ2	2.50	W	27.00	28	86	48.34	51.34	47
AAQ3	2.11	S	26.87	27.87	86	49.07	52.07	48
AAQ4	2.94	E	25.21	26.21	83	43.84	48.84	44
AAQ5	4.30	N	21.26	21.76	74	44.44	45.44	42

<https://www.airnow.gov/aqi/aqi-calculator-concentration/>



In the present study American Meteorological Society and the United States Environmental Protection Agency Dispersion Model (AERMOD) air quality model was run for pre monsoon season under maximum atmospheric temperature conditions. The AERMOD has been run for PM₁₀ and PM_{2.5} distribution with 24-Hr maximum concentration and concentration contours were obtained as given in Figure 4.1 and 4.2. From these Isopleths plots it is observed that the highest pollutants concentrations predicted by AERMOD was near the major source in the core area and a maximum of 59µg/m³ of PM₁₀ and 30µg/m³ of PM_{2.5} were found to be below the prescribed NAAQS near the source. The AQI vales of PM₁₀ shows moderate and PM_{2.5} shows good in all the locations. By adopting suitable mitigation measures the pollutant levels in the atmosphere can be controlled further.

Mitigation Measures

There will be transportation of rough stone from the area to the crusher which is located at a distance of about 500m within the cluster boundary. Considering average annual

production of 80767tons per annum i.e. 299tons per day of stone there will be movement of around 18 trucks per day for transportation of the stone. This will create additional traffic load to the road and also additional emission due to vehicular movement. The mitigation measures to minimize the air pollution are given in Table 4.6 below.

Table 4.6 Proposed Mitigation Measures for Air pollution

Potential Sources of air pollution	Magnitude of air pollution	Proposed Pollution Control Measure
Excavation	Emission of Particulate Matter	Provide Personal Protective Equipment's for workers
Drilling and Blasting	Emission of Particulate Matter and emission gaseous	Wet drilling and controlled blasting will adopt. Optimized blast parameters and design were given in chapter 2 should follow for blasting. Safety shelter will construct within the lease area. Provide PPEs for workers.
Loading of material on dumper	Air emission	Water sprinkler with wide angle nozzle of angle 150° will be selected for water sprinkling in the dust prone area.
Transportation	High Dust generation	Regular grading of haul roads will be practiced. Planting of trees all along mine haul roads outside the lease. Water sprinklers will install along the haul road. Vehicle without PUC certificate will not be allowed. Cover tarpaulin to the tipper during transportation.
Storage of Topsoil	High Dust generation	High dust generation due to wind from the topsoil storage area. This are will be installed with permanent water sprinkler. Plantation will be provided in the dump slope.
Free silica	Crystalline silica	Crystalline silica is SiO ₂ in a specific structural form distinct from the pure non- combined SiO ₂ known as free silica. Crystalline silica particles in these environments can be very small less than 4µm (PM ₄). There are no generally accepted methods of monitoring in ambient PM ₄ air.

4.5 NOISE ENVIRONMENT

According to DGMS Technical Circular No. 18 of 1975 and No.5 of 1990 on “Protection of Workers against noise” it is brought to the knowledge of all concerned that Noise is emerging as an important and challenging health hazard for mine workers. Source data has been computed taking into account of all the machinery and activities used in the open cast mining process had listed in Table 4.7.

Table 4.7 Activity and Noise Produced by Machinery in open cast mines

S. No.	Machinery / activity	Distance of measurement	Noise level dB(A)	
			Idling	Fully accelerated
1.	Jack hammer	1	80	97
2.	Compressor	1	-	96
3.	Bulldozer	2	84	100
4.	Tipper	2	75	92
5.	Drill	1	85	90

The permissible noise exposure levels in Indian mines are based on OSHA standards adapted and enforced by the Indian government through the Factories Act and CPCB norms are given in Table 4.9 below.

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)
Harish Core	500	47.3	30.0	47.4
PUP School	2520	47.3	15.9	47.3
Alenatham Government School	2040	46.5	17.8	46.5
Govt. High School, Doddabelur	2940	47.8	14.6	47.8
Nearby Onnupalli Village	4190	47.3	11.5	47.3

Table 4.9 Permissible noise levels adopted by CPCB, 2000 and OSHA

Maximum Exposure Noise level Time per Working Day in hours	Noise level	
	CPCB, 2000 in dB (International Standard Organization)	OSHA code in dB (Occupational Safety and Health Act)
8	90	90
4	93	95
2	96	100
1	99	105
0.5	102	110
0.25	105	115

A noise level of 90 dB causes disruption, leading to annoyance, cognitive errors, and temporary hearing loss, while 85 dB is considered an upper comfort level with potential for cognitive decrements in tasks requiring decision-making with hearing loss possible at 300-1200 Hz frequencies in that range. Prolonged exposure to sounds at or above 85 dB can damage hearing over time. The mitigation measures to minimize the noise pollution are given below

Impact	Mitigation Measures
Noise impact due to mining activities. Noise impact due to vehicular movement. Auditory impact (hearing impairment resulting from excessive noise exposure)	❖ Diesel powered machineries which are major source of noise in open cast environment will be properly maintained as per maintenance schedule to prevent undesirable noise. ❖ Attention shall be paid towards rigorous maintenance of silencers of diesel engines. ❖ Static diesel engines shall be housed as far as possible (not made of sheet metals or surrounded by baffles). If possible, they will be placed on vibration isolators. ❖ Drill machine operators, blasters and dumper drivers will be issued earplugs and earmuffs. Duty hours of operators of noisy machinery will be regulated to keep their noise exposure levels within limits. ❖ Provision of sound proof cabins for the workers deployed on machines producing higher level of sound like dumpers, shovels etc. ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise ❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise ❖ Silencers / mufflers will be installed in all machineries ❖ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise ❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working

	near HEMM and their use will be ensured though training and awareness ❖ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

4.5.1 Ground Vibrations due to blasting

The major source of ground vibration from the quarry is blasting. The ground vibrations due to the blasting in the quarry are calculated using 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 4.10 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	10.94	320	0.333	19	0.06	129

Table 4.11 Predicted PPV values due to Blasting at 100-500m 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	10.94	100	2.139	19	0.23	141
		200	0.706		0.10	134
		300	0.369		0.06	130
		400	0.233		0.04	127
		500	0.163		0.03	125

The PPV results shows that the ground vibration is well below the permissible limits set by DGMS in the circular 7, 1997.

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
- ❖ 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.
- ❖ Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
- ❖ The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- ❖ The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.
- ❖ 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.

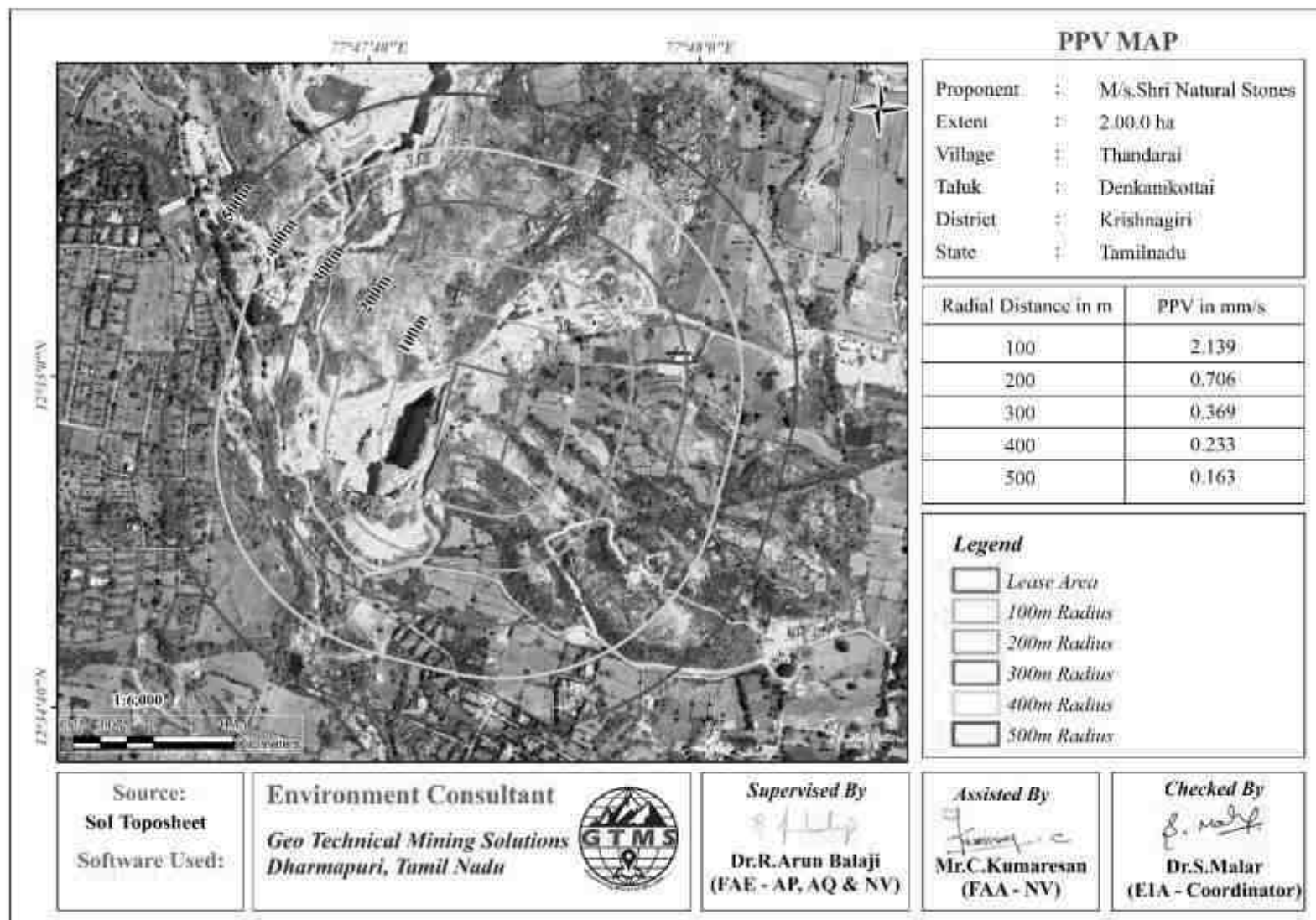


Figure 4.3 100-500m PPV Map

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 *Impact on Ecology and Biodiversity*

- ❖ During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- ❖ The Number of plants in the mining lease area is given in Chapter III Table 3.21 which vegetation in the lease area may be affected during mining.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 498kg per day, 134448kg per year and 793714kg over ten years, as provided in Table 4.9.

Table 4.12 Carbon Released During Ten Years of Rough Stone and Gravel Production

	Per day	Per year	Per ten years
Fuel consumption of excavator	34	23496	234960
Fuel consumption of tipper	362	97900	979000
Total fuel consumption in Liters	10	2700	27000
CO ₂ emission in kg	498	134448	793714
Fuel consumption of compressor	10	2700	13500

4.6.2 *Mitigation Measures on Flora*

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ 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.
- ❖ Existing roads will be used and new roads will not be constructed to reduce impact on flora.
- ❖ Green belt of adequate width will develop around the project site. Dust catching species like *Alstonia scholaris*, *Bombax ceiba*, *Terminalia arjuna*, *Cassia fistula*, *Bombax ceiba*, *Azadirachta indica*, *Nyctanthes arbor-tristis*, *Psidium guajava*, *Tectona grandis* etc will be planted in green belt.
- ❖ 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

23976kg of carbon per year. Therefore, we recommend 500 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 (Table 4.15) will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 21661kg of the total carbon as provided in Table 4.13.

Table 4.13 CO₂ Sequestration

CO ₂ sequestration in kg	89	23976	119880
Remaining CO ₂ not sequestered in kg	1925	520252	2601263
Trees required for environmental compensation	21661		
Area required for environmental compensation in hectares	43		

Table 4.14 Recommended Species for Greenbelt Development Plan

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

Table 4.15 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	5400
Total	1000	800	9000

4.6.3. *Anticipated Impact on Fauna*

- ❖ Direct impact is anticipated on fauna of core zone
- ❖ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use
- ❖ Denkanikottai R.F located on 7.5km South of the mine lease area. There is no affected that birds will be by mining activities.

4.6.3. *Mitigation Measures on Fauna*

- ❖ Fencing will be constructed around the proposed mine lease area to restrict the entry of stray animals
- ❖ The workers shall be trained not to harm any wildlife near the project site
- ❖ The quarry operation using in NONAL blasting Method Technic so controlled in sound and vibration.

4.6.4 *Impact on agriculture and horticulture crops in 1km Radius*

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

4.6.5 *Mitigation Measures on agriculture and horticulture crops.*

- ❖ The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases.
- ❖ A green belt will be created in 7.5m & 10m safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ❖ Transportation of material will be carried out during day time and material will be covered with tarpaulin.

4.7 SOCIO ECONOMIC ENVIRONMENT

Anticipated Impact from Proposed and Existing Projects

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

Common Mitigation Measures for Proposed Project

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

4.8 OCCUPATIONAL HEALTH AND SAFETY

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

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

4.8.1 Respiratory Hazards

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

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

4.8.2 Noise

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

- ❖ No employee will be exposed to a noise level greater than 85dB(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 85dB(A) the peak sound levels reach 140dB(C) or the average maximum sound level reaches 110dB(A)
- ❖ Ear muffs provided will be capable of reducing sound levels at the ear to at least 85dB(A)
- ❖ Periodic medical hearing checks will be performed on workers exposed to high noise levels.

4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards

- ❖ Specific personnel training on work-site safety management will be taken up;
- ❖ Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- ❖ Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up.

4.8.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests: general physical tests, audiometric tests, full chest, X-ray, Lung function tests, spirometry tests, periodic medical examination- yearly, lung function test- yearly, those who are exposed to dust, and eye test. Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

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:

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.,

Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharges likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring

should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

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 General

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.

The quarrying operation like drilling, blasting, excavation, loading & transportation are being carried out. The site has been selected based on geological investigation and exploration as below:

- ❖ Transportation facility for materials & manpower.
- ❖ Overall impact on environment and mitigation feasibility.
- ❖ Socio- economic background.

5.1 ANALYSIS OF ALTERNATIVE SITE

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

5.2 FACTORS BEHIND THE SELECTION OF PROJECT SITE

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

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

5.3 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.

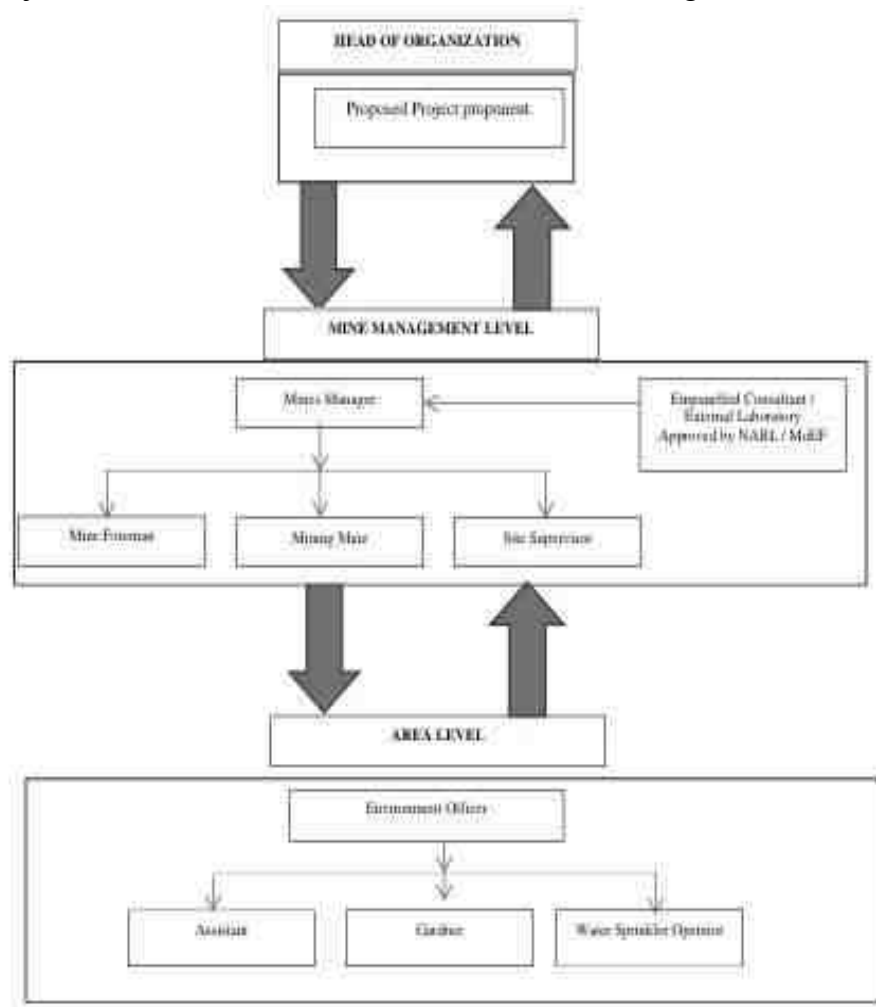


Figure 6.1 Proposed environmental monitoring chart

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 capital cost for Environmental Monitoring Programme for **M/s. Shri Natural Stones**, Rough Stone Quarry is Rs. 2,95,000 for conducting Air Quality, Meteorology, Water Quality, Hydrology, Soil Quality, Noise Quality Vibration Study, Greenbelt.

Table 6.3 Environment Monitoring Budget

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

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

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

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

Application to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was made and the public opinions on the proposed project will be updated in the final EIA/EMP report.

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The methodology for the risk assessment is based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project. Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in Table 7.1.

Table 7.1 Risk Assessment & Control Measures for Proposed Project

S. No.	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy	Improper handling and unsafe working practice	✓ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations.

	mining machineries.		✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited. ✓ Fire-fighting and first-aid provisions in the mine office complex and mining area. ✓ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ✓ Working of quarry, as per approved plans and regularly updating the mine plans. ✓ Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut. ✓ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager. ✓ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	Improper and unsafe practices; Due to high pressure of compressed air, hoses may burst; Drill Rod may break;	✓ Safe operating procedure established for drilling (SOP) will be strictly followed. ✓ Only trained operators will be deployed. ✓ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ✓ Drilling shall not be carried on simultaneously on the benches at places directly one above the other. ✓ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ✓ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition.

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

6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	✓ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m.

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

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

- ❖ Rescue and medical treatment of casualties;
- ❖ Safeguard other people;
- ❖ Minimize damage to property and the environment;
- ❖ Initially contain and ultimately bring the incident under control;
- ❖ Secure the safe rehabilitation of affected area; and
- ❖ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.
- ❖ In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations. Structure of the team has been shown in Figure 7.1.

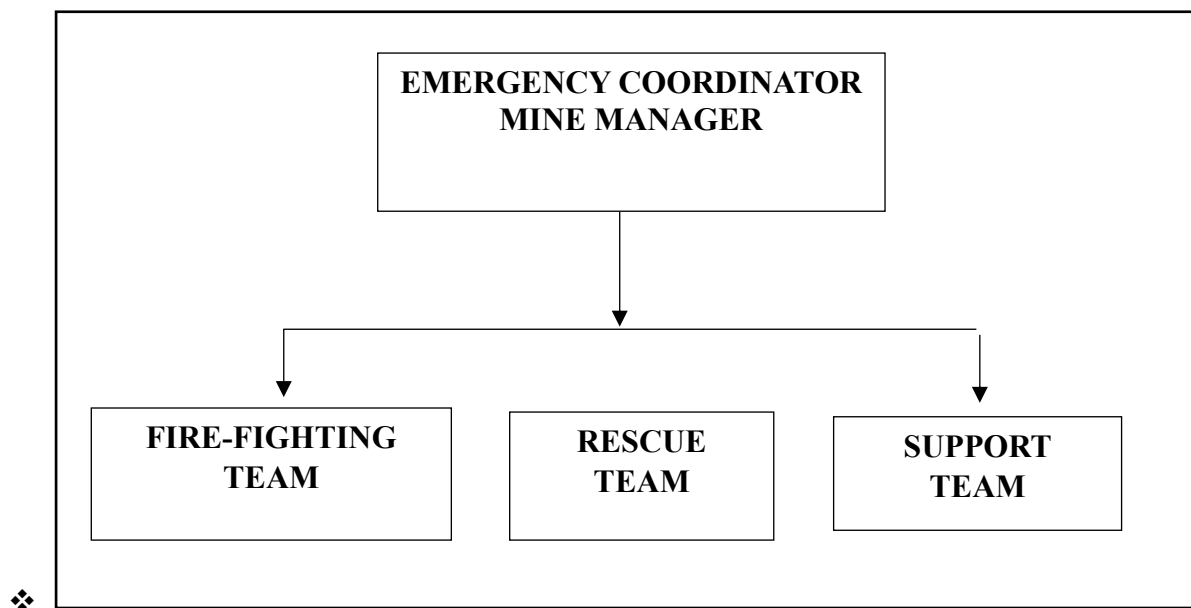


Figure 7.1 Disaster management team layout for proposed project

7.3.1 Emergency Control Procedure

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

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

7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the projects within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, the proposed project, known as P1, P2, P3 & E1 are taken into consideration details of have been given in Table 7.2 - 7.5.

Table 7.2 Salient Features of P1

Name of the Quarry	M/s. Shri Natural Stones
Type of Land	Govt Poramboke Land
Extent	2.00.0ha
S.F. No	738 (Part- 2)
Toposheet No	57 H/14
Highest Elevation	880m AMSL
Latitude	12°34'00.7992"N to 12°34'59.7873"N
Longitude	77°47'43.9868"E to 77°47'49.3133"E
Proposed depth as per ToR for ten years	51m BGL
Ultimate depth for ten years	51m BGL

Geological Resources	Rough stone (m ³) & Tons	Topsoil (m ³) & Tons
	819310 & 2253103	20000 & 40000
Mineable Reserves	293695 & 807661	14700 & 29400
Proposed production for 10 years	293695 & 807661	14700 & 29400
Method of Mining	Open cast mechanized mining method	
Topography	Flat Terrain	
Machinery proposed	Jack hammer	2
	Excavator	1
	Compressor	2
	Tipper	6
Proposed Manpower Deployment	18	
Project Cost	Rs. 8,55,27,057/-	
Proposed Water Requirement	3.5 KLD	

Table 7.3 Salient Features of the Cluster P2

Name of the Quarry	Mr. M. Jeevankumar	
Type of Land	Govt Poramboke Land	
Extent	1.50.0ha	
S.F.No	738 (Part- 3)	
Toposheet No	57 H/14	
Location of Project Site	12°34'51.06"N to 12°34'55.70"N 77°47'42.81"E to 77°47'47.99"E	
Highest Elevation	891m AMSL	
Ultimate depth of Mining	40m	
Geological Resources	Rough Stone in m ³ & Tons	
	661476 & 1819059	
Mineable Reserves	211456 & 581504	
Proposed reserves for five years	211456 & 581504	
Method of Mining	Open- Cast Mechanized mining	
Topography	Elevated Topography	
Machinery proposed	Jack Hammer	7
	Compressor	1
	Tipper	4
	Excavator	1
Proposed Manpower Deployment	19 Nos	
Project Cost	Rs. 5,14,70,000/-	
Proposed Water Requirement	3.0 KLD	

Table 7.4 Salient Features of the Cluster P3

Name of the Quarry	S. M. Harish	
Type of Land	Govt Poramboke Land	
Extent	2.00.0ha	
S.F.No	755 (Part)	
Toposheet No	57- H/14	

Location of Project Site	12°35'17.14"N to 12°35'14.55"N 77°47'45.28"E to 77°47'40.35"E	
Highest Elevation	889m AMSL	
Ultimate depth of Mining	46m (9m AGL + 37m BGL)	
Geological Resources	Rough Stone in m ³ & Tons	
	953364 & 2621751	
Mineable Reserves	552891 & 1520450	
Proposed reserves for 10 years	552891 & 1520450	
Method of Mining	Open- Cast Mechanized mining	
Topography	Elevated Topography	
Machinery proposed	Jack Hammer	5
	Compressor	1
	Tipper	3
	Excavator	1
Proposed Manpower Deployment	18 Nos	
Project Cost	Rs.1,86,45,000/-	
Proposed Water Requirement	3.0 KLD	

Table 7.5 Salient Features of the Cluster E1

Name of the Quarry	H.S. Srinath	
Type of Land	Govt Poramboke Land	
Extent	4.00.0ha	
S.F.No	738/1 (Part)	
Toposheet No	57- H/14	
Location of Project Site	12°34'54.41"N to 12°35'01.13"N 77°47'36.67" E to 77°47'47.70"E	
Highest Elevation	889m AMSL	
Ultimate depth of Mining	46m (9m AGL + 37m BGL)	
Geological Resources	Rough Stone in m ³ & Tons	
	1921739 & 5284782	
Mineable Reserves	696829 & 1916279	
Proposed reserves for 10 years	696829 & 1916279	
Method of Mining	Open- Cast Mechanized mining	
Topography	Elevated Topography	
Machinery proposed	Jack Hammer	6
	Compressor	2
	Tipper	7
	Excavator	2
Proposed Manpower Deployment	23 Nos	
Project Cost	Rs.1,80,00,000/-	
Proposed Water Requirement	4.0 KLD	

7.4.1 Air Environment

As the production of rough stone & topsoil plays a vital role in affecting the air environment. The data on the cumulative production resulting from the proposed project have been given in Tables 7.6 and 7.7.

Table 7.6 Cumulative Production Load of Rough Stone

Proposed Production Details				
Quarry	10 Years in (m³ & Ts)	Per Year in (m³ & Ts)	Per Day in (m³ & Ts)	Number of Lorry Load Per Day
P1	293695 & 807661	29369 & 80766	108 & 299	18
P2	211456 & 581504	21145 & 58150	79 & 215	13
P3	552891 & 1520450	55289 & 152045	204 & 561	34
E1	696829 & 1916279	69682 & 191627	258 & 709	43
Grand Total	1754876 & 4825909	175486 & 482589	649 & 1784	108

Table 7.7 Cumulative Production Load of Topsoil

Proposed Production Details				
Quarry	1 Years in (m³ & Ts)	Per Year in (m³ & Ts)	Per Day in (m³ & Ts)	Number of Lorry Load Per Day
P1	14700 & 29400	14700 & 29400	54 & 108	9
P2	-	-	-	-
P3	19374 & 38748	19374 & 38748	72 & 144	12
E1	--	--	--	--
Grand Total	34074 & 68148	34074 & 68148	126 & 252	21

The cumulative study shows that the overall production of rough stone from the quarry is 649m³ or 1784 Ts per day with a capacity of 108 trips of rough stone per day and topsoil from the quarry is 126m³ or 252Ts per day with a capacity of 21 trips of topsoil per day.

7.4.1.1 Cumulative Impact of Air Pollutants

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

Table 7.8 Cumulative Impact Results from the proposed project

Pollutants	Baseline Data (µg/m³)	Incremental Values (µg/m³)	Cumulative Value (µg/m³)
		P1	
PM _{2.5}	23.78	6.9	30.68
PM ₁₀	44.82	14.7	59.52

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.7.9 Cumulative Impact of Noise for one Cluster Projects

Table 7: Cumulative Impact of Noise for Site Cluster Projects						
Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	620	SE	47.3	28.1	48.1	55
Habitation Near P2	552	SE		29.1	43.4	
Habitation Near P3	672	NE		27.4	45.7	
Habitation Near E1	676	SE		27.4	45.9	
Cumulative Noise (dB (A))					50.3	

Source: Lab Monitoring Data

The cumulative analysis of noise due to cluster project shows that habitation will receive about 48.1dB(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 from the cluster project have been shown in Table 7.10.

Table 7.10 Cumulative Effect of Ground Vibrations Resulting from cluster Project

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	10.94	620	0.115
P2	11.24	552	0.142
P3	14.76	672	0.129
E1	18.91	676	0.156
Total			0.542

Results from the above indicate that the cumulative PPV value of each habitation is well below the peak particle velocity of 8mm/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 proposed project were calculated and the results have been shown in Table 7.11 the project together will contribute Rs. 20,00,000/-towards CER fund.

Table 7.11 Socio Economic Benefits from the Cluster Project

Location ID	Project Cost	CER Cost
P1	Rs.8,55,27,057 /-	Rs. 5,00,000
P2	Rs.5,14,70,000/-	Rs. 5,00,000
P3	Rs.1,86,45,000/-	Rs. 5,00,000
E1	Rs.1,80,00,000/-	Rs. 5,00,000
Grand Total	Rs. 17,36,42,057	Rs. 20,00,000

Table 7.12 Employment Benefits for Cluster Project

Location ID	Employment
P1	18
P2	19
P3	18
E1	23
Grand Total	78

A total of 78 people will get employment from the cluster project.

7.4.4 Ecological Environment

"Gap Plantation" procedure:

Developing a three-tier green belt of native plant species around industrial peripheries is a vital environmental guideline for mitigating pollution and enhancing ecosystem services. Dig pits of substantial dimensions (1m x 1m x 1m for large trees, half for smaller ones) fill them with a mixture of earth, sand, silt and manure and then water the saplings generously. Care for the first three years involves nutrient supplementation, plant protection, managing water stress and ensuring exposure to normal atmospheric conditions.

The chosen species should be fast-growing, deep-rooted, wind-firm possess a dense and potentially permeable canopy, tolerate air pollution (SO₂, NO₂) and ideally be indigenous.

Additional preferred characteristics include long-lasting foliage, large, sturdy leaves, abundant stomata, rough bark and a general ability to withstand local environmental stresses such as drought or inundation while also contributing positively to the environment through soil improvement, aesthetic appeal and attracting wildlife.

Activities for Maintenance:

- Regular pruning
- Watering

- Weed removal
- Manuring
- The growing plants are cared at least for the first 3 years under favourable condition of climate and irrigation.
- For healthy and vigorous growth adequate nutrient will be supplied
- To avoid water stress condition regular watering will be done.

Table 7.13 Greenbelt Development

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	1000	9000	800	<i>Azadirachta indica,</i> <i>Albizia lebbeck,</i> <i>Delonix regia,</i> <i>Tectona grandis, etc.,</i>
P2	750	6750	600	
P3	1000	9000	800	
E1	2000	18000	1600	
Total	4750	42750	3800	

Cumulative studies show that the proposed project proponent will plant about 4750 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., 3800 trees will survive in this green belt development program.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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

7.5.1 Objective

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

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

Table 7.14 Action Plan to Manage Plastic Waste

S. No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic	Mines Manager

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

Source: Proposed by FAEs and EC

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Thandarai Village, aims to produce 293695m³ or 807661Ts of rough stone and 14700m³ or 29400Ts of Topsoil over a period of 10 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 Thandarai Village, Denkanikottai 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 Thandarai Village. CSR budget is allocated.

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

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

01.05.2018. As per para 6 (II) of the office memorandum, being a green field project & capital investment is ≤ 100 crores, the proposed project shall contribute 5% of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund on the basis of the extent of the project. Therefore, Rs. 5,00,000 is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

Table 8.1 CER Action Plan

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

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

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs. 3,17,19,060** to the state government through various ways, as provided in Table 8.2.

Table 8.2 Project Benefits to the State Government

Particulars	Budget for Rough Stone (Rs.)	Budget for Gravel (Rs.)
CER	5,00,000	
Seigniorage @ Rs.90/m ³ of rough stone / Rs.56/m ³ of gravel	2,64,32,550	-
District Mineral Foundation Tax @ 10% of Seigniorage	26,43,255	-
Green Tax @ 10% of Seigniorage	26,43,255	-
Total	Rs. 3,17,19,060	-

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 **M/s. Shri Natural Stones** will:

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

10.1.1 Description of the Administration and Technical Setup

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

- ❖ Monitoring of the water/ waste water quality, air quality and solid waste generated.

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

10.2 Budgetary Provision for Environmental Management

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

Table 10.1 EMP Budget for Proposed Project

Activities	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	20,000	20,000
	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	8,00,000	50,000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags/ steel mesh/ old tyres/ used conveyor belts	0	5,000
	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 - 6Units	50,000	5,000
	No overloading of trucks/tippers/tractors	Monitoring through weighing machines	0	3,90,000
	Stone carrying trucks will be covered	Monitoring if trucks will be covered by tarpaulin	0	10,000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 7Units	30,000	3,000
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5,000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	40,000
Noise Environment	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50,000	20,000
	Source of noise will be during operation of transportation vehicles, HEMM for	Provision made in Operating Cost	0	0

	this proper maintenance will be done at regular intervals.			
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
Noise Environment	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person (Provision made in Operating Cost)	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50,000	2,000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Bulk density of rock = 2.6 for Rough Stone/Granite; = 2.5 for Limestone; 6 tons of production requires 1 kg pf explosives; Cost of NONEL = Rs. 30 per kg.	0	6,00,000
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	25,000	20,000
		Installation of dust bins	5,000	2,000

	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Mine Closure	1. Progressive Closure Activity - Surface Runoff management	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	20,000	10,000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	4,00,000	20,000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - 200 trees inside lease area & 300 trees outside the 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)	1,60,000	24,000
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	60,000	6,000
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	64,000	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budget and not necessarily implemented in the Project Site	0	0
Implementation of EC, Mining	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10,000	1,000

Plan & DGMS Condition	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50,000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) – 18 Employees	72,000	18,000
	Health check-up for workers will be provisioned	IME & PME Health check-up @ Rs. 1000/- per employee	0	18,000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/- for 2 kits	0	4,000
	Slope stability action plan	Slope stability action plan when depth beyond 30m BGL	2,00,000	0
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10,000	2,000
	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	1,00,000	20,000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30,000	5,000
	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	7,80,000
Conservation Measures	-	-	-	-
TOTAL			Rs. 21.56 Lakhs	Rs. 21.30 Lakhs

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

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year	VIth Year	VIIth Year
21.30	22.36	23.47	24.64	25.87	27.16	28.51

VIIIth Year	IXth Year	Xth Year	Total Recurring Cost	Total EMP Cost
29.93	31.42	32.99	Rs. 267.65 Lakhs	(Rs. 21.56 L + Rs. 267.65 L) = Rs. 289.21 Lakhs

In order to implement the environmental protection measures an amount of **Rs. 21.56Lakhs** as capital cost and recurring cost as **Rs. 267.65Lakhs** as recurring cost/ annum is proposed considering present market price for the proposed project. After the adjustment of 5% inflation per year the overall EMP cost for 10 years will be **Rs. 289.21Lakhs** as shown in Table 10.2.

10.3 CONCLUSION

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

CHAPTER XI

SUMMARY AND CONCLUSION

11.1 INTRODUCTION

The proposed rough stone mining project (P1) falls within the cluster of 500m radius with the total extent of 9.50.0ha and it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No. 738 (Part- 2) over the extent of 2.00.0ha is situated in the cluster falling in Thandarai Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu. The quarries involved in the calculation of cluster extent are three proposed and one existing quarries.

11.2 PROJECT DESCRIPTION

- The proposed project area is located between Latitudes from 12°34'00.7992"N to 12°34'59.7873"N and Longitudes from 77°47'43.9868"E to 77°47'49.3133"E in Thandarai Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu.
- The mining plan approved for quarrying 293695m³ & 807661Ts of rough stone and 14700m³ & 29400Ts of Topsoil to the ultimate depth of 51m (16m AGL + 35m BGL) for ten years.
- The quarrying operation is opencast semi mechanized involving drilling, blasting and formation of benches of the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

Baseline data were collected for 5km radius from the proposed area during October to December 2025 as per CPCB guidelines. The data were collected by both the FAE's and NABL accredited and MoEF notified **Green Link Analytical & Research Lab** for the environmental attributes including soil, water, noise, air and by FAEs for ecology and biodiversity, traffic and socio-economy.

11.3.1 Land Environment

Land use pattern of the area of 5km radius was studied using Sentinel II imagery. LULC types and their extent are given in Table 1.

Table.1 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Water bodies	45.74	0.56
2	Plantation	15.79	0.19
3	Crop land	6189.09	75.92
4	Mining/ Industrial area	103.27	1.27
5	Built-up land	1323.62	16.24

6	Bare ground	7.42	0.09
7	Fallow land	466.87	5.73
Total		8151.8	100.0

Source: Sentinel II Satellite Imagery

11.3.2 Soil Environment

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

Physical Characteristics & Chemical Characteristics

1. Soil pH and Electrical Conductivity (EC):

- **pH ranged from 7.0 to 7.75** indicating that the soil is **neutral to slightly alkaline**, which is favourable for most crops.
- **EC value ranged from 47.0 to 164.0 $\mu\text{S}/\text{cm}$** , suggesting low salt concentration and non-saline soil across the sampling area.

2. Physical Properties

- **Bulk Density** values ranged from 0.98 to 1.05kg/cc, which are within the typical range for loamy soils and support good root penetration and aeration.

3. Soil Fertility Status:

- **Total Organic matter** levels ranged from 0.89 to 1.05% by weight, classifying soils as low to moderately fertile in terms of organic matter.
- **Nitrogen (N)** content varied from 96.0 to 210.0kg/ha by mass indicating moderate nitrogen availability.
- **Potassium (K)** ranged from 43.5 to 112.8kg/ha by mass moderate fertility potential in terms of potassium.

4. Base Elements and Cation Ratios:

- **Calcium (Ca)** levels were highest with 2204mg/kg and lowest with 601.0mg/kg.
- **Magnesium (Mg)** ranged from 182.25 to 624.0mg/kg.

Conclusion:

The soils in the study area are generally non-saline, neutral to slightly alkaline, and moderately fertile with low contamination levels. They exhibit good permeability, porosity, and suitable textural classes for agriculture and greenbelt development. The absence of heavy metals confirms that baseline soil conditions are unpolluted and safe for reclamation and vegetation growth.

11.3.3 Water Environment

Sanathkumar Nadhi and Thandarai lake is the prominent surface water resources present in the study area. This lake was ephemeral in nature which convey water only after rainfall events. The surface water sample known as SW1 were collected from the Thandarai lake (2.07km-SW) and SW2 were collected from the Sanathkumar Nadhi (1.98km- SW) to assess the baseline water quality as shown in Table 3.8 and Figure 3.10.

Physical Parameters:

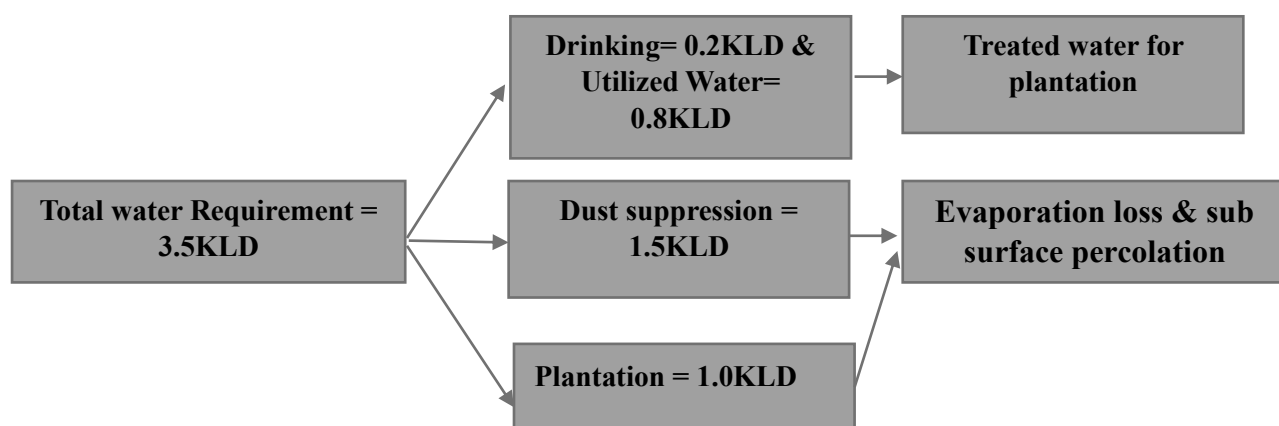
- The **pH** value ranges from 7.24 to 7.85mg/L. The World Health Organization (WHO) and the Bureau of Indian Standards (BIS) recommend a pH range of 6.5 to 8.5 for drinking water and the values are within the acceptable limits.
- **Turbidity** is measured by a nephelometric turbidimeter. NTU is the current standard for measure the intensity of scattered light caused by these particles rather than the amount of light transmitted through the sample. The **turbidity** value is less than 1 NTU in open well and bore well water. In surface water it is 5NTU.
- The **TDS levels** ranged from 670 to 1070mg/L. In bore well water the TDS is higher than the WHO recommendation of 500mg/l for drinking water. High TDS levels can affect the taste of water potentially making it salty or bitter. In the long-term excessive TDS can irritate the stomach and according to some health sources may lead to kidney stones and cardiac issues.

Chemical Parameters:

- The **calcium** levels range from 76 to 112.2 mg/L which is within the permissible limit of 200 mg/L but slightly above the acceptable limit of 75 mg/L. High calcium levels can cause scaling in domestic equipment, reduced detergent efficiency and potential health issues like constipation, gas and bloating.
- The **magnesium** levels range from 12.16 to 94.8 mg/L which is within both the acceptable and permissible limits. However, elevated magnesium levels can cause diarrhea and vomiting in children.
- The **chloride** levels range from 50 to 190 mg/L which is within the acceptable and permissible limits of 250 mg/L and 1000 mg/L respectively. Chloride levels exceeding permissible limits can cause a bitter taste in the water and contribute to corrosion.
- The **total alkalinity** levels ranging from 242 to 390 mg/L are slightly above the acceptable limit of 200 mg/L but within the permissible limit of 600 mg/L. Excessive alkalinity can impart a soda taste to the water.

- The **hardness** levels ranging from 320 to 600 mg/L, are within the permissible limit but higher than the acceptable limit. Hardness can lead to corrosion and scaling problems, increased soap consumption and a salty taste.

Inference: The surface water quality is compared with the CPCB Water Quality Criteria against A, B, C, D & E class of water. From the test result it is found that both the water does not fit Class A (Drinking Water Source without conventional treatment but after disinfection). But they can be used for outdoor bathing as it meets the requirements shown for class B water. 3.5KLD (3.5liters per day) water requirement for drinking, domestic, dust suppression and plantation.



11.3.4 Air Environment

As per the monitoring data PM_{2.5} ranges from 21.48µg/m³ to 30.56µg/m³, PM₁₀ from 42.79µg/m³ to 53.52µg/m³, SO₂ from 8.13µg/m³ to 12.93µg/m³, NOX from 12.21µg/m³ to 19.62g/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 46 causing minimal impact to human health.

11.3.5 Noise Environment

Noise level in core zone was 47.3dB (A) Leq during day time and 44.0dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 46.5 to 47.8dB (A) Leq and during night time from 43.6 to 44.4dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.3.6 Biological Environment

Biological study of the ecosystem is essential to understand the impact of rough stone quarry on existing flora and fauna of the study area. Studies on various aspects of ecosystem play an important role in identifying sensitive issues for undertaking appropriate action to

mitigate the impact, if any. A survey was conducted to study the flora and fauna in 10km radius by direct and indirect sightings/ data. Some of the information was gathered from the local habitants. All the collected data were classified to interpret the impact of pollution on the flora and fauna of that region. Survey of the wild plants as well as cultivated crop plants was made, and all the available information was recorded.

Flora Composition in Core Zone

The core zone presents in tree, shrubs, herbs and grasses. Taxonomically total of 17 species belonging to 9 families 45 Plant have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were Herbs 3 followed by Trees 3 Shrubs 4 and Climbers 2. The result of core zone of flora studies shows that Fabaceae and Solanaceae are the main dominating species in the study area it mentioned in Table 3.24 & 3. 25. No species found as threatened category.

Flora Composition in buffer Zone

There are 144 different species identified in the buffer zone. Among the identified, floral (144) species were 34 trees, 19 herbs & climbers, 21 shrubs, 15 Creepers, and grasses. According to the findings of the buffer zone flora studies, the dominant species in the study area are Fabaceae, Asteraceae, and Euphorbiaceae, as shown in Table 3.26. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Details of flora with the scientific name were mentioned in Table 3.22. A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people.

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, 5 Reptiles, 4 Mammals and 9 Avian. 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 3.27.

Fauna in Buffer Zone

A total of 50 species belonging to 36 families have been recorded from the buffer zone area (Table.3.29). 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.

11.3.7 Socio Economic Environment

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

11.4 Anticipated Environmental Impacts and Mitigation Measures

11.4.1 Land Environment

Anticipated Impact

- ✚ Change in land use and land cover and topography of the mine lease area
- ✚ Problems to human habitations due to dust and noise caused by movement of heavy vehicles
- ✚ Soil erosion and sediment deposition in the nearby water bodies during the rainy season
- ✚ Siltation of water course due to wash off from the exposed working area
- ✚ Deterioration of soil quality in the surrounding area due to runoff from the project area
- ✚ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation.

Mitigation Measures

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

11.4.2 Soil Environment

Anticipated Impact

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

Mitigation Measures

- ✚ Run-off diversion– Garland drains will be constructed around the project boundary to prevent surface flows from entering the quarry works areas and will be discharged into

vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.

- ✚ Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- ✚ Retain vegetation— Retain existing or re-plant the vegetation at the site wherever possible.
- ✚ Monitoring and maintenance Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season.

11.4.3 Water Environment

Anticipated Impact

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

Mitigation Measures

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

11.4.4 Air Environment

Anticipated Impact

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

Mitigation Measures

Haul Road and Transportation

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

Green Belt

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

Occupational Health

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

11.4.5 Noise Environment

Anticipated Impact

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

Sources of Noise in Mining:

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

Common Mitigation Measures

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

- ✚ Optimizing blast design to minimize ground noise.
- ✚ Constructing noise barriers or enclosing noisy equipment can help reduce noise propagation.
- ✚ Proper maintenance and operation of mining equipment can help minimize noise generation.
- ✚ Usage of sharp drill bits while drilling which will help in reducing noise
- ✚ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ✚ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ✚ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system
- ✚ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise
- ✚ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise
- ✚ Silencers / mufflers will be installed in all machineries
- ✚ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise

- ✚ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness
- ✚ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

Ground Vibrations

Noise and Vibration:

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

Sources of Noise and Vibration in Mining:

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

Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting
- ❖ Adequate safe distance from blasting will be maintained as per DGMS guidelines
- ❖ Blasting shelter will be provided as per DGMS guidelines
- ❖ Blasting operations will be carried out only during day time
- ❖ The charge per delay will be minimized and preferably a greater number of delays will be used per blasts
- ❖ During blasting, other activities in the immediate vicinity will be temporarily stopped
- ❖ Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast

- ❖ A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed
- ❖ A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public
- ❖ Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire
- ❖ The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- ❖ The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- ❖ Appropriate blasting techniques shall be adopted in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s.
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

11.4.6 Biological Environment

Anticipated Impact

- ❖ During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.
- ❖ Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region. There are no trees in mine lease area.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 498kg per day, 134448kg per year and 793714kg over ten years.

Mitigation Measures

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ 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.

- ❖ Existing roads will be used and new roads will not be constructed to reduce impact on flora.
- ❖ Green belt of adequate width will develop around the project site. Dust catching species like *Alstonia scholaris*, *Bombax ceiba*, *Terminalia arjuna*, *Cassia fistula*, *Bombax ceiba*, *Azadirachta indica*, *Nyctanthes arbor-tristis*, *Psidium guajava*, *Tectona grandis* etc will be planted in green belt.
- ❖ 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 23976kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.11), about 1000 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 21661kg of the total carbon.

11.4.7 Socio Economic Environment

Anticipated Impact

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

Mitigation Measures

- ✚ Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems
- ✚ Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines
- ✚ Air pollution control measure will be taken to minimize the environmental impact within the core zone
- ✚ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules
- ✚ Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly

11.4.8 Occupational Health

- ✚ All the persons will undergo pre-employment and periodic medical examination

- ✚ Employees will be monitored for occupational diseases by conducting medical tests: General physical tests, Audiometric tests, Full chest, X-ray, Lung function tests, Spirometric tests, Periodic medical examination- yearly, Lung function test- yearly, those who are exposed to dust and Eye test
- ✚ Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost.
- ✚ The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

11.5 Environment Monitoring Program

Table 11.2 Environment Monitoring Program

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	5 Locations (1 Core & 4 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	6 Locations (2 SW & 4 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	5 Locations (1 Core & 4 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	6 Locations (1 Core & 5 Buffer)	–	Once in six months	Physical and chemical characteristics
8	Greenbelt	Within the project area	Daily	Monthly	Maintenance

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

11.6 ADDITIONAL STUDIES

11.6.1 Risk Assessment

The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project.

11.6.2 Disaster Management Plan

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

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

11.6.3 Cumulative Impact Study

- ✚ The results on the cumulative impact of the three proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.
- ✚ The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time.
- ✚ PPV resulting from three proposed project is well below the permissible limit of Peak Particle Velocity of 5mm/s.
- ✚ The cluster projects will allocate Rs. 20,00,000/- towards CER as recommended by SEAC
- ✚ The cluster projects will directly provide jobs to 78 local people, in addition to indirect jobs
- ✚ The cluster projects will plant 4750 about trees in and around the lease area.
- ✚ The cluster projects will add 252PCU per day to the nearby roads.

11.7 Project Benefits

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

- ✚ Direct employment to 18 local people

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

11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures an amount of **Rs. 21.56Lakhs** as capital cost and recurring cost as **Rs. 267.65Lakhs** as recurring cost/ annum is proposed considering present market price for the proposed project. After the adjustment of 5% inflation per year the overall EMP cost for 10 years will be **Rs. 289.21lakhs**.

11.9 CONCLUSION:

The environmental impact assessment (EIA) study for a proposed mining operation exposed the potential negative impacts such as

- **Dust emission impact:**

The project is expected to have a negligible impact on overall dust emissions, with levels remaining less than 0.5% of the existing levels.

- **Blasting restriction:**

Blasting with slurry mixtures should be minimized to avoid causing shockwaves and damage to nearby properties and populations.

- **Erosion control measures:**

Terracing, planting vegetation and soil stabilization techniques should be implemented to manage erosion.

- **Dust suppression equipment:**

Dust suppression machines should be readily available on site to minimize dust generation during material handling.

- **Green belt development**

Creating a vegetative barrier that absorbs gaseous and particulate pollutants reduces noise levels and mitigates soil erosion. By planting native tree species with their vast leaf surfaces, green belts effectively reduce pollutant concentrations in the ambient air and improve the aesthetic environment making them crucial for controlling the impacts of activities like proposed mining operations.

- **Comprehensive environmental management:**

All recommended environmental management practices should be implemented throughout the project lifecycle.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **M/s. Shri Natural Stones** 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. Malar	EIA Coordinator (EC) In-house	1(a)(i)	WP	B
2.	G. Prithiviraj	In-house, FAE	1(a)(i)	GEO	B
3.	G. Umamaheswaran	In-house, FAE	1(a)(i)	LU	B
4.	G. Umamaheswaran	In-house, FAE	1(a)(i)	HG	B
5.	P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
6.	Dr. R. Arun Balaji	In-house, FAE	1(a)(i)	AQ	B
7.	C. Kumaresan	In-house, FAE	1(a)(i)	NV	B
8.	Dr. D. Kalaimurugan	In-house, FAE	1(a)(i)	SC, EB	B
9.	Dr. G. Prabakaran	In-house, FAE	1(a)(i)	SE	A
10.	J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW	B
Approved Functional Area Associates					
11.	K. Ravichandran	FAA	1(a)(i)	LU, HG	B
12.	R. Srikrishna	FAA	1(a)(i)	GEO	B
13.	V. Malavika	FAA	1(a)(i)	HW, NV	B
14.	P. Dhatchayini	FAA	1(a)(i)	AQ	B
Team Members					
15.	A. Jothibas	TM	1(a)(i)	AP, AQ	-

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

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

Signature :
Date :
Name : **Dr. S. Malar**
Designation : EIA Coordinator
Name of the EIA Consultant Organization : Geo Technical Mining Solutions
Period of Involvement : Till date

We, the FAEs, FAAs and TM hereby declare that information furnished in this EIA/EMP report for **M/s. Shri Natural Stones**, rough stone and gravel quarry project with the extent of 2.00.0ha situated in the cluster with the extent of 9.50.0ha in Thandarai Village, Denkanikottai Taluk, Krishnagiri District, and Tamil Nadu is true and correct to the best of our knowledge.

List of Functional Area Experts Engaged in this Project

S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	○ Identification of different sources of air pollution due to the proposed mine activity. ○ Prediction of air pollution and propose mitigation measures / control measures.	P. Venkatesh	
2	WP	○ Suggesting water treatment systems, drainage facilities. ○ Evaluating probable impacts of effluent/ waste water discharges into the receiving environment/water bodies and suggesting control measures.	Dr. S. Malar	

3	HG	○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics	G. Umamaheswaran	
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. Prithviraj	
5	SE	○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive Management Plan ○ Corporate Environment Responsibility.	Dr. G. Prabakaran	
6	EB	○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development.	Dr. D. Kalaimurugan	
7	RH	○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency	J.N. Manikandan	

		Preparedness Plan Management plan for safety.		
8	LU	- Construction of Land use Map - Impact of project on surrounding land use - Suggesting post closure sustainable land use and mitigative measures.	G. Umamaheswaran	
9	NV	- Identify impacts due to noise and vibrations - Suggesting appropriate mitigation measures for EMP.	C. Kumaresan	
10	AQ	- Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. - Recommending mitigations measures for EMP	Dr. R. Arun Balaji	
11	SC	Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. D. Kalaimurugan	
12	SHW	- Identify source of generation of non-hazardous solid waste and hazardous waste. - Suggesting measures for minimization of generation of waste and how it can be reused or recycled.	J.N. Manikandan	

List of Functional Area Associate Engaged in this Project

S.No.	Name	Functional Area	Involvement	Signature
1	K. Ravichandran	LU	- Site visit with FAE - Provide inputs & Assisting FAE for LU	

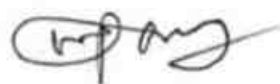
2	R. Srikrishna	GEO	- Field visits along with FAE - Assistance to FAE in both primary and secondary data collection	
3	K. Ravichandran	HG	- Site visit with FAE - Provide inputs & Assisting FAE for HG	
4	V. Malavika	HW, NV	- Site visit with FAE - Provide inputs & Assisting FAE for NV	
5	P. Dhatchayini	AQ	- Site visit with FAE - Assistance to FAE in collection of both primary and secondary data	

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 **M/s. Shri Natural Stones**, rough stone quarry project with the extent of 2.00.0ha situated in the cluster with the extent of 9.50.0ha in Thandarai Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu is true and correct to the best of our knowledge.

Signature

:



Date

:

Name

: **Dr. S. Karuppannan**

Designation

: Managing Partner

Name of the EIA Consultant Organization

: Geo Technical Mining Solutions

NABET Certificate No & Issue Date

: NABET/EIA/23-26/RA 0319

Validity

: Till 31.12.2026



File No: 12360
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated: 16/10/2025



To,

Thiru. M N Ravikumar, Partner
M/s. SHRI NATURAL STONES
No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk, Krishnagiri
District - 635109. TAMIL NADU.
shrinnaturalstone@gmail.com

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

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Proposed Rough Stone Quarry over an extent of 2.00.0 Ha in S.F. No. 738 (Part-2) of Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu by M/s. Shri Natural Stones (Thiru. M.N. Ravikumar, Managing Partner)- under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” of EIA Notification, 2006, as amended – **ToR issued along with Public Hearing** - preparation of EIA report – Regarding.

Ref:

1. Online proposal No. SIA/TN/MIN/542402/2025 Dated 23.06.2025.
2. Your application submitted for Terms of Reference dated:25.06.2025.
3. Minutes of the 587th SEAC meeting held on 07.07.2025.
4. Minutes of the 859th SEIAA meeting held on 24.07.2025.
5. Minutes of the 609th SEAC meeting held on 26.08.2025.
6. Minutes of the 888th SEIAA meeting held on 17.08.2025.
7. Minutes of the 900th SEIAA meeting held on 09.10.2025.

2. The particulars of the proposal are as below:

(i) TOR Identification No.	TO25B0108TN5155022N
(ii) File No.	12360
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals, 1(a) Mining of minerals
(vii) Name of Project	Thandarai Village Rough Stone Mining Lease
(viii) Name of Company/Organization	SHRI NATURAL STONES

(ix) Location of Project (District, State)	KRISHNAGIRI, TAMIL NADU
(x) Issuing Authority	SEIAA
(xi) Applicability of General Conditions	no
(xii) Applicability of Specific Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by SEIAA in the meeting held on 09.10.2025. The minutes of the meeting and all the Application and documents submitted [viz. Form-1 Part A, Part B] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).

4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal of **M/s. Shri Natural Stones (Thiru. M.N. Ravikumar, Managing Partner)** under the provisions of EIA Notification, 2006 and as amended thereof.

5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.

6. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/Regulations or Statutes, as applicable, to the project.

7. This issues with the approval of the Competent Authority.

8. The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

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

Annexure 1

Specific Terms of Reference s for (Mining Of Minerals)

1. Seiaa Specific Conditions :

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC-1 and decided to

S. No	Terms of Reference
	grant Terms of Reference (ToR) along with Public Hearing for the quantity of 2,93,695 m³ of Rough Stone up to the depth of 51m (16m AGL + 35m BGL) as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-1 & normal conditions & the SEIAA Standard conditions.

2. Seiaa Standard Conditions :

S. No	Terms of Reference
2.1	<u>Cluster Management Committee</u> - 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. - 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 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. - 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. - The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. - The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the Environmental policy devised shall be given in detail in the EIA Report. - The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. - The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. <u>Agriculture & Agro-Biodiversity</u> - Impact on surrounding agricultural fields around the proposed mining Area. - Impact on soil flora & vegetation around the project site. - Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP. - The Environmental Impact Assessment should study the agro-biodiversity, agro- forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. - Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. - The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock. <u>Forests</u> - The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife. - The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna. - The Environmental Impact Assessment should study impact on standing trees and the existing

S. No	Terms of Reference
	trees should be numbered and action suggested for protection. 18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site. <u>Water Environment</u> 19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. 20. Erosion Control measures. 21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. 22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 23. The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment, by the activities. 24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts. 25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components. 26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites. 27. The EIA shall include the impact of mining activity on the following: - Hydrothermal/Geothermal effect due to destruction in the Environment. - Bio-geochemical processes and its foot prints including Environmental stress. - Sediment geochemistry in the surface streams. <u>Energy</u> 28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. <u>Climate Change</u> 29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. 30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features. 31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood. <u>Mine Closure Plan</u> 32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. <u>EMP</u> 33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs. 34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan. <u>Risk Assessment</u> 35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.

S. No	Terms of Reference
	<u>Disaster Management Plan</u> 36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. <u>Others</u> 37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. 38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan. 39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic & microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.



SEAC conditions - Site specific

1. **A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:**
 - (i) **Copy of the agreement forming CMC.**
 - (ii) **The Organization chart of the Committee with defining the role of the members**
 - (iii) **The 'Standard Operating Procedures' (SOP) executing the planned activities.**
2. The PP should submit an affidavit to follow the scientific formation of benches for 5m * 5m properly during mining as per the approved mining plan.
3. The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/video graphic evidence along with the EIA report.

SEAC Standard Conditions

1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:
 - (i) Original pit dimension
 - (ii) Quantity achieved Vs EC Approved Quantity
 - (iii) Balance Quantity as per Mineable Reserve calculated.
 - (iv) Mined out Depth as on date Vs EC Permitted depth
 - (v) Details of illegal/illicit mining
 - (vi) Violation in the quarry during the past working.
 - (vii) Quantity of material mined out outside the mine lease area
 - (viii) Condition of Safety zone/benches
 - (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the

location of habitations within 300m radius from the periphery of the site.

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

13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
14. Quantity of minerals mined out.
- Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.
19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including

traffic/vehicular movement study.

22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
28. Impact on local transport infrastructure due to the Project should be indicated.
29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with

shrubs should be planted in a mixed manner.

33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

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

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

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

36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations
37.	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project
40.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
41.	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
42.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc
44.	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should

be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area

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, with respect to the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.

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

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

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

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

and with adequate number of sections) should be given in the EIA report.

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

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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.

11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

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

From

Thiru A.Arumuganainar, M.Sc.,
Regional Joint Director,
Deputy Director (FAC),
Dept. of Geology and Mining,
Krishnagiri.

To

M/s.Shri Natural Stones,
Partner Thiru.M.N.Ravikumar,
No.194/18A, Jalakendeshwara
Nagar,
Opp to Anand Electronics,
NH Road, Hosur Taluk,
Krishnagiri District.

Roc.No.26/2025/Mines

dated 26.06.2025

Sir,

Sub: Mines and Minerals-Minor Mineral-Rough Stone-Krishnagiri District – Denkanikottai Taluk – Thandarai Village-Government Poromboke land - S.F.No.738(Part-2) - Over an extent of 2.00.0 ha - e-Tender cum Auction conducted- M/s.Shri Natural Stones offered Highest bid amount - M/s.Shri Natural Stones declared as the successful bidder – Mining plan approved - Details of quarries situated within 500m radial distance requested – Quarry details furnished - Reg.

- Ref:**
1. Krishnagiri District Gazette (Extraordinary) No. 12 & 20, dated 16.11.2024.
 2. E-Auction(live) conducted on 03.01.2025
 3. The Deputy Director of Geology & Mining, Krishnagiri in Rc.No.26/2025/Mines, dated : 03.04.2025 (Precise area communication).
 4. The Deputy Director of Geology & Mining, Krishnagiri Rc.No.26/2025/Mines, dated 17.06.2025 (Mining Plan approval).
 5. Representation of M/s.Shri Natural Stones, dated 16.06.2025.

Kind attention is invited to the references cited above.

2. e- Tender Cum Auction was conducted on 03.01.2025 for the grant of quarry lease to quarry rough stone in Government poramboke land in S.F.No.738 (P-2) over an extent of 2.00.0 hectares in Thandrai Village, Denkanikottai Taluk, Krishnagiri District. Since M/s.Shri Natural Stones had quoted the highest lease amount, the said tender was confirmed to him.

3.Subsequently, M/s.Shri Natural Stones had been communicated precise area vide reference 3rd cited and directed to submit Mining plan and Environmental Clearance for grant of rough stone quarry lease over an extent of 2.00.0 hectares of Government poramboke land in S.F.No.738(P-2) in Thandrai Village, Denkanikottai 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. Accordingly, the applicant submitted Mining Plan and the same was approved by the Deputy Director of Geology & Mining vide the reference 4th cited.

5. At this juncture, the applicant has requested the details of quarries situated within 500m radial distance from the lease applied area vide letter dated 16.06.2025. As requested by the applicant, the details of quarries situated within 500m radial distance from the subject area is furnished as follows:

I. Details of Existing Quarries

S. No.	Name of the Lessee	Village & Taluk	S.F.No.	Extent in ha	Proceedings Rc.No. & date	Lease period
1	Thru H.S.Srinath, S/o Sundar Raj, No. 219 near Milk Dairy, Huskur, Anekal Taluk, Bangalore District, Karnataka State	Thandarai Village Deenkanikottai Taluk	738/1 (part)	4.00,0	Roc. 110/2016/ Mines dated 19.06.2019	19.06.2019 To 18.06.2029

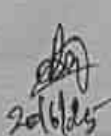
II. Details of Expired/Abandoned Quarries

S. No.	Name of the Applicant/Lessee	Village & Taluk	S.F.No.	Extent (ha)	Proceeding Rc.No. & date	Lease period
1	-----Nil-----					

III. Details of Proposed/applied quarries

S. No.	Name of the Applicant/Lessee	Village & Taluk	S.F.No.	Extent (ha)	Proceeding Rc. No. & date	Status
1	M/s.Shri Natural Stones, Partner Thiru.M.N.Ravikumar, No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk, Krishnagiri District.	Thandarai Village Deenkanikottai Taluk	738 (part 2)	2.00.0	Roc. 25/2025/ Mines dated 03.04.2025 (Precise area communicated)	Mining Plan approved dated : 17.06.2025
2	M.Jeevankumar	Thandarai Village Deenkanikottai Taluk	738 (part 3)	1.50.0	---	---
3	S.M. Harish, S/o. Muniraj, No. 2/159, Achettipalli, J. Karupalli, Denkanikottai	Panchakchipuram village Hosur Taluk	755(P)	2.00.0	Rc.no. 214/2019/ mines Dated : 05.01.2024	05.01.2024 to 04.01.2034
Total				9.50.0		


 Regional Joint Director/
 Deputy Director, (Addl. Charge)
 Dept. of Geology and Mining,
 Krishnagiri.


 26/6/25

Copy to:

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

From

Thiru.A.Arumuganainar, M.Sc.,
Regional Joint Director,
Deputy Director (FAC),
Dept. of Geology and Mining,
krishnagiri.

To

M/s. Shri Natural Stones,
Partner Thiru.M.N.Ravikumar,
No.194/18A, Jalakendeshwara
Nagar,
Opp to Anand Electronics,
NH Road, Hosur Taluk,
Krishnagiri District.

Roc.No.26/2025/Mines**dated 08.09.2025.**

Sub: Mines and Minerals-Minor Mineral-Rough Stone-Krishnagiri District - Denkanikottai Taluk - Thandarai Village - Government poramboke land in S.F.No.738(Part-2)- Over an extent of 2.00.0 ha - e-Tender cum Auction conducted- M/s. Shri Natural Stones offered the highest bid amount - M/s. Shri Natural Stones declared as the successful bidder-Precise area communicated- Draft mining plan submitted- Mining plan approved - SEIAA examined the mining plan and instructed to submit the Reveised Mining plan in 859th meeting - Approved - Reg.

Ref:

1. Krishnagiri District Gazette (Extraordinary) No. 12 & 20, dated 16.11.2024.
2. e-Auction(live) conducted on 03.01.2025
3. The Deputy Director of Geology & Mining, Krishnagiri in Rc.No.26/2025/Mines, dated 03.01.2025 (Precise area communication).
4. Representation of M/s. Shri Natural Stones, dated 30.05.2025.
5. The Deputy Director, Department of Geology and Mining, Krishnagiri in Rc.No..26/2025/Mines dated:17.06.2025 (Mining Plan Approved)
6. Representation of M/s. Shri Natural Stones, dated 20.08.2025.

Kind attention is invited to the references cited above.

2. The District Collector, Krishnagiri has published Gazette Notification vide reference 1st cited for grant of Rough stone quarry leases in Government poramboke lands in Krishnagiri District. e- Tender Cum Auction was conducted on 03.01.2025 for the grant of quarry lease to quarry rough stone in Government poramboke land in S.F.No.738(Part-2) over an extent of 2.00.0 hectares in Thandarai Village, Denkanikottai Taluk, Krishnagiri District. Since M/s. Shri Natural Stones had quoted the highest lease amount, the said tender was confirmed to him.

3. Subsequently, M/s. Shri Natural Stones has remitted the entire bid amount quoted in e-Tender cum Auction and precise area has been communicated vide reference 3rd cited and directed the tenderer to submit Mining plan and Environmental Clearance as required under Rules 41 & 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of rough stone quarry lease over an extent of 2.00.0 hectares of Government poramboke land in S.F.No. 738 (Part-2) in Thandarai Village, Denkanikottai 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. At this juncture, M/s. Shri Natural Stones has submitted representation vide letter dated 30.05.2025 with enclosed draft Mining Plan prepared by a qualified person with a request to approve the draft Mining Plan and the same was approved by the Deputy Director, Department of Geology and Mining, Krishnagiri vide R.C.No.26/2025/Mines dated 17.06.2025.

5. In this regard the project proponent has planned this proposal before SEIAA in the 859th for want of EC. The SEIAA noticed that the

quarry area is a part of mound raised above ground level and instructed to furnish the revised mining plan.

6. In this connection, M/s. Shri Natural Stones has submitted the draft revised Mining Plan prepared by a qualified person for approval vide letter dated 20.08.2025 and the yearwise production for the proposal revised mining plan for the above subject area is tabulated below.

Yearwise production excluding common mine boundary for the first five years

Year	Roughstone		Weathered Rock		Topsoil	
	m ³	Tons	m ³	Tons	m ³	Tons
1 st Year	50295	138311	11970	23940	5985	11970
2 nd Year	50995	140236	9870	19740	4935	9870
3 rd Year	50705	139439	7560	15120	3780	7560
4 th Year	52325	143894	---	---	---	---
5 th Year	44500	122375	---	---	---	---
Total	248820	684255	29400	58800	14700	29400

Yearwise production excluding common mine boundary for the second five years

Year	Roughstone		Weathered Rock		Topsoil	
	m ³	Tons	m ³	Tons	m ³	Tons
6 th Year	8800	24200	---	---	---	---
7 th year	8800	24200	---	---	---	---
8 th year	8875	24406	---	---	---	---
9 th year	8775	24131	---	---	---	---
10 th year	9625	26469	---	---	---	---
Total	44875	123406	---	---	---	---

7. The proposed yearwise production and the systematic and scientific method for production of Roughstone has been compared with ground condition of the subject area and found correct.

8. Hence the power delegated under Rule 41 of the Tamil Nadu Minor Mineral Concession Rules, 1959 and 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 draft revised Mining Plan is hereby approved subject to the following conditions:

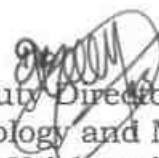
(i) The draft revised Mining Plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

(ii) This approval of the draft revised 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, Forest (Conservation) Act, 1980, Forest Conservation Rules 1981, Environment protection Act, 1986, Indian Explosives Act, 1884 (Central Act IV of 1884), Metalliferous Mines Regulations, 1961 and the rules made thereunder, Minor Mineral Conservation and Development Rules, 2017 and the Tamil Nadu Minor Mineral Concession Rules, 1959.

(iii) The draft revised 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 communicated to the applicant shall be followed during quarry operation as per Act and Rules.

Encl: Approved revised Mining Plan


Deputy Director (FAC),
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.

REVEISED MINING PLAN

FOR

THANDARAI VILLAGE ROUGH STONE MINING LEASE

PROGRESSIVE QUARSSRY CLOSURE

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

Lease period 10 Years from the date of lease execution

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

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
 DISTRICT : KRISHNAGIRI
 TALUK : DENKANIKOTTAI
 VILLAGE : THANDARAI
 S.F. No : 738 (Part-2)
 EXTENT : 2.00.0Hectares

ADDRESS OF THE APPLICANT

M/s.Shri Natural Stones,

Partner Thiru.M.N.Ravikumar,
 No.194/18A, Jalakendeshwara Nagar,
 Opp to Anand Electronics,
 NH Road, Hosur Taluk,
 Krishnagiri District.

PREPARED

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

GEO TECHNICAL MINING SOLUTIONS

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

Oddapatti, Collectorate Post office,

Dharmapuri-636705. Tamil Nadu.

Mob. : +91 9443937841, +917010076633,

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

Website: www.gtmsind.com



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ANNEXURES

Sl. No.	Description	Annexure No.
1.	Copy of District Tender Gazette Notification	I
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3.	Copy of FMB (Field Measurement book)	III
4.	Copy of "A" register	IV
5.	Copy of GST	V
6.	Photo copy of the lease area	VI
7.	Copy of ID Proof of the authorized signatory	VII
8.	Copy of Qualified Person Certificate	VIII



LIST OF PLATES



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1	Key Map	I	Not to scale
2	Location Plan	I-A	Not to scale
3	Toposheet Map	I-B	1:1,00,000
4	Satellite Imagery Map	I-C	1: 5,000
5	Environmental Plan	I-D	1: 5,000
6	Mine Lease Plan	II	1:1000
7	Surface, Geological Plan and Sections	III	Plan 1:1000
8	Geological Sections	III	Sections Hor 1:1000 Ver 1:500
9	Conceptual Plan and Sections	IV	Plan 1:1000
10	Conceptual Sections	IVA	Sections Hor 1:1000 Ver 1:500
11	Mine Layout Plan and Land Use Pattern	V	Plan 1:1000
12	Year wise Development, Production Plan and Sections	VI	Plan 1:1000
13	Year wise Development, Production Sections	VIA	Sections Hor 1:1000 Ver 1:500

M/s.Shri Natural Stones,
Partner Thiru.M.N.Ravikumar,
No.194/18A, Jalakendeshwara Nagar,
Opp to Anand Electronics,
NH Road, Hosur Taluk,
Krishnagiri District.



CONSENT LETTER FROM THE APPLICANT

The Reveised Reveised Mining Plan in respect of rough stone quarry lease in Government Poramboke land at S.F.No: 738 (Part-2), over an extent of 2.00.0hectares of Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State has been prepared by

Dr. S. KARUPPANNAN. M.Sc., Ph.D. (QUALIFIED PERSON)

I request "Regional Joint Director / Deputy Director (i/c)", Department of Geology and Mining, Krishnagiri District to make further correspondence regarding modifications of the Reveised Mining Plan with the said Qualified Person on this following address,

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

(QUALIFIED PERSON)

GEO TECHNICAL MINING SOLUTIONS

(A NABET accredited & ISO certified Company)

No: 1/213-B, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +91 7010076633

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

Website: www.gtmsind.com

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

Place: Krishnagiri, TN.

Date:

**Signature of the applicant
(M/s.Shri Natural Stones)**

M/s.Shri Natural Stones,
Partner Thiru.M.N.Ravikumar,
No.194/18A, Jalakendeshwara Nagar,
Opp to Anand Electronics,
NH Road, Hosur Taluk,
Krishnagiri District.



DECLARATION

The Reveised Mining Plan in respect of rough stone quarry lease in in Government Poramboke land at S.F.No: 738 (Part-2), over an extent of 2.00.0hectares of Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Krishnagiri, TN.

Date:

Signature of the applicant
(M/s.Shri Natural Stones)

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

QUALIFIED PERSON

GEO TECHNICAL MINING SOLUTIONS

(A NABET accredited & ISO certified Company)

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

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +91 7010076633

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

Website: www.gtmsind.com



CERTIFICATE

This is to certify that, the provisions of rule 8 of Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Reveised Mining Plan for the grant of rough stone quarry lease at S.F.No: 738 (Part-2), over an extent of 2.00.0 hectares of Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State granted to **M/s.Shri Natural Stones**, Partner Thiru.M.N.Ravikumar, Krishnagiri District.

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

Place: Dharmapuri, TN

Date:

Signature of the Qualified Person

Dr.S.KARUPPANNAN, M.Sc, Ph.D.,
Qualified Person
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

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

QUALIFIED PERSON

GEO TECHNICAL MINING SOLUTIONS

(A NABET accredited & ISO certified Company)

No: 1/213-B, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +91 7010076633

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

Website: www.gtmsind.com



CERTIFICATE

I certify that, in preparation of Reveised Mining Plan for rough stone quarry lease at S.F.No: 738 (Part-2), over an extent of 2.00.0hectares of Thandarai Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State prepared to **M/s.Shri Natural Stones**, Partner Thiru.M.N.Ravikumar, Krishnagiri District covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date:

Signature of the Qualified Person

Dr.S.KARUPPANNAN, M.Sc, Ph.D.
Qualified Person
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

MINING PLAN

FOR THANDARAI VILLAGE ROUGH STONE QUARRY LEASE WITH PROPOSED

QUARRY CLOSURE PLAN

Govt Poramboke land / Open cast Semi-Mechanized mining/Non-forest/Non-Captive Use

Lease period 10 Years

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

1. INTRODUCTION:

M/s.Shri Natural Stones a partnership firm registered in the address at No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk Krishnagiri District participated in e-auction conducted by Department of Geology and Mining, Krishnagiri District on 03.01.2025 for rough stone quarry lease located in S.F.No. 738 (Part-2) – Government Poramboke land over an extent of 2.00.0 hectares at Thandarai Village, Denkanikottai Taluk, Krishnagiri District as per the Krishnagiri District gazette (Extraordinary) Notification No.12 & 20 dated: 16.11.2024.

- The roughstone quarry lease granted to M/s.Shri Natural Stones as per the rule 8(16) E of TNMMCR 1959 for a period of 10 years.
- The precise area of the roughstone quarry lease was communicated letter vide **Roc.No.26/2025/Mines Dated: 03.04.2025** as per the rule 41(4) of TNMMCR 1959 by the Deputy Director, Department of Geology and Mining, Krishnagiri District and directed to submit the draft mining plan within a period of 90 days from the date of receipt of the communication as required under Rule 41 of TNMMCR 1959.
- The mining plan was prepared by QP and approved by Regional Joint Director/ Deputy Director (FAC), Department of Geology and Mining, Krishnagiri District letter vide **Rc.No.26/2025/Mines Dated: 17.06.2025**.

a) Preparation and Submission of Reveised Mining Plan:

M/s.Shri Natural Stones submitted the approved mining plan to obtain Terms of Reference (ToR with Public Hearing) for the Rough Stone quarry lease granted has the total extent of the proposed and existing quarries within 500m radius is greater than 5hectares as per the MoEF&CC Office memorandum Dated:12th Dec 2018.

State Level Expert Appraisal Committee (SEAC) - I has furnished its recommendations for granting Terms of Reference in 587th SEAC minutes of meeting.



The Authority of State Environment Impact Assessment Authority (SEIA) in SEP 2015 meeting noticed that the quarry area is a part of mound raised above ground level approximately contains 20m – 30m AGL whereas in the mining plan was approved for a depth of 51m BGL. The Authority refer back the subject to SEAC-I for re-examination and to get the revised mining plan. The approved mining plan was prepared by considering the Quarry lease area topography allotted in the mound of about 22m above ground level.

The revised mining plan is prepared focuses on the ground level of a mound located in the southeastern side of the lease area meaning the plan is taking into account the elevation and topography of that area. The maximum elevation fall within the mineable area is 16m above ground level.

b) Geological resources:

Geological resource was calculated for the lease area of **879310m³** including overburden. Material wise geological resource estimation are as follows

- Roughstone - **819310m³** or **2253103Ts**,
- Topsoil - **20000m³** or **40000Ts** and
- Weathered rock - **40000m³** or **80000Ts** up to a depth of 51m (16m above ground level + 35m Below ground level). Refer plate no. III & IIIA.

c) Mineable reserve:

Mineable reserve was assessed as per the conditions given in precise area communication letter **Roc.No.26/2025/Mines Dated: 03.04.2025** and as per **Rule 106** of the **Metalliferous Mines Regulations (MMR), 1961** for safe mine operation. Material wise mineable reserve are as follows

- Rough stone - **293695m³** or **807661Ts**,
- Topsoil is **14700m³** or **29400Ts** and
- Weathered rock is **29400m³** or **58800Ts** up to a depth of 51m (16m above ground level + 35m Below ground level). Refer plate no. IV & IVA.

d) Proposed Production Schedule:

Total proposed production for the lease period of 10 years or life of the mine are given below.

- Rough stone is **293695m³** or **807661Ts**,
- Topsoil is **14700m³** or **29400Ts** and
- Weathered rock is **29400m³** or **58800Ts** up to a depth of 51m (16m above ground level + 35m Below ground level). Refer Plate No. VI & VIA.



e) **Ecological Sensitivity of the proposed lease area if any: -**

- i). **Interstate boundary:** There is no interstate boundary situated within 10Km radius.
- ii). **Wildlife Sanctuaries any:** There are no notified wildlife sanctuaries within the radius of 10km from the project site under the wildlife (Protection) Act, 1972.
- iii). **Forest (conservation) Act, 1980:** No forest land involved in the proposed quarrying and there is no reserve forest within the radius of 100m.
- iv). **CRZ Notification, 2019:** There is no sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 2019.

f) **Environmental protective measures will follow in the Mining plan period.**

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

1.0 GENERAL:

a.	Name of the Applicant	:	M/s.Shri Natural Stones
	Applicant address	:	Thiru.M.N.Ravikumar, No.194/18A, Jalakendeshwara Nagar, Opp to Anand Electronics, NH Road, Hosur Taluk,
	District	:	Krishnagiri.
	State	:	Tamilnadu
	Pin code	:	635 109.
	Phone	:	+919363115599



	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
	E-mail	:	<u>shrinaturalstone@gmail.com</u>
b.	Status of the Applicant		
	Private individual	:	---
	Cooperative Association	:	---
	Private company	:	Private Partnership firm
c.	Mineral(s) which are occurring in the area and which the applicant intends to mine	:	Rough Stone
d.	Period for which the mining lease granted /renewed/ proposed to be applied	:	Period of Mining granted is Ten (10) years.
	Name of the QP preparing the Revised Mining Plan	:	Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,
	Address	:	Geo Technical Mining Solutions (A NABET Accredited & ISO certified) No: 1/213-B, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri - 636705.
	Phone	:	+91 9443937841, 7010076633
	Fax	:	Nil
	e-mail	:	<u>gtmsdpi@gmail.com</u>
	Telex	:	Nil
f.	Name of the prospecting agency	:	District Survey Report, Krishnagiri District
	Address	:	Department of Geology and Mining, Alandur Road, Guindy Industrial Estate, Guindy, Chennai-600032, TamilNadu.
	Phone	:	044-22501158
g.	Reference No. and date of consent letter from the state government	:	The precise area communication letter vide Roc.No.26/2025/Mines Dated: 03.04.2025

2.0 LOCATION AND ACCESSIBILITY:

a. Details of the Area:	:	Refer plate no: IA & IB*
District & State	:	Krishnagiri, Tamil Nadu
Taluk	:	Denkanikottai
Village	:	Thandarai

Khasra No./ Plot No./ Block Range/ Felling Series etc.:

Survey No	Sub Division	Total Extent in Hect	Patta No.	Ownership /Occupancy
738	Part-2	2.00.0	---	Govt Poramboke land
Total Extent		2.00.0		2.00.0

Lease area (hectares)	:	2.00.0 Hectares
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)	:	Government Promboke Land
Ownership / Occupancy	:	Government of Tamil Nadu
Existence of Public Road / Railway line if any nearby and approximate distance	:	☒ Cart road is situated on the north-western side of the lease area. ☒ SH-17A is situated about 1.6km radius away on the western side of the lease area. ☒ There is no railway line is situated about 5km radius from the lease area.
Toposheet No. with latitude and longitude	:	Toposheet No. 57 H/14 Latitude: From 12°34'54.7483"N to 12°35'00.7992"N Longitude: From 77°47'43.9868"E to 77°47'49.3133"E

Geo-Coordinates of the lease boundary:

PROPOSED LEASE AREA CO-ORDINATES

PILLAR ID	LATITUDE	LONGITUDE	X	Y
1	12°34'59.7873"N	77°47'49.3133"E	803922.001	1392669.417
2	12°34'54.7483"N	77°47'47.9947E	803883.821	1392514.039
3	12°34'55.7602"N	77°47'43.9868"E	883762.432	1392543.867
4	12°35'00.7992"N	77°47'45.3054"E	803800.612	1392699.245

Land use pattern (Forest,	:	It is an barren land of elevated mound.

	Agricultural, Grazing, Barren etc.)	
b.	<i>Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.</i>	: Refer plate no-IA & IB



i) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance	Direction
a.	Nearest post office	Denkanikottai	6.1Km	South
b.	Nearest police station	Denkanikottai	5.5km	South
c.	Nearest fire station	Denkanikottai	7.7km	South
d.	Nearest medical facility	Denkanikottai	7.1Km	South
e.	Nearest school	Denkanikottai	6.1km	South
f.	Nearest railway station	Kelamangalam	8.5km	Northeast
g.	Nearest port facility	Chennai	277.0km	Northeast
h.	Nearest airport	Bangalore	44.0km	North
i.	Nearest DSP office	Denkanikottai	5.5km	South
j.	Nearest villages	Koratagiri	1.3km	Northwest
		Kamaiyanur	1.0km	Northeast
		Adaikkalapuram	1.4Km	Southeast
		Onnupalli	1.5km	Southwest

PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

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

(i)	Topography	:	The proposed lease area is a elevated mound. The average elevation is 16m above ground level except in the southern side corner. The maximum elevation is 876m in the southeast corner and the minimum elevation is 854m in the northeast corner of the site. The slope is towards eastern side and falls in Toposheet no. 57 H/14

(ii) **General Geology of the District:**

The geological formations of the district belong mainly to Archaean age along with rock of Proterozoic age. The former is represented by Khondalite Group of rocks, Charnockite Group of rocks, Migmatites Complex, Sathyamangalam Group of rocks, while the latter is represented by Alkaline rocks. The Khondalite Group includes garnet sillimanite gneiss and quartzite which occur as small patches. The migmatite complex includes garnetiferous quartz feldspathic gneiss and hornblends biotite gneiss, the former exposed on the western part of the district. The Sathyamangalam Group includes fuchsite quartzite, sillimanite mica schist and amphibolites. The Bhavani Group in this area includes fissile hornblende-biotite gneiss, granitoid gneiss and pink migmatite. Amphibolites with barbed ferruginous quartzite and associated quartzo-feldspathic rocks (Champion Gneiss) represent the Kolar group and are found west and southwest of Epiphaniically. Following this there are basic intrusions occurring as dykes.

The Charnockite Group occupies a major part of the south-west portion of this district with small bands of garnetiferous quartzo-feldspathic gneiss, Granite gneiss and dolerite dykes. The North-East and Northern part of the district mainly consist of granite gneiss with small patches of Pink Migmatite, hornblende-biotite gneiss and dolerite dykes. The Eastern part of the district consists of Epidote-Hornblende Gneiss, Ultra Mafics, Syenite and Carbonatite.



Order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent to Sub recent	---	Top Soil (2m Thick)
Archean to Lower Proterozoic	Migmatite complex	Pegmatite and Quartz veins Dolerite dyke Peninsular gneisses and Migmatites
Archean	Charnockite Group	Charnockite, Garnetiferous quartzo-feldspathic, Biotite gneisses

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

Topography of the proposed lease area:

The proposed lease area is a elevated mound. The average elevation is 16m above ground level except in the southern side corner. The maximum elevation is 876m in the southeast corner and the minimum elevation is 854m in the northeast corner of the site. The rocks exhibits layered, medium to coarse grained hornblende biotite and orthopyroxene charnockite gneiss.

The Topsoil available is in the average of 0-1m thick, Weathered rock exists in 1-3m average thickness and a rough stone occurs from 3m to infinite depth in the quarry area. The surface plan showing elevation, contour, accessibility road and Geological map was prepared the proposed lease area.

Mode of origin:

The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown, however, that many, if not all, of the rocks are metamorphic, formed by recrystallization at high pressures and moderately high temperatures.

Physiography of the rocks:

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

Chemical composition of rocks:

The compositional characteristics of coexisting orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulite's and gneisses. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks.

Order of superposition of the proposed lease area,

	Age	Group	Rock Formation
	Recent to Sub recent	----	Topsoil
	Archaean	Charnockite Group	Charnockites.

(iv) Drainage Pattern : Sub dentrical

(b) *The topographic plan of the lease area prepared on a scale of 1 :1000 or 1 : 2000 with contour interval of 3 to 10m depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan:*

a. Present status: : The QP examined the surface features during survey. It is a fresh quarry lease.

b. Surface Plan : Surface plan showing elevation contour and accessibility road was prepared at the scale of 1: 1000 as shown in Plate No. III.

(c) Geological sections : Longitudinal and transverse geological cross sections were prepared at the horizontal scale of 1: 1000 and at the vertical scale of 1:500 as shown in Plate No. III

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

No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.

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

The geological resources were computed by cross section method with respect to the boundaries of the lease area. In this method, the lease area was divided into one longitudinal and one transverse section to calculate the volume of material up to the depth of 51m (16m above ground level + 35m Below ground level). for ten years plan period. (Refer Plate No.III. One longitudinal and one transverse cross section were assigned as XY-AB. Using the cross-sectional method, total reserve is estimated to be **879310m³** including the resources of safety zone, topsoil, Weathered rock etc. Of which, rough stone resources of about **819310m³** or **2253103Ts**, topsoil is **20000m³** or **40000Ts** and Weathered rock is **40000m³** or **80000Ts**.

GEOLOGICAL RESOURCES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Rough stone in M ³	Weathered in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
XY-AB	I	160	125	1	20000	.....	.....	20000	2	.....	.....	40000
	II	160	125	2	40000	.....	40000	.....	2	.....	80000	.....
	II	50	125	3	18750	18750	.....	.....	2.75	51563	.....	.....
	III	129	48	5	30960	30960	.....	.....	2.75	85140	.....	.....
	IV	160	91	5	72800	72800	.....	.....	2.75	200200	.....	.....
	V	160	121	5	96800	96800	.....	.....	2.75	266200	.....	.....
	VI	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	VII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	VIII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	IX	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	X	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
XI	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....	
TOTAL					879310	819310	40000	20000	2.75	2253103	80000	40000

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

The mineable reserve is estimated as 337795m³ by deducting the reserve safety zone, block in benches from the total Geological resource up to a depth of 51m (16m above ground level + 35m Below ground level). of which, rough stone is about 293695m³ or 807600Ts, topsoil is 14700m³ or 29400Ts and Weathered rock is 29400m³ or 58800Ts. The commercially viable rough stone has been prepared on 1:1000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's. IV & IVA).



MINEABLE RESEVES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
XY-AB	I	140	105	1	14700	.....	.....	14700	2	.....	.....	29400
	II	140	105	2	29400	.....	29400	.....	2	.....	58800	.....
	II	40	105	3	12600	12600	.....	.....	2.75	34650	.....	.....
	III	114	46	5	26220	26220	.....	.....	2.75	72105	.....	.....
	IV	125	76	5	47500	47500	.....	.....	2.75	130625	.....	.....
	V	115	95	5	54625	54625	.....	.....	2.75	150219	.....	.....
	VI	105	85	5	44625	44625	.....	.....	2.75	122719	.....	.....
	VII	95	75	5	35625	35625	.....	.....	2.75	97969	.....	.....
	VIII	85	65	5	27625	27625	.....	.....	2.75	75969	.....	.....
	IX	75	55	5	20625	20625	.....	.....	2.75	56718	.....	.....
	X	65	45	5	14625	14625	.....	.....	2.75	40219	.....	.....
XI	55	35	5	9625	9625	.....	.....	2.75	26468	.....	.....	
TOTAL					337795	293695	29400	14700		807661	58800	29400



4.0 MINING:

a)	Briefly describe the existing / proposed method for developing / working the deposit with all design parameters. (Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)	:	The mining operation is open cast semi-mechanized and allow to function on single shift only. All open cast workings in hard rock the benches and sides should be properly sloped as per Regulation 106 of the Metalliferous Mines Regulations, 1961 and the bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

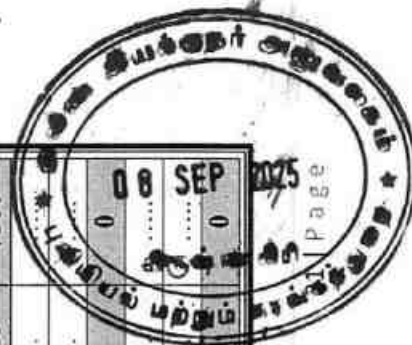
- b) *Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.*

Total proposed production of rough stone for ten years is about **293695m³ or 807661Ts**, topsoil is **14700m³ or 29400Ts** and Weathered rock is **29400m³ or 58800Ts** up to a depth of 51m (16m above ground level + 35m Below ground level). (Refer Plate No's. VI).

Year	Pit No.(s)	Topsoil/Overburden m ³	Topsoil in (Ts)	ROM (m ³)	Saleable rough stone (m ³) @ 100%	Saleable rough stone (Ts) @ 100%	Rough stone rejects(m ³)	Sub grade/Weathered rock (m ³)	Weathered rock (Ts)	Rough stone to waste ratio
I	I	5985	11970	68250	50295	138311	...	11970	23940	1:0.3
II	I	4935	9870	65800	50995	140236	...	9870	19740	1:0.2
III	I	3780	7560	62045	50705	139439	...	7560	15120	1:0.2
IV	I	...	...	52325	52325	143894	...	...	sss...	...
V	I	...	...	44500	44500	122375	...	...	...	...
VI	I	...	...	8800	8800	24200	...	...	...	...
VII	I	...	...	8800	8800	24200	...	...	...	...
VIII	I	...	...	8875	8875	24406	...	...	...	...
IX	I	...	...	8775	8775	24131	...	...	...	...
X	I	...	...	9625	9625	26469	...	...	...	...
Grand Total		14700	29400	337795	293695	807661	...	29400	58800	...

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

YEARWISE PRODUCTION RESERVES													
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weathered in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
I-YEAR	XY-AB	I	57	105	1	5985	.....	.....	5985	2	.....	.....	11970
		II	57	105	2	11970	.....	11970	.....	2	.....	23940	.....
		II	40	105	3	12600	12600	.....	.....	2.75	34650	.....	.....
		III	47	46	5	10810	10810	.....	.....	2.75	29727	.....	.....
		IV	37	76	5	14060	14060	.....	.....	2.75	38665	.....	.....
		V	27	95	5	12825	12825	.....	.....	2.75	35269	.....	.....
TOTAL						68250	50295	11970	5985		138311	23940	11970
II-YEAR	XY-AB	I	47	105	1	4935	.....	.....	4935	2	.....	.....	9870
		II	47	105	2	9870	.....	9870	.....	2	.....	19740	.....
		III	47	46	5	10810	10810	.....	.....	2.75	29727	.....	.....
		IV	47	76	5	17860	17860	.....	.....	2.75	49115	.....	.....
		V	47	95	5	22325	22325	.....	.....	2.75	61394	.....	.....
		TOTAL						65800	50995	9870	4935		140236	19740	9870
III-YEAR	XY-AB	I	36	105	1	3780	.....	.....	3780	2	.....	.....	7560
		II	36	105	2	7560	.....	7560	.....	2	.....	15120	.....
		III	20	46	5	4600	4600	.....	.....	2.75	12650	.....	.....
		IV	41	76	5	15580	15580	.....	.....	2.75	42845	.....	.....
		V	41	95	5	19475	19475	.....	.....	2.75	53556	.....	.....
		VI	26	85	5	11050	11050	.....	.....	2.75	30388	.....	.....
TOTAL						62045	50705	7560	3780		139439	15120	7560
IV-YEAR	XY-AB	VI	79	85	5	33575	33575	.....	.....	2.75	92331	.....	.....
		VII	50	75	5	18750	18750	.....	.....	2.75	51563	.....	.....
TOTAL						52325	52325	0	0		143894	0	0
V-YEAR	XY-AB	VII	45	75	5	16875	16875	.....	.....	2.75	46406	.....	.....
		VIII	85	65	5	27625	27625	.....	.....	2.75	75969	.....	.....
		TOTAL						44500	44500	0	0		122375	0	0



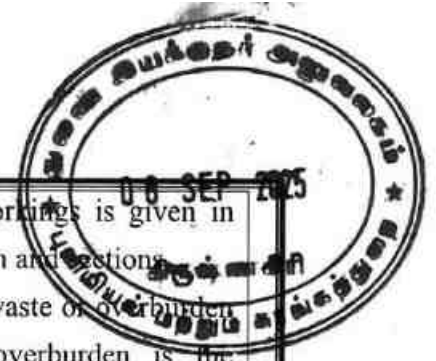
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
VI- YEAR	XY-AB	IX	32	55	5	8800	8800	.....	.....	2.75	24200	.....	.....
TOTAL													
VII- YEAR	XY-AB	IX	32	55	5	8800	8800	.....	.....	2.75	24200	.....	.....
TOTAL													
VIII- YEAR	XY-AB	IX	11	55	5	3025	3025	.....	.....	2.75	8319	.....	.....
		X	26	45	5	5850	5850	.....	.....	2.75	16087	.....	.....
TOTAL													
IX- YEAR	XY-AB	X	30	45	5	8775	8775	.....	.....	2.75	24131	.....	.....
TOTAL													
X- YEAR	XY-AB	XI	55	35	5	9625	9625	.....	.....	2.75	26469	.....	.....
TOTAL													
GRAND TOTAL													
						337795	293695	29400	14700	.....	807661	58800	29400





d)	Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc.	:	Composite plan not required for the proposed lease area. The material to be mined is roughstone alone.																																																																						
e)	Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected: At this rate of production, the expected life of quarry is calculated as given below: <u>Rough stone:</u> Mineable reserve of rough stone (10 Years) = 293695m³ or 807661Ts Annual Peak production = 52325m³ or 143894Ts																																																																								
f)	Attach a note furnishing a conceptual Reveised Reveised Mining Plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:																																																																								
i)	Time frame of completion of mineral exploration program in leasehold area. Give broad description identified potential areas to be covered in the given time frame:	:	Exploration not proposed in the lease hold area as the lease area consists of roughstone a building material.																																																																						
ii)	Whether ultimate pit limit has been determined and demarcated on surface and geological plan :- The ultimate pit limit has been determined and demarcated in the conceptual plan <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="6">SECTION XY-AB</th> </tr> <tr> <th>Bench</th> <th>Period</th> <th>Overburden/ Mineral</th> <th>L (m)</th> <th>W (m)</th> <th>D (m)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td rowspan="11">Ten years Plan Period</td> <td>Topsoil</td> <td>140</td> <td>105</td> <td>1</td> </tr> <tr> <td>II</td> <td>Weathered Rock</td> <td>140</td> <td>105</td> <td>2</td> </tr> <tr> <td>II</td> <td rowspan="9">Rough stone</td> <td>40</td> <td>105</td> <td>3</td> </tr> <tr> <td>III</td> <td>114</td> <td>46</td> <td>5</td> </tr> <tr> <td>IV</td> <td>125</td> <td>76</td> <td>5</td> </tr> <tr> <td>V</td> <td>115</td> <td>95</td> <td>5</td> </tr> <tr> <td>VI</td> <td>105</td> <td>85</td> <td>5</td> </tr> <tr> <td>VII</td> <td>95</td> <td>75</td> <td>5</td> </tr> <tr> <td>VIII</td> <td>85</td> <td>65</td> <td>5</td> </tr> <tr> <td>IX</td> <td>75</td> <td>55</td> <td>5</td> </tr> <tr> <td>X</td> <td>65</td> <td>45</td> <td>5</td> </tr> <tr> <td>XI</td> <td>55</td> <td>35</td> <td>5</td> </tr> <tr> <td colspan="5">Total Depth</td> <td>51m</td> </tr> </tbody> </table>			SECTION XY-AB						Bench	Period	Overburden/ Mineral	L (m)	W (m)	D (m)	I	Ten years Plan Period	Topsoil	140	105	1	II	Weathered Rock	140	105	2	II	Rough stone	40	105	3	III	114	46	5	IV	125	76	5	V	115	95	5	VI	105	85	5	VII	95	75	5	VIII	85	65	5	IX	75	55	5	X	65	45	5	XI	55	35	5	Total Depth					51m
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iii)	Whether the site for disposal of waste rock or an un-saleable material have/ has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity: -	: The weathered rock is 29400m ³ or 58800Ts will be removed and dumped in the safety area. Topsoil is 14700m ³ or 29400Ts will be removed and stacked for earth bund in the lease area to prevent inherent entry of cattle's and human as per Regulation 106 of Metalliferous Mines Regulation, 1961.
iv)	Whether back filling of pits after recovery of mineral up to techno - economically feasible depth envisaged. If so, describe the broad features of the proposal: -	: Back filling not applicable for the roughstone quarries as the recovery of the material is 100%.
v)	Whether post mining land use envisaged: -	: Envisaged Land Uses: • Afforestation: Planting trees and vegetation to restore the ecological balance and improve the aesthetic appeal of the area. • Water Bodies: Creating ponds or lakes, especially in areas where backfilling is not feasible, for water storage and potential recreational use. • Recreational Areas: Developing parks, recreational spaces, or eco-parks, potentially incorporating water bodies.
g)	Open cast mining	
i)	Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: Opencast, mechanized mining involves extracting minerals from the earth's surface using large-scale machinery. Key features include high extraction rates, reduced safety hazards compared to underground mining and the ability to handle large volumes of material efficiently. However, it also poses environmental challenges like land degradation and potential pollution.



ii)	Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice	The layout of mine workings is given in yearwise production plan and sections. Layout for disposal of waste of overburden not required as the overburden is the topsoil will use for greenbelt development.					
	a. Details of Topsoil/Overburden	There is a topsoil of 14700m ³ will be removed and use it to make earth bund in safety zone of 10meters left inside the lease area.					
	b. Rough Stone waste and side burden waste:-	The recovery of rough stone is 100%.					
H	Underground Mining	Not applicable					
i)	Extent of mechanization: Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.						
	(1) Drilling Machines: Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Details of drilling equipment's are given below.						
	Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.
	Jack Hammer	2	175 mm	Hydraulic	--	Diesel	--
	Compressor	2	---	Air	--	Diesel	--
	Rock breaker	2	---	40-175mm	DOZ CO	Diesel	800 BPM
	(2) Loading Equipment:						
	Type	Nos	Size / Capacity	Make	Motive power	H.P.	
	Hydraulic Excavator	1	2.9-4.5m ³	--	Diesel	--	
	(3) Haulage and Transport Equipment (a) Haulage within the mining leasehold:						
	Type	Nos	Size / Capacity	Make	Motive power	H.P.	
	Tipper	6	32tons	Tata, Bharat Benz, Ashok Leyland etc	Diesel	--	
	Whether the dumpers are fitted with exhaust conditioner should be indicated: The dumpers not used in this quarry area, hence it's a small B category mine.						

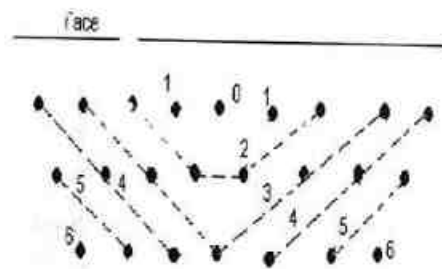


b)	Transport from mine head to the destination	:	Tipper will be used for transport of stone and topsoil from the mine head to needy customer.															
c)	Describe briefly the transport system (please specify)	:	Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customer's area.															
	i) Ore transported by: own trucks / hired trucks	:	Hired trucks for initially production purposes															
	ii) Main destination to which ore is transported (giving to and from distance)	:	The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc															
a)	Details of hauling / transport equipment:																	
	<table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Size / Capacity</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Tipper</td> <td>6</td> <td>32ton GVW</td> <td>Tata, Bharat Benz, Ashok Leyland etc</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	6	32ton GVW	Tata, Bharat Benz, Ashok Leyland etc	Diesel	--					
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Tipper	6	32ton GVW	Tata, Bharat Benz, Ashok Leyland etc	Diesel	--													
4)	(4). Miscellaneous: Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.																	
	(A) Operations	:	The mining operation is opencast, semi-mechanized.															
	(B) Machineries deployed	:	Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators will use for loading and tippers will iuse for transport.															
5	BLASTING: <i>a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.</i> Blasting pattern: The quarrying operation is proposed to carried by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone. Rough stone production for 10 years = 293695m³																	



BLAST DESIGN	
Blasthole Diameter (D) in mm	32
Burden (B) in m	1.2
Spacing (S) in m	1.38
Subdrill in m	0.5
Charge length (C) in m	0.70
Stemming	0.5
Hole Length (L) in m	1.2
Bench Height (BH) in m	2.5
Mass of explosive/hole in g	437.5
Stemming material size in mm	3.2
Burden stiffness ratio	2.08
Blast volume/hole in m ³	4.14
Production of rough stone/day in m ³	105m ³
Number of blast holes/day	25
Number of blast round/day	1
Blasthole pattern	Staggered
Mass of explosive /day in kg	11.08
Powder factor in kg/m ³	0.11
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL

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



Staggered method of mining

b) Type of explosives used / to be used:

Following explosives are recommended for efficient blasting with safe practice.

Small dia. 25mm slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of rough stone. No deep hole drilling or secondary blasting is proposed.



c) Measures proposed to minimize ground vibration due to blasting. The control blasting measures is being adopted for minimizing ground vibration and fly rock.

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

Delay detonators:

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

- ❖ Reduction of ground vibration
- ❖ Reduction in air blast
- ❖ Reduction in over break
- ❖ Improved fragmentation
- ❖ Better control of fly rock

Blasting program for the production per day

No of holes	: 25holes
Yield	: 105m ³
Total explosive required	: 11.08kg-Slurry explosives
Charge per hole	: 0.5kg
Blasting at day time only	: 12.0p.m-1.0p.m

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

6. **MINE DRAINAGE:**

a)	Likely depth of water table based on observations from nearby wells and water bodies	:	The ground water table is reported as of 70m in summer and 65m in rainy season from the general ground level observed in the adjacent bore well.

b)	Workings expected to be _____ m. above / reach below water table by the year _____.	:	Proposed mining depth is 30m (16m above ground level + 35m Below ground level). Now, the present Mining shall be proposed above the water table and hence, quarrying may not affect the ground water.
c)	Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	:	The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 L pm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.
7.	STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:		
a).	Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the years: No other wastes are removed during years.		
b).	Land chosen for disposal of waste with proposed justification	:	There is a topsoil of 14700m ³ or 29400Ts will be removed and use to make earth bund in the lease area.
c).	Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.	:	The recovery of rough stone in this quarry is 100%. If rough stone may be unsold will be keep within the lease boundary.
8.	USE OF MINERAL:		
a).	Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	:	The excavated stone materials will be supplied to the consumers like stone pillar, sized stone, etc. For instance, aggregates are mostly used for building, roads and footpaths., etc
b).	Indicate physical and chemical specifications stipulated by buyers	:	Basically, the materials produced at this quarry are rough stone (charnockite) the same are used for building materials and road metal. So, there is no chemical specifications are specified. Only physical specifications are involved.
c).	Give details in case blending of	:	Not blending process is involved, after



	different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.		blasting the rough stone will be directly loaded to the needy customer.																								
9.	OTHERS																										
	Describe briefly the following a) Site services	:	Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry laborers.																								
	b) Employment potential: As per Mines safety under the provisions of Metalliferous Mines Rules, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision. The following man power is proposed for quarrying stone material during the ten years period the same manpower will be utilize for this Reveised Reveised Mining Plan period to achieve the proposed production and to comply the provisions of as per the MMR, 1961 norms. <table border="1" style="width: 100%;"> <tr> <td>1.</td><td>Highly Skilled</td><td>Mines Manager</td><td>1No.</td></tr> <tr> <td></td><td></td><td>Mine Engineer</td><td>1No.</td></tr> <tr> <td></td><td></td><td>Mine Geologist</td><td>--</td></tr> <tr> <td></td><td></td><td>Blaster</td><td>1No</td></tr> <tr> <td>2.</td><td>Unskilled</td><td>Musdoor / Labours</td><td>15 No's</td></tr> <tr> <td colspan="3" style="text-align: right;">Total =</td><td>18No's</td></tr> </table>			1.	Highly Skilled	Mines Manager	1No.			Mine Engineer	1No.			Mine Geologist	--			Blaster	1No	2.	Unskilled	Musdoor / Labours	15 No's	Total =			18No's
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10	MINERAL PROCESSING/BENEFICIATIONS:																										
(a)	If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area. briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.	:	Excavated rough stone minerals directly will be used by the applicant for required size $\frac{1}{2}$, $\frac{3}{4}$ and $1\frac{1}{2}$ inches Jelly which are mainly used in road and building construction purpose. The recovery of rough stone in this quarry is 100%.																								
(b)	Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed to be	:	No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be																								



	discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam).	used for drilling and spraying main roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system.
(c)	A flow sheet or schematic diagram of the processing procedure should be attached.	: Not applicable.
(d)	Specify quantity and type of chemicals to be used in the processing plant.	: Not applicable
(e)	Specify quantity and type of chemicals to be stored on site / plant.	: Not applicable
(f)	Indicate quantity (cu.m. per day) of water required for mining and processing and sources of supply of water. Disposal of water and of recycling.	: Drinking is 0.2KLD, utilized water is 0.8KLD, Dust suppression is 1.5KLD and Green Belt is 1.0KLD. Minimum quantity of water 3.5KLD per day. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development. The sewage water to a tune of 0.9KLD generated from toilets will be diverted to the septic tank followed by soak pit.

PART – B

11.0 ENVIRONMENTAL MANAGEMENT PLAN:

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

11.1 Fresh lease land use pattern indicating the area already degraded by quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present land use pattern is given as below.

Sl. No.	Land Use	Present area (Hect.)
1.	Area under Mining	Nil
2	Infrastructure	Nil
3	Roads	Nil
4	Unutilized	2.00.0
5	Green belt +Earth bund+ Dump	Nil
Grand Total		2.00.0

11.2 Water Regime : Water table in this area is noticed at a depth of 70m in summer and 65m in rainy season from the general ground level and presently the quarrying of rough stone is proposed up to a depth of 51m (16m above ground level + 35m Below ground level).

It is proposed to make an authorized water vendors for drinking water and dust suppression.

11.3 Flora and Fauna : There is no major flora observed in this area and except bushes, shrubs, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.

11.4 Quality of air, ambient noise level and water : Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc..., will be suppressed by periodical wetting of land by water spraying. Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six

		months around the quarry site.																									
11.5	Climatic conditions: Krishnagiri, India weather forecasted for the maximum temperature of 29°C/84°F. Min temperature will be 18°C/64°F. Most precipitation falling will be 8.20mm/0.32inch. Windiest day is expected to see wind of upto 11kmph/11mph.																										
11.6	Human Settlement: The nearest villages are found in the buffer zone with population as per 2011 census. <table border="1"> <thead> <tr> <th>S.No</th> <th>Village</th> <th>Direction</th> <th>Distance in Kms</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Koratagiri</td> <td>Northwest</td> <td>1.3km</td> <td>933</td> </tr> <tr> <td>2</td> <td>Kamaiyanur</td> <td>Northeast</td> <td>1.0km</td> <td>3311</td> </tr> <tr> <td>3</td> <td>Adaikkalapuram</td> <td>Southeast</td> <td>1.4Km</td> <td>6006</td> </tr> <tr> <td>4</td> <td>Onnupalli</td> <td>Southwest</td> <td>1.5km</td> <td>256</td> </tr> </tbody> </table>		S.No	Village	Direction	Distance in Kms	Population	1	Koratagiri	Northwest	1.3km	933	2	Kamaiyanur	Northeast	1.0km	3311	3	Adaikkalapuram	Southeast	1.4Km	6006	4	Onnupalli	Southwest	1.5km	256
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11.7	Public buildings, places of worship and monuments	: No infrastructure like residential building, are found within radius of 300m. The places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.																									
11.8	Attach plans showing the locations of sampling stations	: The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.																									
11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974																									

b) Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines)

- i) **Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:**

Due to quarrying and exploitation of the rough stone, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period shown in the tabular form:

Sl. No.	Land Use	Area in use during the quarrying period (Hect.)
1	Area under Mining	1.47.00
2	Infrastructure	0.02.0
3	Roads	0.03.00
4	Green belt +Earth bund+ Dump	0.42.52
5	Un-Utilized Area	Nil
6	Drainage & Settling Tank	0.05.48
Grand Total		2.00.0

ii).	Air Quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.
iii).	Water quality	A water sample from the open/bore wells was tested to NABL approved lab to assess hardness, Salinity, colour, Specific gravity, etc.
iv).	Noise levels	Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The maximum peak particles velocity shall be recorded using mini seismograph devises as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	No major river or any odai track are found around 500m radius.
vii).	Socio-economics	1. To provide Employment opportunities of the nearby villagers.

		2. For the cultural development of the nearby villagers.
viii).	Historical monuments etc.	There are no historical monuments, etc found around 500m radius.



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

i).	temporary storage and utilization of topsoil	: No separate of topsoil will be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during ten years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.	: The present mining is proposed to an depth of 51m (16m above ground level + 35m Below ground level) has been envisaged as workable depth for safe & economic mining. The mined-out area will fence using Galvanozied metal sheet from the Green fund pay by the proponent for each cubic metre and the same shall ensure by Department of Geology and Mining.

iii). *Programme of afforestation, Yearwise for the initial ten years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares.*

Green Belt Development:

Safety barrier, nearby school area and Nearest Panchayat approach Roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below

						Amount in Rs
	Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate
	First	Lease Boundary	4250	450	80%	@100 Rs Per sapling
	Second	Approach road and Nearby Village Road	--	300	80%	
	Third	Schools	--	300	80%	
Total						1,05,000/-
iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the ten years (and upto conceptual plan period for 'A' category mines).			:	No waste or rejects shall be proposed.	
v).	Measures to control erosion / sedimentation of water courses.			:	Not applicable. There is no major dumps are stabilize in this quarry area.	
vi).	Treatment and disposal of water from mine.			:	It will not be harmful and it does not require any treatment before discharging into the natural courses.	
vii).	Measures for minimizing adverse effects on water regime.			:	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.	
viii).	Protective measures for ground vibrations / air blast caused by blasting,			:	It is a small "B" category open cast, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.	
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.			:	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.	
x).	Socioeconomic benefits arising out of mining.			:	The nearest villages are will get employment benefits.	

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

Not applicable. It is B category quarry

12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	Present mining is proposed to depth of 51m (16m above ground level + 35m Below ground level). The mined-out area will be fenced on top of working bench with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 450 trees will be proposed in the quarry area. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	The quarry lease is a fresh mining lease, no mitigation measures observed.
12.4	Mine closure activity	:	The Reveised Mining Plan is proposed to a depth of 51m (16m above ground level + 35m Below ground level) has been envisaged as workable depth for safe & economic mining. during the lease period. The mined-out area will fence using Galvanozied metal sheet from the Green fund pay by the proponent for each cubic metre and the same shall ensure by Department of Geology and Mining.
12.5	Safety and security	:	Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous mine regulations, 1961, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS



		being a mechanized operation.
12.6	Disaster management and Risk Assessment	: Appoint the person for monitoring slope failures, fly rocks due to blasting etc. Garnland drain should construct around the mine pit in the safety area left to overcome heavy rainfall. Skilled persons should appoint for the mine workings. Maintainence of equipments and vehicles should follow. Personal protective equipments should give for workers during mining.
12.7	Care and maintenance during temporary discontinuance	: Form E – Temporary Discontinuance of mine workings should inform to authorities. Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
12.8	Economic repercussions of closure of quarry and man power entrenchments	: The machineries and tippers will deploy on contract basis. If the mine closed then they have other contract works from various govt and private organisations.

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

A	Fixed Asset Cost:	
	1. Land Cost OR Tender Cost	: Rs. 8,02,56,857/-
	2. Labour Shed	: Rs. 1,00,000/-
	3. Sanitary Facility	: Rs. 1,00,000/-
	4. Fencing	: Rs. 2,00,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 4,00,000/-
	Total	: Rs. 8,10,56,857/-
B	B. Machinery cost	: Rs. 20,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for ten years)	
	1. Drinking Water Facility	: Rs. 1,00,000/-



2. Sanitary facility & Maintenance	: Rs. 1,50,000/-
3. Permanent water sprinkler	: Rs. 2,00,000/-
4. Afforestation and its maintenance	: Rs. 1,05,000/-
5. Safety Kits	: Rs. 50,000/-
6. Provision of tyre washing facility	: Rs. 1,50,000/-
7. Blasting materials with blast mat cost	: Rs. 10,00,000/-
8. Drainage & Settling Tank (0.05.38Hect or 538Sq.m x 400)	Rs. 2,15,200/-
9. Environment monitoring	: Rs. 5,00,000/-
Total	: Rs. 24,70,200/-
D Total Project Cost (A+B+C)	: Rs. 8,55,27,057/-

13.0 FINANCIAL ASSURANCE:

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

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with Reveised Mining Plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone economically without any wastage and to improve the environment and ecology.
- (iii) The Reveised Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Deputy Director, Department of Geology and Mining, Krishnagiri vide letter **Roc.No.26/2025/Mines Dated: 03.04.2025.**
- (iv) Total proposed production rough stone is **293695m³** or **807661Ts**, topsoil is **14700m³** or **29400Ts** and Weathered rock is **29400m³** or **58800Ts** up to a depth of 51m (16m above ground level + 35m Below ground level) for ten years plan period.



17.0 CSR Expenditure:

CSR (Corporate Social responsibility) shall provide by the applicant of average net profit of the company for the last three financial years to the nearest 1% of the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22nd January 2021 as circular no. CSR-05/01/2021-CSR-MCA dated 25th August 2021.

Place: Dharmapuri, TN

Date:

Signature of the Qualified Person

Dr.S.KARUPPANNAN, M.Sc, Ph.D.,
Qualified Person
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

This Mining Plan is approved based on guidelines / instruction issued and in corporation of the particulars specified in the letter Rec. No. 26/25 Dated 8.9.25 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 Mineral Conservation and Development Rule 2010.

DEPUTY DIRECTOR
Geology and Mining,
Collectorate, Krishnagiri.

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

Letter Rec. No. 26/25 Dated 8.9.25

2.1
8.9.25



தமிழ்நாடு அரசு
2024



கிருஷ்ணகிரி மாவட்ட அரசிதழ்

சிறப்பு வெளியீடு

ஆணையின்படி வெளியிடப்பட்டது

கிருஷ்ணகிரி, நவம்பர் 16, 2024
[குரோதி, கார்த்திகை 1 - திருவள்ளூர் ஆண்டு 2055] [எண் 20

மாவட்ட ஆட்சியர் அறிவிக்கை

[ந.க.எண்.2023/2023/(கனிமம்), நாள் : 15.11.2024.]

(மின்அஞ்சல் (mine.tnkgi@nic.in))

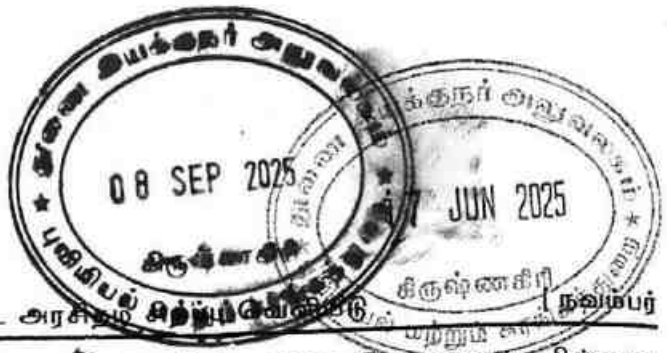
ஒப்பந்தப்புள்ளி வரவேற்கும் அறிவிக்கை

கிருஷ்ணகிரி மாவட்டத்தில் அரசு புறம்போக்கு நிலங்களில் அமைந்துள்ள சாதாரண வகை கற்குவாரிகளில் பொதுப் பயன்பாட்டிற்காக உடைகல் / சாதாரண வகை கற்கள் குவாரி கனிமக் குத்தகை தொடர்பான விண்ணப்பங்கள் வரவேற்கும் அறிவிக்கை

கனிமங்களும் குவாரிகளும் (மேம்படுத்துதல் மற்றும் ஒழுங்குபடுத்துதல்) சட்டம் 1957-ன் பிரிவு 15 மற்றும் அரசாணை (எம்.எஸ்) எண்.21 இயற்கை வளங்கள் (எம்.எம்.சி.1) துறை நாள்: 31.07.2024 மற்றும் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959-ன் விதி எண்.8-ன் படியும், அவ்வப்போது ஏற்படுத்தப்படும் அதன் திருத்தங்களின்படியும், கிருஷ்ணகிரி மாவட்ட நிர்வாகம் இவ்வறிக்கையின் இணைப்பில் கண்டுள்ளவாறு அரசுப்புறம்போக்கு நிலங்களில் அமைந்துள்ள 20 இணங்களில் உள்ள உடைகல் / சாதாரண வகை கற்களை குவாரி செய்து பொதுப் பயன்பாட்டிற்கு, பயன்படுத்தும் பொருட்டு (e-auction) மின்னணு ஏலம் முறையில் கனிமக் குத்தகைக்கு அளிக்க ஒப்பந்தப் புள்ளிகள் வரவேற்கப்படுகின்றன.

மேற்படி கல்குவாரி குத்தகை மின்னணு ஏலத்தில் கலந்து கொள்ள உரிய படிவத்தில் ரூ.5000- (ரூபாய் ஐந்தாயிரம் மட்டும்) விண்ணப்பக் கட்டணத்துடன் அளிக்கப்படும் ஒப்பந்தப்புள்ளிகள் மூலம் தேர்ந்தெடுக்கப்படும் தகுதியான நபர்கள் தொழிற்சாலை அடிப்படையிலான பரிசீலனை மூலம் உறுதிசெய்யப்பட்டு மின்னணு ஏலக்கேட்டில் கலந்துகொள்ள அனுமதிக்கப்படுவார்கள்.

138C/11 (கி) சி.வெ.20.



2

கிருஷ்ணகிரி மாவட்ட அரசு

நவம்பர்

ஒப்பந்தப்புள்ளி ஆவணத்தில் (Tender Document) தகுதிகள் குறித்த நிபந்தனைகள், மின்னணு ஏலத்தில் கலந்து கொள்ள குறிக்கப்பட்டுள்ள நாள் மற்றும் நேரம் ஆகியவை தெரிவிக்கப்பட்டுள்ளன. விளக்கங்களுடன் ஒப்பந்தப்புள்ளி படிவம், மின்னணு ஏலம் தொடர்பான அறிவிக்கை, காலமுறை, முன்கொணர்வுகள் மற்றும் நடைமுறைகள் ஆகியவற்றை வலைதள முகவரி website <https://tntenders.gov.in>-ல் இருந்து பதிவிறக்கம் செய்துகொள்ளலாம்.

மின்னணு ஏலம் கேட்பில் கலந்து கொள்ள ஆர்வமுள்ள மற்றும் தகுதியான நபர்கள் மேற்படி வலைதளத்தில் தாங்களாகவே பதிவு செய்து கொள்ள வேண்டும். அவ்வாறு பதிவு செய்துகொண்ட பின்னர் தகுதியான ஏலக் கேட்பு நபர்கள் உள்நுழைவு அடையாளக் குறியீடு (Login ID) மற்றும் கடவுச் சொல் (Password) ஆகியவற்றை பெற்ற பின்னர் மின்னணு ஏல நடவடிக்கைகளில் பங்குபெறலாம். ஒப்பந்தப்புள்ளி படிவ மாதிரி மற்றும் கனிமப் பகுதியில் சுருக்கமான விவரங்களை கட்டணம் ஏதுமின்றி website <https://tntenders.gov.in> என்ற வலைதளத்தில் பதிவிறக்கம் செய்துகொள்ளலாம். எண்ம கையொப்பம் சான்று (Digital Signature certificate) பெற்றிருக்க வேண்டும்.

இவ்வினத்தில் விருப்பமுள்ள ஏலக்கேட்பு நபர்கள் தேவையான விவரங்கள் மற்றும் தொடர்புடைய ஆவணங்கள் ஆகியவற்றை மின்னணு ஏலம் - டெண்டர் வழிகாட்டு முறை கையேட்டின் பிற்சேர்க்கை 2-ல் கண்டுள்ளவாறு சரியான குறியீடு மற்றும் கடவுச் சொல் பயன்படுத்தி சமர்ப்பிக்க வேண்டும். ஏலக்கேட்பு நபர்கள் ஏலக்கேட்பு கையேட்டினை பார்வையிட்டு மின்னணு ஏலம் மற்றும் ஒப்பந்தப்புள்ளி ஆகியவற்றை இணைய வழி நுழைவாயில் (e-Portal) உரிய முறையில் சமர்ப்பிக்க வேண்டும்.

மின்னணு ஒப்பந்தப்புள்ளி, தொழில்நுட்ப மதிப்பீடு ஆகியவற்றிற்கு வாங்கப்படும் கால அளவு ஒப்பந்தப்புள்ளி வரவேற்கும் அறிவிக்கை வெளியிடப்பட்ட நாளிலிருந்து, தினசரி பத்திரிகைகளில் பிரசுரம் செய்தல் மற்றும் புவியியல் மற்றும் சுரங்கத் துறை வலைதளத்தில் பதிவேற்றம் செய்யப்படும் நாளிலிருந்தும் கணக்கிடப்படும்.

மின்னணு பொது ஏலத்தில் கலந்து கொள்ளும் ஏலதாரர்கள் மற்றும் உயர்ந்தபட்ச ஏலதாரர்கள் ஆகியோருக்கு மாவட்ட ஆட்சியரின் ஏல ஆவண வழிகாட்டு நெறிமுறைகள் தொகுப்பு எண்.001/MM/2024-1 நாள். 15.11.2024-ன் படி தெரிவிக்கப்பட்டுள்ளது.

கால வரையறை

மின்னணு ஒப்பந்தப்புள்ளிக்கான காலவரையறை ஒப்பந்தப்புள்ளி தொடர்பான ஆவணத்தில் உள்ளவை.

மின்னணு ஒப்பந்தப்புள்ளி விண்ணப்பம் சமர்ப்பிக்க இறுதி நாள் - 06.12.2024

விண்ணப்பங்களை (தொழில்நுட்ப கேட்புகளுக்காக திறக்கும் நாள் - 09.12.2024

மின்னணு ஏல நாள் - பின்னர் அறிவிக்கப்படும்

இணைப்பு - மின்னணு ஒப்பந்தப்புள்ளி மற்றும் மின்னணு ஏலத்தின் மூலம் கல்குவாரி கனிமக் குத்தகை அளிக்கப்படக் கூடிய குவாரிகளின் விவரம்.



2024]

கிருஷ்ணகிரி மாவட்ட அரசிதழ்மீது காவல்துறை

அட்டவணை - சாதாரண கற்குவாரி பட்டியல்

1. கிருஷ்ணகிரி வருவாய் கோட்டம்

கிருஷ்ணகிரி வட்டம்

வ. எண்.	கிராமம்	புல எண்	மொத்த பரப்பு	குவாரி குத்தகை வழங்கும் பரப்பு	வகைப்பாடு	குத்தகை உரிமம் காலம்
(1)	(2)	(3)	(4) (ஹெக்டேர்)	(5) (ஹெக்டேர்)	(6)	(7) (வருடங்கள்)
1	கல்லுகுறுக்கி	354 (பகுதி-1)	46.61.0	1.00.0	தீ.ஏ.த (மலை)	10
2	கல்லுகுறுக்கி	354 (பகுதி-2)	46.61.0	1.00.0	தீ.ஏ.த (மலை)	10
3	கல்லுகுறுக்கி	354 (பகுதி-3)	46.61.0	1.00.0	தீ.ஏ.த (மலை)	10
4	கல்லுகுறுக்கி	354 (பகுதி-4)	46.61.0	1.00.0	தீ.ஏ.த (மலை)	10

2. ஓசூர் வருவாய் கோட்டம்

ஓசூர் வட்டம்

5	அச்செட்டிப்பள்ளி	886, 887 (பகுதி), 896 மற்றும் 895 (பகுதி)	8.78.5	4.00.0	கல்லாங்குத்து	10

குளகிரி வட்டம்

6	பேரிகை	305/4 (பகுதி)	1.89.0	1.15.0	தீ.ஏ.த (பாறை)	10
7	உல்லட்டி	122 (பகுதி-1)	4.31.0	1.00.0	தீ.ஏ.த (பாறை)	10
8	காமன்தொட்டி	653 (பகுதி-1)	7.56.0	3.35.0	தீ.ஏ.த (தரிசு)	5
9	காமன்தொட்டி	754 மற்றும் 760 (பகுதி-6)	36.46.50	4.00.0	தீ.ஏ.த (மலை)	10
10	மாண்டப்பள்ளி	71/2	1.15.0	1.15.0	தீ.ஏ.த (பாறை)	10
11	வெங்கடேசபுரம்	132 (பகுதி-1)	3.90.0	1.55.0	தீ.ஏ.த (பாறை)	10
12	வெங்கடேசபுரம்	132 (பகுதி-2)	3.90.0	1.45.0	தீ.ஏ.த (பாறை)	10
13	வெங்கடேசபுரம்	135 (பகுதி)	42.34.0	1.70.0	தீ.ஏ.த (காடு)	10



4

கிருஷ்ணகிரி மாவட்ட அரசிதழ் சிறப்புத் திட்டம் (நவம்பர் 2024)

(1)	(2)	(3)	(4) (ஹெக்டேர்)	(5) (ஹெக்டேர்)	(6)	(7) (வருடங்கள்)
14	வெங்கடேசுபுரம்	294 (பகுதி-1)	18.36.5	3.00.0	தீ.ஏ.த (கரடு)	10
15	மதிநாயக்கன் பாளையம்	53 (பகுதி-1)	86.01.5	1.70.0	தீ.ஏ.த (கரடு)	10
16	மதிநாயக்கன் பாளையம்	53 (பகுதி-2)	86.01.5	2.00.0	தீ.ஏ.த (கரடு)	10
17	வெங்கடேசுபுரம்	136 (பகுதி-10)	69.36.0	2.00.0	தீ.ஏ.த (கரடு)	5
தேன்கணிக்கோட்டை வட்டம்						
18	ஒசுபுரம்	359 (பகுதி)	3.03.5	1.50.0	தீ.ஏ.த (தரிக)	10
19	தண்டரை	738 (பகுதி-2)	61.78.0	2.00.0	தீ.ஏ.த (மலை)	10
20	தண்டரை	738 (பகுதி-3)	61.78.0	1.50.0	தீ.ஏ.த (மலை)	10

கிருஷ்ணகிரி.
15.11.2024.

கே.எம். சரயு,
மாவட்ட ஆட்சியர்,
கிருஷ்ணகிரி மாவட்டம்.

தமிழ்நாடு எழுதுபொருள் மற்றும் அச்சத்துறை ஆணையரால் சேலம் அரசினர் கிணை அச்சகத்தில்
அச்சிடப்பட்டு மாவட்ட ஆட்சியரால் வெளியிடப்பட்டது.

Government of Tamil Nadu
2024



KRISHNAGIRI DISTRICT GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 12]

KRISHNAGIRI, NOVEMBER 16, 2024
(Krodhi, Karthigai 1 – Thiruvalluvar Aandu 2055)

NOTIFICATION BY THE COLLECTOR

[Rc.No.2023/2023/(Mines), Dated : 15.11.2024]

E-mail : (mine.tnkgi@nic.in)

Notice Inviting Tender (NIT)

Inviting Application for Grant of Rough Stone Quarry Leases in Government Lands

In exercise of the power conferred by Section 15 of Mines and Mineral (Development & Regulation) Act, 1957 and in accordance with the Rule 8 of the Tamil Nadu Minor Mineral Concession Rules, 1959 read with G.O. Ms. No.21, Natural Resources (MMC:1), 31st July 2024 as amended from time to time notified there under, the District Administration of Krishnagiri District, Tamil Nadu has identified 20 areas in Krishnagiri District for grant of leases through electronic auction (e-auction) to quarry Rough Stone and hereby invites tender for the said purpose.

Accordingly, technical bids for grant of quarry lease are invited in the format of "FORM XXXXX" to the Tamil Nadu Minor Mineral Concession Rules, 1959, in digital format from eligible bidders.

138C/11 (K) Ex.No.12.



2

KRISHNAGIRI DISTRICT GAZETTE EXTRAORDINARY

1 NOVEMBER

Eligible condition, date and time for participating in the electronic auction are provided in Tender Document. Detailed Tender Document along with the timeline, notification, updates and other details for the e-auction process for the quarries are available in electronic form only and can be downloaded from the website <https://tntenders.gov.in>.

Interested and eligible bidders can register themselves on the above website. On successful registration, Eligible bidders will obtain login ID and password necessary for participation in the e-auction process. Model Tender Document and Mineral Block Summary are available free of cost on the website <https://tntenders.gov.in>.

The intending bidders should submit necessary details and relevant mandatory documents in "ANNEXURE-II", by using valid login User ID and password. The bidders should refer to the 'Bidder's Manual' for successful submission of "FORM XXXXX" for participating in the tenders, which is available in the e-Auction portal. The period given to the bidder for submission of e-tenders for Technical Evaluation, is counted from the date on which the notice inviting tender (e-NIT) including e-tender is actually published in newspaper(s) and the website of the Department of Geology and Mining (<https://tnmines.tn.gov.in>).

The Guidelines stipulated in the Tender document by the District Collector vide Tender No.001/MM/2024-1 Dated: 15.11.2024 are binding on the participating bidders and successful bidders.

Time schedule:

The detail time schedule is available in the tender document.

Technical bid submission end date of application : 06.12.2024

Technical bid opening date : 09.12.2024

Financial bid opening and live e-auction date : Will be intimated later on through
Tamil Nadu e-Tender portal



2024]

KRISHNAGIRI DISTRICT GAZETTE EXTRAORDINARY

List of Areas identified in Government Lands in Krishnagiri District of
Tamil Nadu for Grant of Rough stone Quarry Leases through

e-Auction

1. Krishnagiri – Revenue Division

Krishnagiri Taluk

Sl. No	Village	SF. No.	Total Extent In Hectare	Proposed Extent In Hectare	Classification of land	Period of lease to be granted
(1)	(2)	(4)	(5)	(6)	(7)	(8) (in number of years)
1	Kallukurukki	354 (Part-1)	46.61.0	1.00.0	UAW (Malai)	10
2	Kallukurukki	354 (Part-2)	46.61.0	1.00.0	UAW (Malai)	10
3	Kallukurukki	354 (Part-3)	46.61.0	1.00.0	UAW (Malai)	10
4	Kallukurukki	354 (Part-4)	46.61.0	1.00.0	UAW (Malai)	10

2. Hosur – Revenue Division

Hosur Taluk

5	Achettipalli	886, 887 (Part), 896 & 895 (Part)	8.78.50	4.00.0	(Kalankuthu)	10

Shoolagiri Taluk

6	Berigai	305/4 (Part)	1.89.0	1.15.0	UAW (Parai)	10
7	Ullati	122 (Part-1)	4.31.0	1.00.0	UAW (Parai)	10
8	Kamandoddi	653 (Part-1)	7.56.00	3.35.0	UAW (Tharisu)	5
9	Kamandoddi	754 & 760 (Part-6)	36.46.50	4.00.0	UAW (Malai)	10
10	Marandapalli	71/2	1.15.0	1.15.0	UAW (Parai)	10
11	Venkatesapuram	132 (Part-1)	3.90.0	1.55.0	UAW (Parai)	10
12	Venkatesapuram	132 (Part-2)	3.90.0	1.45.0	UAW (Parai)	10
13	Venkatesapuram	135 (Part)	42.34.0	1.70.0	UAW (Karadu)	10



4

KRISHNAGIRI DISTRICT GAZETTE EXTRAORDINARY [NOVEMBER 2024]

(1)	(2)	(3)	(4)	(5)	(6)	(7) (In number of years)
14	Venkatesapuram	294 (Part-1)	18.36.5	3.00.0	UAW (Karadu)	10
15	Mathinayakanpalayam	53 (Part-1)	86.01.5	1.70.0	UAW (Karadu)	10
16	Mathinayakanpalayam	53 (Part-2)	86.01.5	2.00.0	UAW (Karadu)	10
17	Venkatesa puram	136(Part-10)	69.36.0	2.00.0	UAW (Karadu)	5
Denkanikottai Taluk						
18	Hosapuram	359(Part)	3.03.5	1.50.0	UAW (Tharisu)	10
19	Thandarai	738(Part-2)	61.78.0	2.00.0	UAW (Malai)	10
20	Thandarai	738(Part-3)	61.78.0	1.50.0	UAW (Malai)	10

Krishnagiri,
15.11.2024.

K.M. SARAYU,
District Collector,
Krishnagiri District.

GOVERNMENT OF TAMIL NADU
2024



KRISHNAGIRI DISTRICT GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 14]

KRISHNAGIRI, NOVEMBER 27, 2024
(Krodhi, Karthigai 12 - Thiruvalluvar Aandu 2055)

NOTIFICATION BY THE COLLECTOR

[Roc.No.2023/2023/(Mines), Date : 26.11.2024]

[Amendment Notice Inviting Tender Applications for the Grant of Quarry Lease for Rough Stone situated in Government lands in Krishnagiri District through e-Tender cum auction system as per Rule 8 of the Tamil Nadu Minor Mineral Concession Rules, 1959].

For and on behalf of the Government of Tamil Nadu Tender applications were invited by the District Collector, Krishnagiri through online vide Krishnagiri District Gazette Extraordinary Notification No.20 (Tamil) and 12 (English) dated:16.11.2024 for grant of rough stone quarry leases in Government lands situated in Krishnagiri District, wherein the last date for submission of tender applications through online was mentioned as 06.12.2024 upto 4.00 PM and Technical Biding opening date was mentioned as 09.12.2024 at 10.00 AM.

For administrative reasons, the following amendment is hereby made to the Gazette notification No.20 and 12 dated:16.11.2024.

Technical bid submission end date	:	16.12.2024 upto 5.00 PM
Technical bid opening date	:	17.12.2024 at 10.00 AM
Date of e-auction date	:	Will be intimated later in Tamil Nadu e-Tender portal

Krishnagiri,
26.11.2024.

K.M. SARAYU,
District Collector,
Krishnagiri District.

PRINTED BY THE COMMISSIONER OF STATIONERY AND PRINTING AT THE GOVERNMENT BRANCH PRESS, SALEM
AND PUBLISHED BY THE COLLECTOR OF THE DISTRICT.



THE DISTRICT COLLECTOR, KRISHNAGIRI DISTRICT

(Tender Document)

TENDER No.001/Mines/2024-1, Dated: 26.11.2024.

**e-Tender with forward bidding for grant of Rough Stone quarry
leases in Krishnagiri District.**



OFFICE OF THE DISTRICT COLLECTOR, KRISHNAGIRI

Phone No. 04343-239301, 239302, 239303 Fax No: 91-4343-239304

E-Mail: mine.tnkgi@nic.in

Tender No.001/Mines/2024-1

Dated : 26.11.2024.

NOTICE INVITING e-TENDER with FORWARD BIDDING
INFORMATION AND GUIDELINES TO TENDERERS
(Tender Document)

E-tender with forward bidding is invited through the e-tendering portal by the District Collector, Krishnagiri for grant of Rough Stone quarry leases in Krishnagiri District as indicated in the Annexure I of this tender, document.

The tendering process is online at e-portal URL (Universal Resources Locator) address <https://tntenders.gov.in>. Aspiring bidders may download and go through the tender document. The URL for online bid submission in e-tender is <https://tntenders.gov.in/nicgep/app>

Intending tenderers are advised to get themselves registered at Tamil Nadu tender portal, obtain 'login ID' & 'password' and go through the instructions available in the Home page after log in to the Tamil Nadu Tender Portal <https://tntenders.gov.in>. They should also obtain Digital Signature Certificate (DSC) in parallel which is essentially required for submission of their application.

1. A) Eligibility to participate:

- a) The applicant shall be an Indian National or a Company as defined in clause (20) of section 2 of the Companies



- Act 2013 (Central Act 18 of 2013) and domicile of Tamil Nadu having business and corporate office in Tamil Nadu.
- b) In case of a firm or other Association of persons, only if all the members of the firm or members of the Association shall be citizens of India; in case of an individual, only if he / she shall be a citizen of India.
 - c) In case of a firm or other association of persons, only if all the members of the firm or members of the Association shall reside or doing business with an established office or corporate office in Tamil Nadu for a minimum period of 05 years (five years).
 - d) In case of an individual, only if he / she shall reside or doing business with an established office in Tamil Nadu for a minimum period of 05 years (five years).
 - e) The Applicant shall not have any dues, namely, mining dues, income tax dues, Goods and service Tax dues etc., to be paid to the Government.
 - f) The applicant shall obtain a valid mining dues clearance certificate from the Assistant Director of geology and Mining where the quarrying or mining lease area is situated, in the form prescribed in Appendix-VIII of the Tamil Nadu Minor Mineral Concession Rules 1959.
 - g) The applicant shall satisfy such other conditions as specified in this tender document.

2. e-TENDER WITH FORWARD BIDDING:

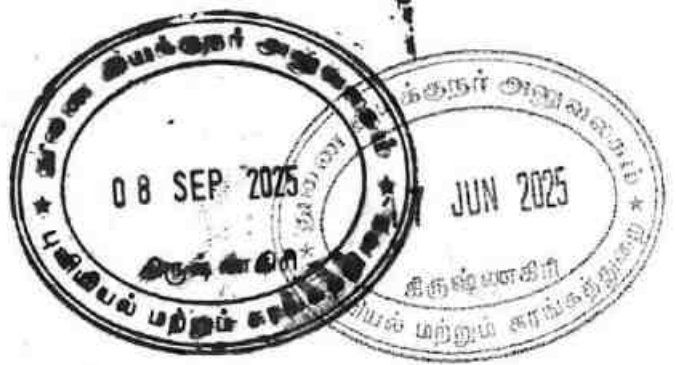
- a) The details of the areas offered under the e-Tender with forward bidding for grant of Rough Stone quarry lease is given in the Annexure -I.



- b) The e-auction shall be an ascending forward online electronic auction and shall comprise the following rounds namely, a technical bid (1st round of e-auction) and offering of bid amount with forward bidding greater than the floor price (2nd round of e-auction).
- c) The bidders shall first submit their e-tenders and then take part in the forward bidding when the live Forward bidding is opened during the stipulated date & time as in the critical data sheet Annexure-V.
- d) The date & time period of live Forward bidding will be intimated through the Tamil Nadu e-Tender portal / email after evaluation of the Technical and Financial bid.
- e) Only the bidders shall become eligible in accordance with the terms and conditions of eligibility specified in the Gazette published and this tender document.
- f) Only those bidders whose initial tender price offered is greater than the reserved price shall be considered as the Technically qualified bidders eligible to participate in the further round of e-auction.
- g) Whenever the number of Technically qualified bidders are more than ten, the 1st 10 highest bidders shall be eligible for participating in the second round of e-auction, and if the number is less than 10, all the technically qualified bidders will be eligible for participating in the 2nd round of e-auction.
- h) If the number of bidders qualified to participate in the 2nd round is less than three, e-auction process shall be annulled.



- i) The highest initial bid price offered amongst the qualified bidders quoted over and above the reserve price shall be the floor price for the 2nd round of e-auction.
- j) The qualified bidder who offers the highest final price in the forward bidding shall be declared as the successful bidder immediately on conclusion of the e-auction.
- k) The e-auction process shall be annulled if none of the technically qualified bidders offer a final price or a price higher than the floor price on the online e-auction platform.
- l) If there are any clarifications, the same may be obtained online through the e-Portal or through the contact details given in the tender document. Bidder should take into account of the corrigendum addendum published, if any, before submitting the bids through online.
- m) Tender inviting authority will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to any technical issues.
- n) The time that is displayed from the server clock at the top of the tender portal, will be valid for all actions of requesting bid submission, bid opening, forward bidding etc.,
- o) E-tender /Forward bidding cannot be accessed after the due date and time for bid submission.
- p) The bidder shall submit the bid documents and bid in forward bidding online mode only, through <https://tntenders.gov.in> portal.



- q) All notices and correspondence to the bidder(s) will be sent by email only, during the process till finalization of tender with forward bidding. Hence the bidders are required to ensure that their email address provided at the time of registration is valid and updated. Bidders are also requested to ensure validity of their DSC.
- r) Bidders are advised to see the website regularly to remain updated with latest information to ensure that they do not miss out any corrigendum / addendum uploaded against the said e-Tender with forward bidding. The responsibility of downloading the related corrigendum, if any, will be that of the bidders.
- s) All electronic bids submitted during the e-Tender with forward bidding process shall be legally binding on the bidder. Any bid will be considered as the valid bid offered by that bidder and acceptance of the same by the Tender inviting authority will form a binding contract between TIA and the Bidder.
- t) It is mandatory that all the bids are submitted with digital signature certificate otherwise the same will not be accepted by the system.
- u) Tender Inviting Authority reserves the right to cancel or reject or accept or withdraw or extend the tender with forward bidding in full or in part as the case may be without assigning any reason thereof.
- v) The server time shall be treated as final and binding. Bids recorded in the server before the bid closing time will only be treated as valid bid. Bidders are, therefore,



advised to submit their bids well before the closing time of e-tender cum auction. If any bid reaches the server after the bid closing time as per server time, the same will not be recorded and no complaint in this regard shall be entertained.

- w) Bidders are advised to exercise caution in quoting their bids in e-Tender with forward bidding to avoid any mistake. Bids once submitted can't be recalled after bid closing time.
- x) Tenders shall be subject to all the conditions stipulated in the Tender specification. Any other conditions of counter offers stipulated by the bidders in their tender will not be accepted.

3. PAYMENTS:

- a. Any person interested to participate in the e-auction shall pay through online a non-refundable application fee of Rs.5,000/- (Rupees five thousand only).
- b. Every bidder shall, while applying for bidding, pay online, as bid security amount equal to 1% of the value of the estimated resources or Rs.10,00,000/- (Rupees ten lakhs only) for fresh rough stone quarries and Rs.5,00,000/- (Rupees five lakhs only) for other quarries, whichever is higher.
- c. On declaration of the name of the successful bidder, the successful bidder shall pay 10% of the bid amount as initial payment through electronic clearance service (ECS), within 24 hours of such declaration. If the 24



hours limit happens to the bank holiday, the payment shall be made on the immediate next working day of the bank.

- d. If the declared successful bidder fails to pay the 10% of the bid amount within 24 hours, his/ her bid shall be rejected and the bid security amount paid by him / her shall be forfeited to the Government within two days. The remaining 90% of the bid amount, deducting the bid security amount already paid, shall be paid by the successful bidder through electronic clearance service (ECS), within one month from the date of declaration. If the bidder fails to do so, the 10% of the bid amount already paid by the successful bidder along with the bid security amount shall be forfeited to the Government within one week.
- e. TIA will not be responsible for any sort of difficulties or delay faced by the bidder during the online payment.
- f. Any other mode of payment other than ECS (Electronic Clearance Services) shall not be accepted.
- g. In case of unsuccessful bidders, on conclusion of the e-auction process, the bid security amount paid by the persons other than the successful bidders shall be refunded automatically to bidders through "Pooling Account" of the State Government only. Tender Inviting Authority is no way responsible for refund of bid security amount to the unsuccessful bidders.



4. SUBMISSION OF e-TENDER:

Bidder has to select the payment option as "pay online" to pay the Tender Application fee and bid security amount. Only after payment of Tender Application fee and bid security amount, bidder will be able to encrypt/upload their bids. In order to avoid last minute lapses, it is recommended to make payment and submit the bid as early as possible.

Cover-1 named "Technical bid":

The bidder shall upload the scanned copies of the following:

- ✓ Annexure II duly filled & signed (Tenderer name, Full Postal address & contact details to be filled legibly without fail).
- ✓ Annexure III duly filled and signed.
- ✓ Scanned copy of Aadhar card.
- ✓ Scanned copy of GST Registration Certificate.
- ✓ Scanned copy of PAN Card.
- ✓ Scanned copy of Certificate of Registration.
- ✓ Affidavit for no mining dues / no mining due clearance certificate obtained from competent authority.

Cover -2 named "Financial bid":

The bidder shall download the BOQ (Bill of Quantities) template available under "Details of price quoted" and fill up the name of the bidder & the rates offered for each area in relevant column. After filling the details, the bidder should save it and upload without changing the file name.

Note: The rates quoted shall be exclusive of Seigniorage fee,



DMFT, Green fund, GST and other taxes and levies imposed by the Government then and there. The same will have to be paid additionally by successful bidder.

5. FORCE MAJEURE:

In case, the terms contained herein or in the order cannot be performed either by the bidder or TIA for any reason arising out of the laws/regulations / restrictions governing mining industry, natural calamities, war/hostility, military operation of any character, civil commotions, sabotage, Pandemic, riots, quarantine restriction, acts of Government embargoes, the Successful Bidder shall not be entitled for any compensation.

6. NON ASSIGNABILITY:

The letter of confirmation issued to successful bidder is not transferable or assignable in whatsoever manner. Tender inviting Authority will not entertain any third party nominee/ assignee in whatsoever manner on behalf of the Successful Bidder.

7. TRACK THE WEBSITE:

Intending bidders are advised to visit <https://tntenders.gov.in> regularly till closing date of e-auction for any corrigendum / addendum / amendment.

8. DISCRETION:

- a) The tender accepting authority, reserves the right of rejection / cancellation of all or any of the tenders without assigning any reason thereof or split up the tender as deemed fit.



- b) The tender accepting authority, reserves the right to cancel the bid even after acceptance or during performance of the contract.
- c) The tender accepting authority reserves the right to alter/modify any of the above tender conditions before the award of the tender.

[Signature]
DISTRICT COLLECTOR,
KRISHNAGIRI

[Signature]

For any technical assistance with regard to e-tendering, the bidders may contact the following official on all working days:-

The Deputy Director,
Department of Geology
and Mining,
Collectorate, Krishnagiri.

Phone No:04343-239200 Fax No. 04343-239300 & Mobile: 94990 02247



ANNEXURE -1

Tender No.001/Mines/2024-1

Dated: 26.11.2024

THE DETAILS OF THE AREAS FOR GRANT OF ROUGH STONE QUARRY LEASES IN KRISHNAGIRI DISTRICT THROUGH e-Tender WITH FORWARD BIDDING

1. Krishnagiri – Revenue Division

Krishnagiri Taluk

Sl. No	Taluk	Village	SF. No.	Total Extent in Ha	Proposed Extent in Ha	Classification of land	Period of lease to be granted (in number of years)
1	Krishnagiri	Kallukurukki	354 (Part-1)	46.61.0	1.00.0	UAW (Malai)	10
2	Krishnagiri	Kallukurukki	354 (Part-2)	46.61.0	1.00.0	UAW (Malai)	10
3	Krishnagiri	Kallukurukki	354 (Part-3)	46.61.0	1.00.0	UAW (Malai)	10
4	Krishnagiri	Kallukurukki	354 (Part-4)	46.61.0	1.00.0	UAW (Malai)	10

2. Hosur – Revenue Division

Hosur Taluk

Sl. No	Taluk	Village	SF. No.	Total Extent in Ha	Proposed Extent in Ha	Classification of land	Period of lease to be granted (in number of years)
5	Hosur	Achettipalli	886, 887(Part), 896 & 895(Part)	8.78.50	4.00.0	UAW (Kalankuthu)	10

Shoolagiri Taluk

Sl. No	Taluk	Village	SF. No.	Total Extent in Ha	Proposed Extent in Ha	Classification of land	Period of lease to be granted (in number of years)
6	Shoolagiri	Berigai	305/4 (Part)	1.89.0	1.15.0	UAW (Parai)	10
7	Shoolagiri	Ullatti	122 (Part-1)	4.31.0	1.00.0	UAW (Parai)	10



8	Shoolagiri	Kamandoddi	653(Part-1)	7.56.00			
9	Shoolagiri	Kamandoddi	754 & 760 (Part-6)	36.46.50	4.00.0	UAW (Malai)	10
10	Shoolagiri	Marandapalli	71/2	1.15.0	1.15.0	UAW (Parai)	10
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13	Shoolagiri	Venkatesa puram	135 (Part)	42.34.0	1.70.0	UAW (Karadu)	10
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16	Shoolagiri	Mathinayaka npalayam	53 (Part-2)	86.01.5	2.00.0	UAW (Karadu)	10
17	Shoolagiri	Venkatesa puram	136(Part-10)	69.36.0	2.00.0	UAW (Karadu)	5

Denkanikottai Taluk

Sl. No	Taluk	Village	SF. No.	Total Extent in Ha	Proposed Extent in Ha	Classification of land	Period of lease to be granted (in number of years)
18	Denkani kottai	Hosapuram	359(Part)	3.03.5	1.50.0	UAW (Tharisu)	10
19	Denkani kottai	Thandarai	738(Part-2)	61.78.0	2.00.0	UAW (Malai)	10
20	Denkani kottai	Thandarai	738(Part-3)	61.78.0	1.50.0	UAW (Malai)	10

[Signature]
 District Collector,
 Krishnagiri.
 26/11/24



ANNEXURE - I

Tender No. 001/Mines/2024-1

Dated: 26.11.2024

Back ground details of Bidder

1	Name and address of the Individual / firm/company (with full postal address)	:	
2	Telephone/ Mobile number	:	
3	Contact Person	:	
4	Email Address	:	
5	Status of the firm Proprietorship/Partnership Company (Certificate of Registration to be enclosed)	:	
6	Aadhar card number	:	
7	PAN Number.	:	
8	GST Number	:	
9	Audited P/L & Balance sheet of last two years.	:	
10	No Mining dues affidavit - with notional attestation whether enclosed.	:	
11	Mining due clearance certificate obtained from the competent authority - whether enclosed.	:	
12	Affidavit for quarry leases already held, applied, yet to be granted and simultaneously applied with notarial attestation	:	
13	Any other relevant particulars	:	

I / We hereby declare that the particulars furnished above are correct and I/ We are ready to furnish any other detail or details as may be required by the DISTRICT COLLECTOR, KRISHNAGIRI.

**SIGNATURE OF THE TENDERER
WITH OFFICE SEAL (if any)**

Encl: The scanned copy of the followings have been uploaded

- 1.Aadhar Card
- 2.GST Registration
- 3.PAN card.
- 4.Certificate of Registration

[Signature]
District Collector
Krishnagiri.

[Signature]



ANNEXURE - III

TENDER DECLARATION FORM

Tender No. 001/Mines/2024-1

Dated: 26.11.2024

1. I/we have gone through the tender notice and all the instructions to the bidder and agree to abide by all the conditions and terms mentioned therein.
2. I /We hereby quote the price for the rough stone quarry lease specified in the Annexure I. The quotations furnished in the schedule are subject to the conditions set-forth in the tender form.
3. I/We hereby certify that myself / our firm has not been banned or black listed by the Government on account of unfair business dealings with any Government Departments and Government undertaking.

SIGNATURE OF THE TENDERER.
WITH OFFICE SEAL (if any)

[Signature]
District Collector
Krishnagiri. 15/12

26/11/24



ANNEXURE-IV

Details of price quoted

Tender No. 001/Mines/2024-1 Dated: 26.11.2024

BOQ



Annexure - V

Tender No.001/Mines/2024-1, Dated: 26.11.2024

CRITICAL DATA SHEET

(As per amended Gazette No. 14 dated: 26.11.2024)

Publishing date	
Bid document download starting date	29.11.2024 from 1000 hrs
Bid submission starting date	29.11.2024 from 1000 hrs
Bid Submission ending date	16.12.2024 upto 1700 hrs
Technical bid opening date	17.12.2024 at 1000 hrs
Date of e-Auction	Will be intimated later in Tamil Nadu e-Tender portal
Tender fee / Application fee	Rs.5,000/- (Non-refundable)
Bid Security Amount	As per Annexure VI of the Tender Document

**DISTRICT COLLECTOR,
KRISHNAGIRI**

26/11/24

ANNEXTURE VI

Details of EMD and Tender fee

Sl. No.	Taluk	Village	S.F	Extent in Hects.	Proposed Lease Period in years	EMD fixed As per G.O.No.21 dt.31.07.2024 (in Rs.)	Tender fee Application Fee (in Rs.)
1	Krishnagiri	Kallukurukki	354(Part-1)	1.00.0	10	11,19,836	5000
2	Krishnagiri	Kallukurukki	354(Part-2)	1.00.0	10	11,12,241	5000
3	Krishnagiri	Kallukurukki	354(Part-3)	1.00.0	10	11,28,173	5000
4	Krishnagiri	Kallukurukki	354(Part-4)	1.00.0	10	11,60,777	5000
5	Hosur	Achettipalli	886,887(P),896 & 895(P)	4.00.0	10	60,19,588	5000
6	Shoolagiri	Berigai	305/4(Part)	1.15.0	10	12,53,461	5000
7	Shoolagiri	Ullatti	122(Part-1)	1.00.0	10	10,00,000	5000
8	Shoolagiri	Kamandoddi	653(Part-1)	3.35.0	5	24,92,576	5000
9	Shoolagiri	Kamandoddi	754&760(Part-6)	4.00.0	10	50,09,308	5000
10	Shoolagiri	Marandapalli	71/2	1.15.0	10	15,59,731	5000
11	Shoolagiri	Venkatesapuram	132(Part-1)	1.55.0	10	13,95,155	5000
12	Shoolagiri	Venkatesapuram	132(Part-2)	1.45.0	10	13,43,292	5000
13	Shoolagiri	Venkatesapuram	135(Part)	1.70.0	10	19,12,484	5000
14	Shoolagiri	Venkatesapuram	294(Part-1)	3.00.0	10	36,05,395	5000
15	Shoolagiri	Mathinayakan palayam	53(Part-1)	1.70.0	10	14,96,857	5000
16	Shoolagiri	Mathinayakan palayam	53(Part-2)	2.00.0	10	22,60,702	5000
17	Shoolagiri	Venkatesapuram	136(Part-10)	2.00.0	5	31,15,364	5000
18	Denkanikottai	Hosapuram	359(Part)	1.50.0	10	14,53,731	5000
19	Denkanikottai	Thandarai	738(Part-2)	2.00.0	10	21,76,317	5000
20	Denkanikottai	Thandarai	738(Part-3)	1.50.0	10	13,39,135	5000

Note : The Bidders shall pay respective EMD for each proposed areas for which they want to apply. For other non-interested areas for which they don't want to apply, the Bidder shall click "EMD Exemption" option available in the website during online application and shall upload " self - declaration " statement with signature by stating the reason why EMD Exemption is availed.

Signature Not Verified

Digitally signed by EASWARAN
Date: 2024.12.02 09:00:00 IST
Location: Tamil Nadu, TN



ANNEXURE - II



Rc.No.26/2025/Mines dated:03.04.2025

O/o. Deputy Director of
Geology & Mining,
Collectorate, Krishnagiri.

Precise Area Communication

Sub : Mines and Minerals – Minor Mineral – Rough Stone –
Krishnagiri District – Denkanikottai Taluk - Thandarai
Village – SF.No.738(Part-2) – over an extent of
2.00.0 hectare of Government poramboke land – e-
Tender cum Auction conducted – Highest bid amount
offered by M/s.Altima Blue Metals – Highest bidder
not remitted the 10% of lease amount within the
stipulated period – 2nd Highest bidder M/s. Shri
Natural Stones declared as the successful bidder -
Entire bid amount remitted - Precise area
communicated -Reg.

- Ref :
1. Krishnagiri District Gazette (Extra-ordinary)
Notification No.12 & 20 dated: 16.11.2024.
 2. e-auction (live) conducted on 03.01.2025.
 3. Notice in Rc.No.29/2025/Mines
dated:13.01.2025 and 12.02.2025
 4. Connected Records.

kind attention is invited to the references cited above.

2) Based on the recommendations of the Special
Committee report dated: 13.11.2024, the District Collector,
Krishnagiri has issued notice inviting tender under District
Gazette No.12(English) & 20(Tamil) dated: 16.11.2024 and
received applications through online from the interested bidders
for conducting e-Tender cum auction.



3) The Highest bidder, namely M/s. Altima Blue Metals declared in respect of the area proposed in SF.No.738 (Part-2) over an extent of 2.00.0 hecets situated in Thandarai village, Denkanikottai Taluk, has not remitted 10% of H1 within a period of 24 hours immediately after H1 declaration. Hence, the said declaration of H1 has been cancelled as per Rule 8(16)(E) of TNMMCR, 1959. Subsequently, the next highest bidder namely M/s. Shri Natural Stones quoted bid amount of Rs.8,02,56,799/- to the subject area has been declared as the successful bidder as per Rule 8(16)(F) of TNMMCR 1959 vide Rc.No.29/2025/mines dated: 13.01.2025 and M/s. Shri Natural Stones has remitted 10% of the highest bid amount of Rs.80,25,680/-within stipulated time period.

4) Since, M/s. Shri Natural Stones has quoted, the highest bid amount of Rs.8,02,56,799/- (Rupees Eight crores two lakhs fifty six thousand seven hundred and ninety nine only) for the proposed lease area in Government poramboke land over an extent of 2.00.0 hectares in SF.No.738(Part-2), Thandarai Village, Denkanikottai Taluk, Krishnagiri District, M/s. Shri Natural Stones has been declared as the successful bidder.

5) In this regard, the highest bidder M/s. Shri Natural Stones vide reference 3rd cited has been directed to remit the quoted highest bid amount to the proper head of Government Account. Accordingly, the M/s. Shri Natural Stones has remitted the entire bid amount of Rs.8,02,56,799/- (Rupees Eight crores two lakhs fifty six thousand seven hundred and ninety nine only) as detailed below;



JUN 2025

Challan Date	E-challan No.	Bank	Category	Amount in Rs.
EMD remitted during application through online			EMD	2176317
13.01.2025	20250109009963	SBI, Krishnagiri	10% of Bid amount	8025680
13.02.2025	20250212034395	SBI, Krishnagiri	90% of Bid amount	3500000
15.02.2025	20250214076349	SBI, Krishnagiri		5000000
18.02.2025	20250217005839	SBI, Krishnagiri		1500000
24.02.2025	20250218018509	SBI, Krishnagiri	90% of Bid amount	7548000
24.02.2025	20250217017557	SBI, Krishnagiri		7500000
24.02.2025	20250217017585	SBI, Krishnagiri		7500000
24.02.2025	20250217017626	SBI, Krishnagiri		7500000
24.02.2025	20250217017663	SBI, Krishnagiri		7500000
24.02.2025	20250218018527	SBI, Krishnagiri		7500000
24.02.2025	20250218018446	SBI, Krishnagiri		7506860
10.03.2025	20250218018546	SBI, Krishnagiri		7500000
			Total	80256857

6) Since the subject area in SF.No.738(Part-2) over an extent of 2.00.0 hecets of Government poramboke land situated in Thandarai Village, Denkanikottai Taluk, Krishnagiri District, has been considered as the qualified area for grant of lease for the period of 10 years, this precise area under Rule 41(4) of TNMMCR 1959 is hereby communicated to the successful bidder M/s. Shri Natural Stones. They are hereby directed to submit a draft mining plan within a period of 90 days from the date of receipt of this communication as required under Rule 41 of TNMMCR 1959 for approval of the Deputy Director of Geology



and Mining, Krishnagiri and further directed to obtain prior environment clearance from the State Level Environment Impact Assessment Authority, (SEIAA) Chennai as required under Rule 42 of TNMMCR 1959 for further process to grant of lease in the proposed lease area subject to the following conditions:-

- 1) A safety distance of 7.5 meters is to be maintained to the adjacent patta lands and a safety distance of 10 meters to be maintained to the adjacent Government lands and should not cause any hindrance to them while quarrying and transportation.
- 2) All conditions stipulated in the District Gazette Extra ordinary notification No.12 (English) & 20 (Tamil) dated: 16.11.2024 should be adhered by the bidder.
- 3) Environment clearance should be obtained from the State Level Environmental Impact Assessment Authority before grant of quarry lease as per rule 42 of the Tamil Nadu Minor Mineral Concession Rules 1959.
- 4) The bidder should fence the lease granted area with barbed wire before the execution of lease deed as follows:
 - The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
 - The applicant firm shall incorporate the DGPS readings for the entire boundary pillars of the



area and the same should be clearly shown in the Mining Plan

- A soft copy of digitalized map with DGPS readings should be submitted in the CD form to the Deputy / Assistant Director, Krishnagiri.
- 5) As per Rule 12 (V) of Minerals (other than Atomic & Hydrocarbon Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expenses erect, maintain and keep in repair all the boundary pillars for entire period of lease.
 - 6) The applicant should use mild explosives during quarrying.
 - 7) Child labourers should not be engaged in the quarry works.
 - 8) If any violation is found during quarrying operation, the Rule 36(5)(h) and the penal provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959 and connected Act and rules in force will attract.

Encl: Demarcated Map showing the proposed lease area.

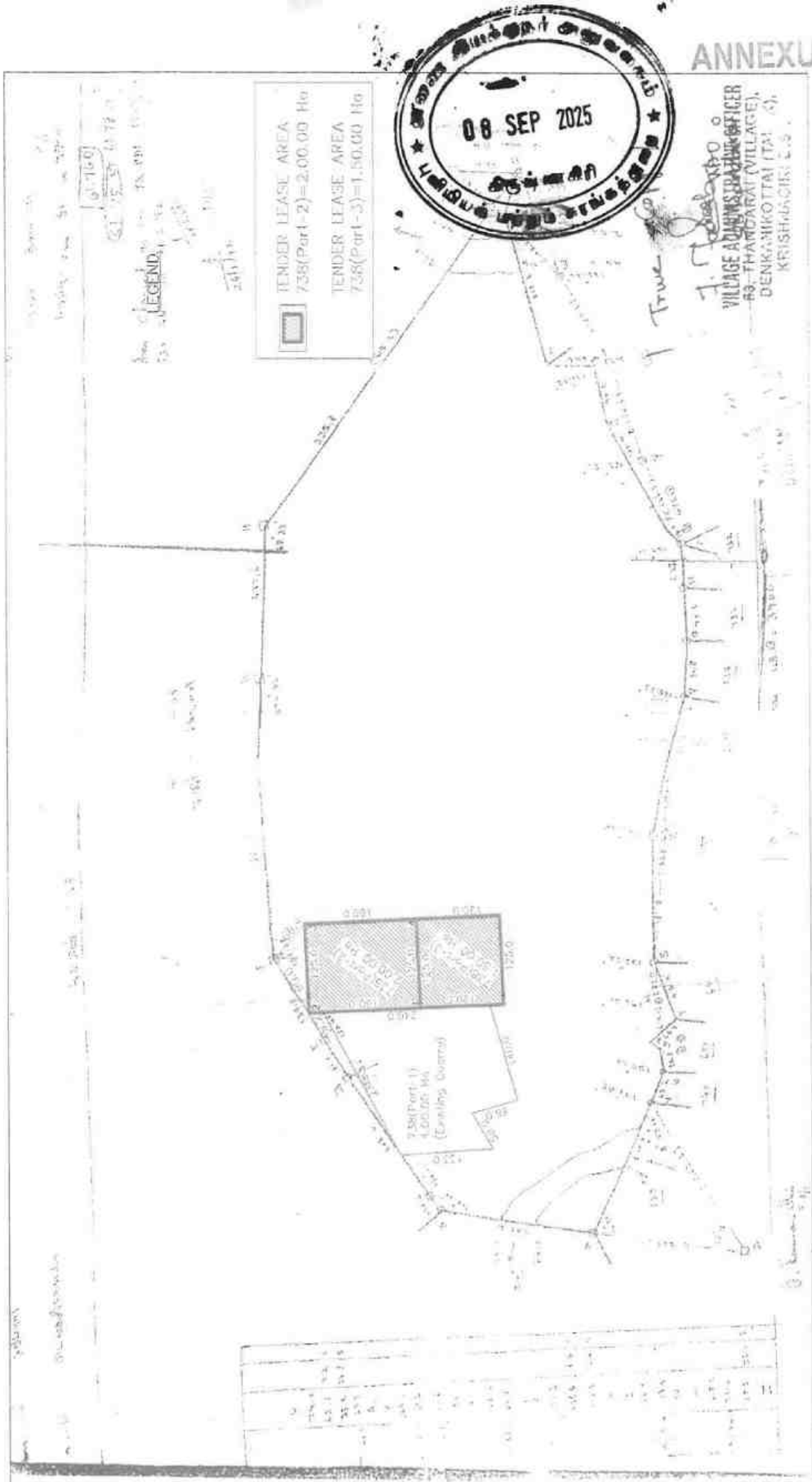
[Signature]
03/04/25
**Deputy Director,
Dept. of Geology & Mining,
Krishnagiri.**

To,

M/s.Shri Natural Stones,
Partner Thiru.M.N.Ravikumar,
No.194/18A, Jalakendeshwara Nagar,
Opp to Anand Electronics,
NH Road, Hosur Taluk,
Krishnagiri District.

[Signature]
03-04-25

[Signature]
03/04/2024





ANNEXURE IV



1	3	4	5	6	7	8	9	10	11	12
734-பா	ர	4	...	8-4	10	1 09	8 55-0	0 38	335	வே. முனியப்பா.
-பா	ர	4	...	8-4	10	1 09	0 06-0	0 07	281	ரா. மாறப்பா.
-பா	ர	4	...	8-4	10	1 09	0 06-8	0 07	433	கே. கெம்பம் மாள்.
-பா	ர	4	...	8-4	10	1 09	0 08-0	0 09	405	பெ. வெங்கடே சுப்பா.
-பா	ர	4	...	8-4	10	1 09	0 06-0	0 07	337	பெ. முனியப்பா.
							1 27-0	1 40		
725-பா	ர	4	...	8-3	...	0 62	0 95-0	0 59	335	வே. முனியப்பா
-பா	ர	4	...	8-3	...	0 62	0 21-5	0 13	392	ந. வீராசெட்டி.
-பா	ர	4	...	8-3	...	0 62	0 23-5	0 15	177	த. செனடா செட்டி.
							1 40-0	0 87		
736	ர	4	...	8-3	...	0 62	1 16-5	0 75	581	வே. முனியப்பா (1), வே. கெம்பமா(2)- பா. செனடா செட்டி(3). த. தஞ்சைமா (4).
727 1	7.7-பா	ர	4	...	8-3	...	0 62	2 43-6	1 50	625 ரா. மாறப்பா (1), கி. கே. கெம்பமா(2). இதன்க்கு முத்தப்பா(3). மணிராஜ்(4). ரா. மாறப்பா(5). காப்பாணி தாயா கெம்பம் மாள்.
2	-பா	ர	4	...	8-3	...	0 62	0 98-5	0 61	645 வே. முனியப்பா.
3	-பா	ர	4	...	8-3	...	0 62	0 06-5	0 06	646 வே. கெம்பமா.
							3 48-5	2 17		
							1 72			
							61 77-0			
738	அ	புற	...	...	...	...				
739	அ	புற	...	...	...	...	2 19-5			
740	அ	புற	...	...	...	...	14 47-0			

// ஸ்டாப் நகல் //

ச. சண்முகம்

Village Administration Officer
P. S. MARIARA (P. N. AGE),
KANKANIKOTTAI TALUKA



Government of India
Form GST REG-06
[See Rule 10(1)]

Registration Certificate

Registration Number :33ADJFS8879H1ZD

1.	Legal Name	SHRI NATURAL STONES			
2.	Trade Name, if any	SHRI NATURAL STONES			
3.	Constitution of Business	Partnership			
4.	Address of Principal Place of Business	SECOND FLOOR, NO.18A, VLT,JALAKANTESHWARA NAGAR, N.H.ROAD, HOSUR, Krishnagiri, Tamil Nadu, 635109			
5.	Date of Liability				
6.	Period of Validity	From	03/08/2017	To	NA
7.	Type of Registration	Regular			
8.	Particulars of Approving Authority				
Signature					
Name					
Designation					
Jurisdictional Office					
9. Date of issue of Certificate		03/08/2017			
Note: The registration certificate is required to be prominently displayed at all places of business in the State.					

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of the application for registration



GSTIN

33ADJFS8879H1ZD

Legal Name

SHRI NATURAL STONES

Trade Name, if any

SHRI NATURAL STONES



Details of Managing / Authorized Partners

1		Name	NARAYANAPPA MADHESWARAN
		Designation/Status	PARTNER
		Resident of State	Karnataka
2		Name	RAJANNA DAYA KRISHNA
		Designation/Status	PARTNER
		Resident of State	Tamil Nadu
3		Name	THIRUMALAPPA SRINIVASIAH
		Designation/Status	PARTNER
		Resident of State	Karnataka
4		Name	SRINIVASAN MATHIVANAN
		Designation/Status	PARTNER
		Resident of State	Tamil Nadu



ANNEXURE VI

PHOTOCOPY OF THE CASE FILE

Site photos in respect of rough stone quarry lease in Part-2 Govt Poramboke land - over an extent of 2.00.0hectares - Thandarai Village - Denkanikottai Taluk - Krishnagiri District Tamil Nadu State in belongs to M/s. Shri Natural Stones

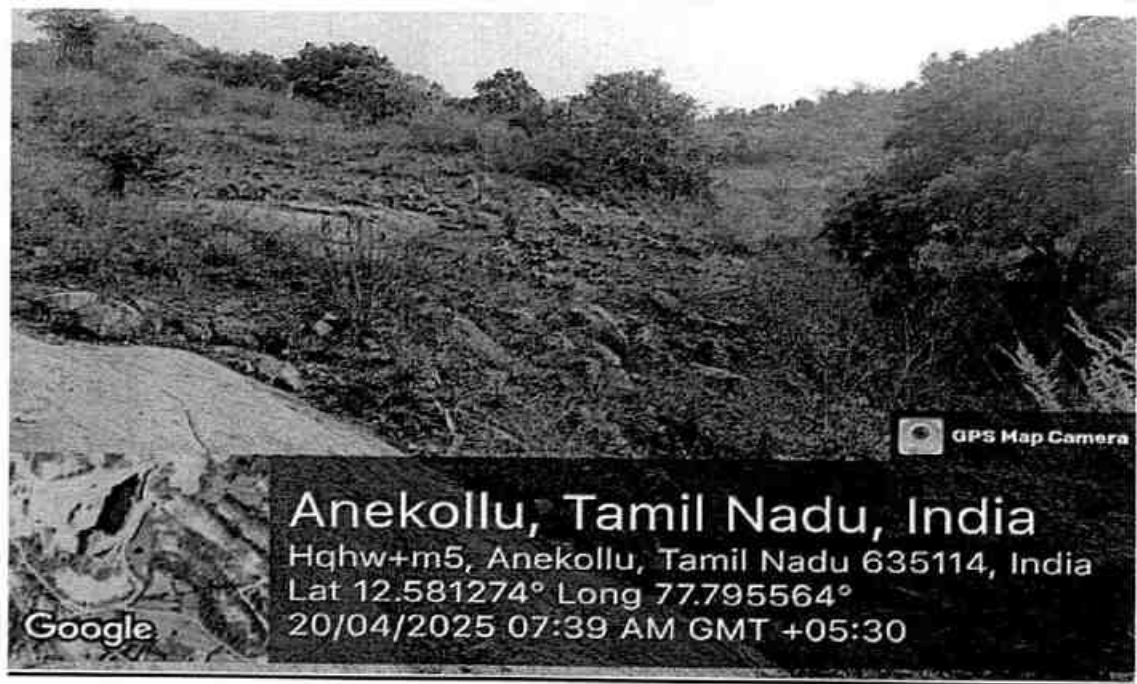
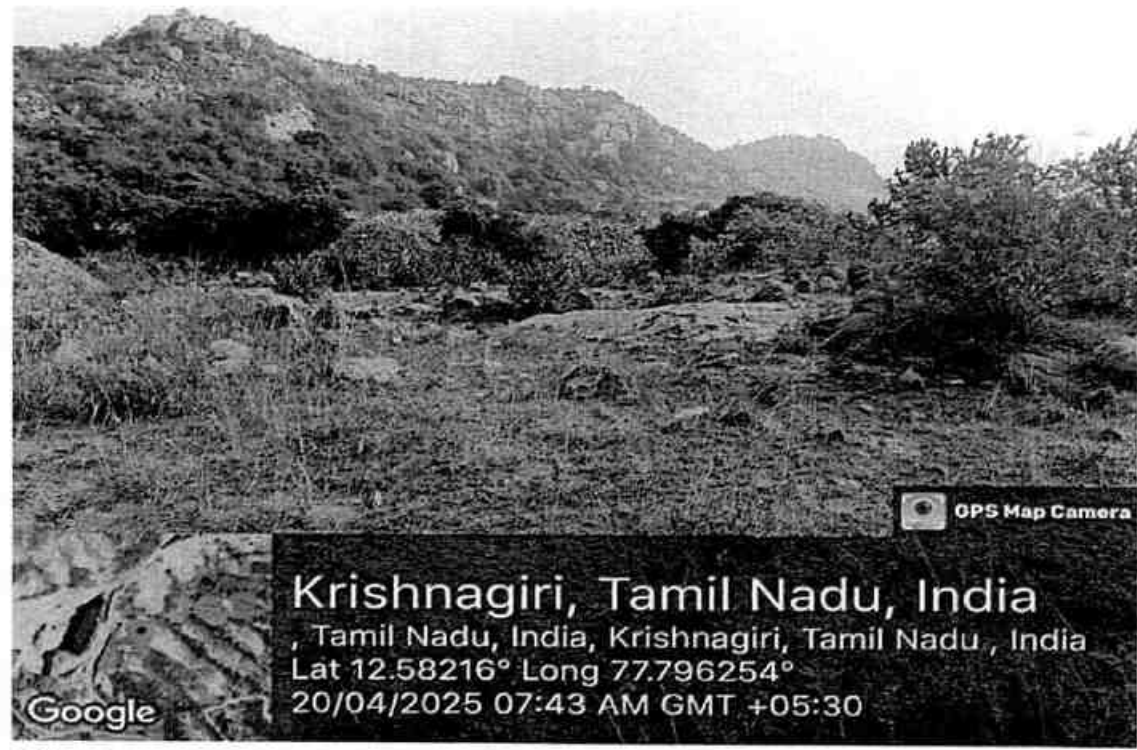
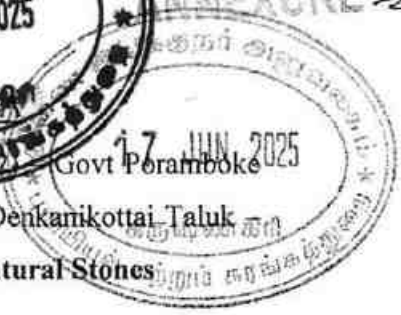




EXHIBIT - VII

17 JUN 2025




இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

பதிவேட்டு எண் / Enrolment No.: 2193/11119/27039

To
எம் என் ரவி குமார்
M N Ravi Kumaran
C/O: M C Nagabhushan,
No 194/19-19A Prasanthi Nilayam,
1st Floor VLT,
Jalagandeshwarar Nagar,
Opp Anand Electronics NH Road,
VTC: Hosur,
PO: Hosur,
Sub District: Hosur,
District: Krishnagiri,
State: Tamil Nadu,
PIN Code: 635109,
Mobile: 9363115595

Signature valid



உங்கள் ஆதார் எண் / Your Aadhaar No. :
5055 5661 1674
VID : 9167 0643 7506 6445

எனது ஆதார், எனது அடையாளம்






எம் என் ரவி குமார்
M N Ravi Kumaran
பிறந்த நாள்/DOB: 22/03/1995
ஆண் MALE

ஆதார் என்பது அடையாளத்திற்கான சான்றாகும். குடியுரிமை அல்லது பிறந்த தேதிக்கான சான்றல்ல. இது சமீபத்தில் பதிவேட்டில் பதிவு செய்யப்பட்ட தகவல்கள் ஆகியவை அடங்கியிருக்கின்றன. (ஆணவம் அல்லாதது)

Aadhaar is proof of identity, not of citizenship or date of birth. It should be used with verification (online authentication, or scanning of QR code / offline XML)

5055 5661 1674

எனது ஆதார், எனது அடையாளம்



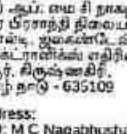

இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

தகவல் / INFORMATION

- ஆதார் என்பது அடையாளத்திற்கான சான்றாகும். குடியுரிமை அல்லது பிறந்த தேதிக்கான சான்றல்ல. பிறந்த தேதி என்பது ஆதார் எண் வைத்திருப்பவரால் சமர்ப்பிக்கப்பட்ட விதிமுறைகளில் குறிப்பிடப்பட்டுள்ள பிறந்த தேதி ஆவனத்தின் ஆதாரம் மூலம் ஆதரிக்கப்படும் தகவல்கள் அடிப்படையில் அமைந்துள்ளது.
- இந்த ஆதார் கடிதத்தை மட்டும் நியமித்த அங்கீகரிக்கப்பட்ட நிறுவனத்தால் ஆண்வண் அங்கீகாரம் அல்லது ஆப என்டோர்களை மீளக் கட்டும் எம் ஆதார் அல்லது ஆதார் 0A என்டோர் செயலியை பயன்படுத்தி 0A குறியீடு என்டோர்ஸ் அல்லது www.uidai.gov.in இல் மீளக் கட்டும் பாதுகாப்பான 0A குறியீடு ரீடர் செயலியை பயன்படுத்தி சரிபார்க்க வேண்டும்.
- ஆதார் தனித்துவமானது மற்றும் பாதுகாப்பானது.
- ஆதார் பதிவு செய்யப்பட்ட தாளிலிருந்து ஒவ்வொரு 10 வருடங்களுக்கும் பிற்பாடு ஆதாரில் அடையாளம் மற்றும் முகவரிக்கான ஆவணங்கள் புதுப்பிக்கப்பட வேண்டும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா பலன்கள் / சேவைகளைப் பெற ஆதார் உபயோகத்தை உதவுகிறது.
- உங்கள் மொனஸ்டர் எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் புதுப்பிக்கவும்.
- ஆதார் சேவைகளைப் பெற m.aadhaar.gov.in செயலியைப் பயன்படுத்தவும்.
- ஆதார்பயோமெட்ரிக்ஸைப் பயன்படுத்தாதபோது பாதுகாப்பை உறுதிசெய்ய, ஆதார்பயோமெட்ரிக்ஸ் லாக்அவுனைக் அகலுங்கள். பயன்படுத்தவும்.
- ஆதார் கோரும் நிறுவனங்கள் ஒப்பந்தத்தைப் பெற வேண்டிய கட்டாயம் உள்ளது.
- Aadhaar is proof of identity, not of citizenship or date of birth (DOB). DOB is based on information supported by proof of DOB document specified in regulations, submitted by Aadhaar number holder.
- This Aadhaar letter should be verified through either online authentication by UIDAI-appointed authentication agency or QR code scanning using mAadhaar or Aadhaar QR Scanner app available in app stores or using secure QR code reader app available on www.uidai.gov.in.
- Aadhaar is unique and secure.
- Documents to support identity and address should be updated in Aadhaar after every 10 years from date of enrolment for Aadhaar.
- Aadhaar helps you avail of various Government and Non-Government benefits/services.
- Keep your mobile number and email id updated in Aadhaar.
- Download mAadhaar app to avail of Aadhaar services.
- Use the feature of Lock/Unlock Aadhaar/biometrics to ensure security when not using Aadhaar/biometrics.
- Entities seeking Aadhaar are obligated to seek consent.



எம் என் ரவி குமார்
M N Ravi Kumaran
பிறந்த நாள்/DOB: 22/03/1995
ஆண் MALE

ஆதார் என்பது அடையாளத்திற்கான சான்றாகும். குடியுரிமை அல்லது பிறந்த தேதிக்கான சான்றல்ல. இது சமீபத்தில் பதிவேட்டில் பதிவு செய்யப்பட்ட தகவல்கள் ஆகியவை அடங்கியிருக்கின்றன. (ஆணவம் அல்லாதது)

Aadhaar is proof of identity, not of citizenship or date of birth. It should be used with verification (online authentication, or scanning of QR code / offline XML)

5055 5661 1674

எனது ஆதார், எனது அடையாளம்

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Reg No. 03BBH1007
Col Code 013 / 106



JUN 2025



அறிவியல் புலம்
FACULTY OF SCIENCE

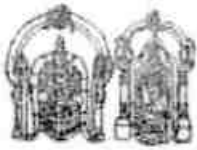
பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2005 ஆம் ஆண்டு ஏப்ரல் மாதம்
நடந்த பயன்பாட்டு புவியமைப்பியல் தேர்வில்
S கருப்பண்ணன் என்பவர்
தனிச்சிறப்புடன் முதல் வகுப்பில் தேர்ச்சி பெற்றார் என்று தக்க
தேர்வாளர்கள் சான்றுளித்தபடி அறிவியல் நிறைஞர்
என்னும் பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினைபுடன் வழங்குகிறது.

The Syndicate of the Periyar University hereby makes known
that **KARUPPANNAN S** *has been*
admitted to the **DEGREE OF MASTER OF SCIENCE in**
APPLIED GEOLOGY
he/she having been certified by duly appointed Examiners to be qualified
to receive the same and was placed in the **FIRST CLASS WITH DISTINCTION**
at the Examination held in **APR-2005**



Given under the seal of this university

LAC. No. 140 / TNGST. No. 2702141
CST. No. 704829 / SLM / Dt. 7-4-99



BALAJI MINES

Proprietor: E. S. SANTHARAMAN
PURITY LIME STONE
5/88, CHINNAGOLLAPATTI, KANNANKURICHI P. O.,
SALEM-636 008, Tamil Nadu.



17 JUN 2025

Mines : Devar Malai Village, Kulithalai Tk., KARUR Dt. (Via) Karur to Palayam.

Date 15-10-2010

EXPERIENCE CERTIFICATE

I E.SANTHARAMAN being the Managing Director of BALAJI MINES do hereby certify that Thiru. S.KARUPPANNAN, son of T.SUNDARAM (Whose signature is appended) worked as a Geologist in Balaji Mine, Devar malai village, kulithalai Taluk, Karur District, from 01.06.2005 to 10.10.2010. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved his continuous attendance at the mine, and have been efficiently performed by him.

I believe him to be of good character and a fit and proper person to be examined for Certificate of Competency.

(Signature with date and official Seal)

TIN No: 33852702141

CST No: 704829 / 7-4-99

BALAJI MINES

5/88, Chinnagollapatty,
Kannankurichi (P.O), SALEM-8.

(Signature of Candidate)



Cell 94876 33359

**SRI RAMAJEYAM
GRANITES**

731, Krishnagiri Main Road, Opp. E.B. Office, MATHUR - 635 201
email: sriramajeyamgranites@gmail.com



Date: 11/10/2011

EXPERIENCE CERTIFICATE

This is to certify that **Mr. Karuppannan Sundaram** has been worked as a "Senior Geologist" in our company from 11th October 2010 to 11th October 2011. During this period, he has been involved in the Quality Control for Granite block extraction from quarry. Involvement of his work is highly appreciated and have been efficiently worked in our company. The duties connected with his work have been continuous attendance at the quarry.

I wish him all the best in all his future endeavors.

For SRI RAMAJEYAM GRANITES

K. P. Sundaram
Proprietor

11/10/2011

[Attested]
[Signature]
18/11/2020

**DEPUTY DIRECTOR
DEPARTMENT OF GEOLOGY AND MINING
DHARMAPURI**



PLATTENST. 2025
APR 10 2025
MUSEUM OF NATURAL HISTORY
PAPAYA
No. 19
OPP TO
NH ROAD, HISSOR, PACH
KRISHNAGIRI DISTRICT

LEASE APPLIED AREA:

S.S.F.No	: 738 (PART-2)
EXTENT	: 2.00.0Hects,
VILLAGE	: THANDARAI
TALUK	: DENKANIKO
DISTRICT	: KRISHNAGIRI

INDEX

MINE LEASE AREA

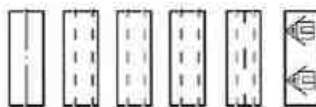
APPROACH ROAD

CART ROAD

VILLAGE ROAD

SH-17A ROAD

HABITATION



KEY MAP

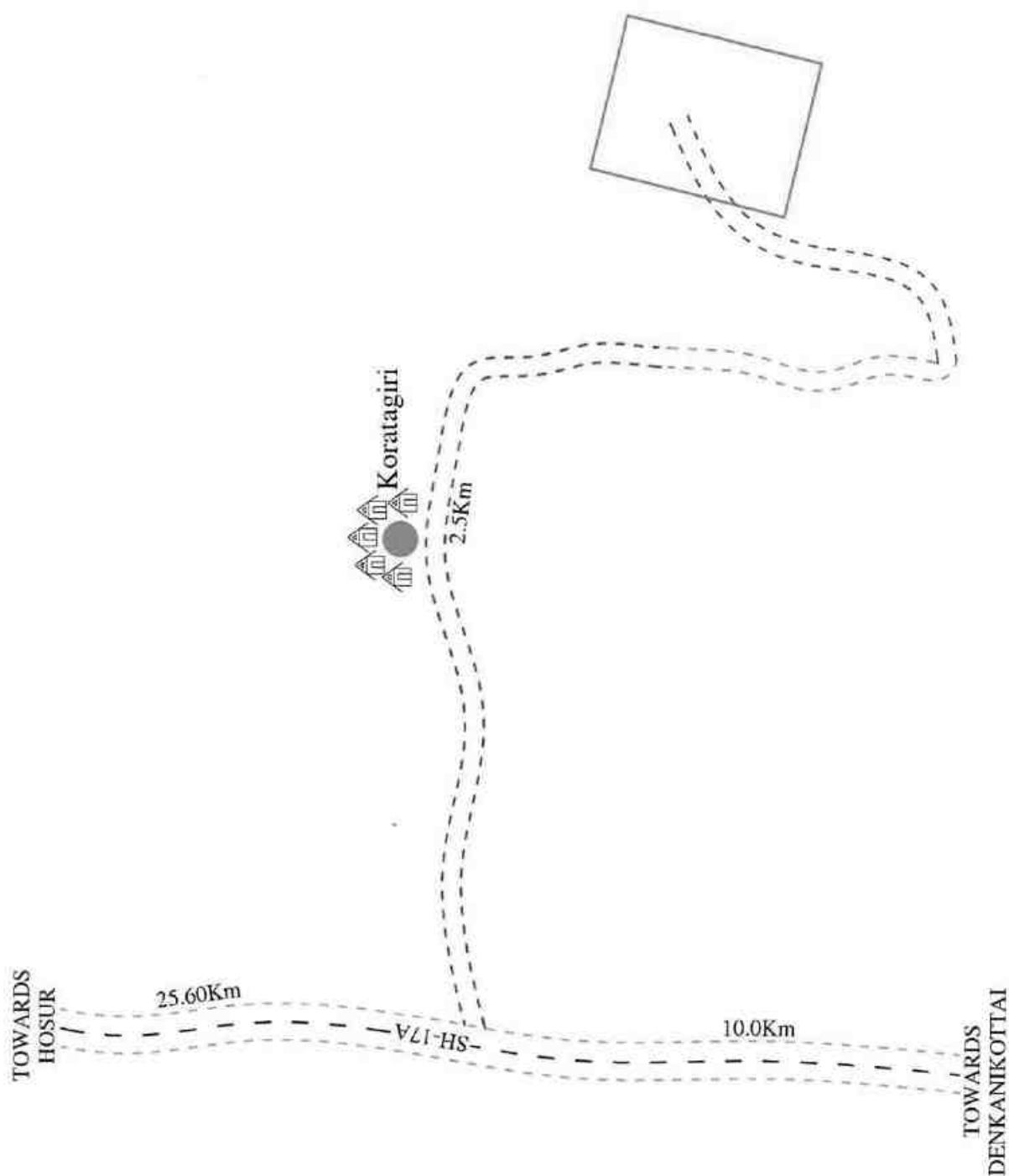
Not to Scale

Prepared By:

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TO THE BEST OF MY KNOWLEDGE



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



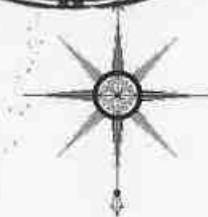


PLATE No-IA

APPLICANT:

M/s. SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects.
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

INDEX

MINE LEASE AREA: ●

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

LOCATION PLAN

NOT TO SCALE

Prepared By:

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TO THE BEST OF MY KNOWLEDGE

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

12°35'0.7992"N

77°47'43.9868"E

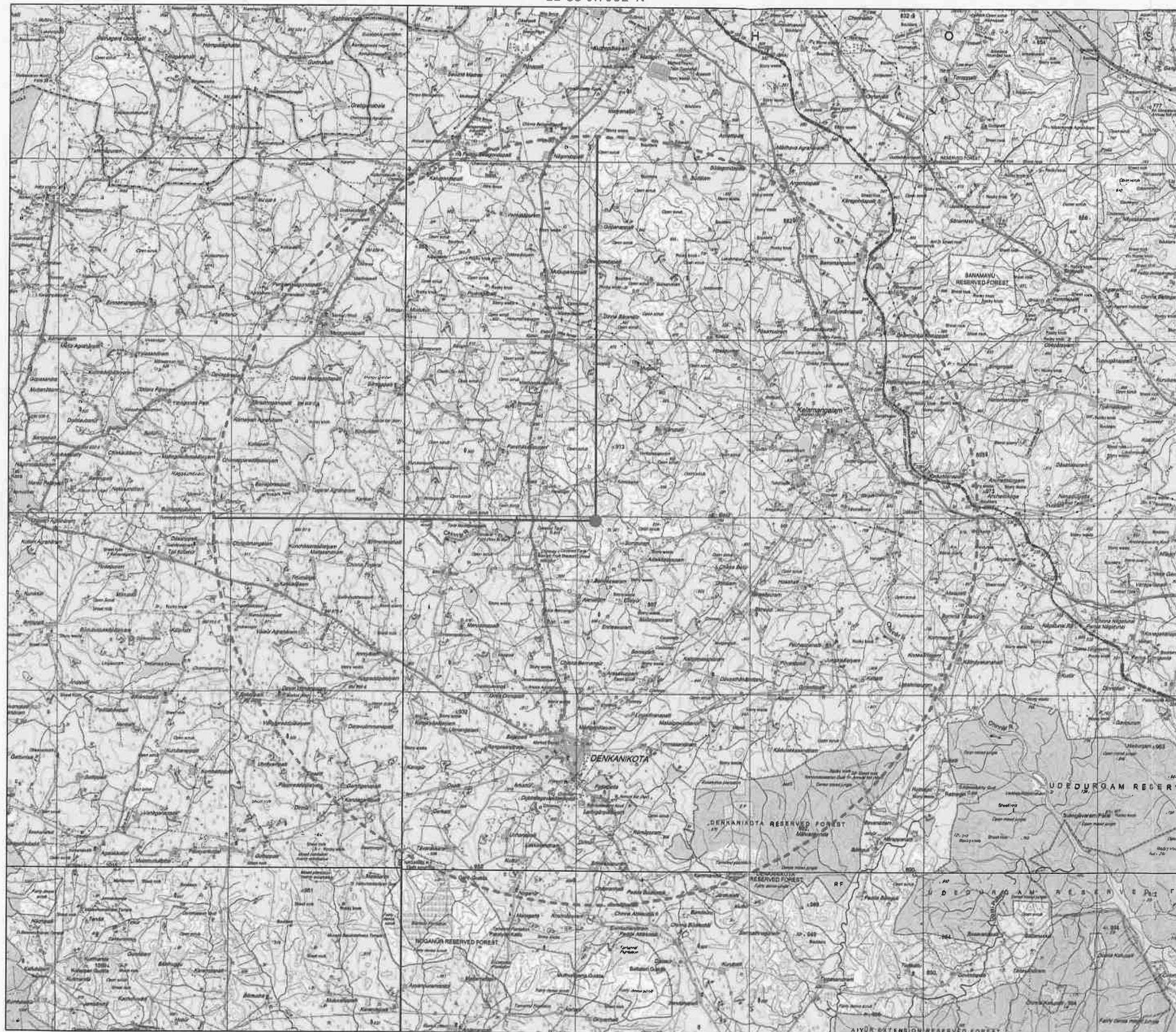


PLATE No-15

APPLICANT: 08 SEP 2025
M/s. SHRI NATURAL STONES,
PARTNER: M. N. RAVIKUMAR
No. 194/18A, JALAKENDESHWAR NAGAR,
OPP TO ANAND ELECTIONS
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone	
Roads, metalled; according to importance	
Roads, double carriageway; according to importance	
Unmetalled road: Cart track: Pack-track with pass: Foot-path	
Stream: with track in bed; undefined: Canal	
Dam: masonry or rock-filled, earthwork: Wall	
River: dry with water channel; with island & rocks: Tidal river	
Submerged rocks: Shoal: Swamp: Roads	
Well: lined: Unlined: Tubewell: Spring: Tanks: perennial: dry	
Embankments: road or rail: Bank: Broken ground	
Railways, broad gauge: double, single with station; under constn.	
Railways, other gauges: double; single with distance stone; do.	
Mineral line or tramway: Kin. Cutting with tunnel	
Contours with sub-features: Rocky slopes: Cliffs	
Good features: (1) flat, (2) sand-hilltop permanent, (3) snow-capped	
Towns or Villages: inhabited: deserted: Fort	
Mts: permanent: temporary: Tower: Antiquities	
Temple: Chhatri: Church: Mosque: Idgah: Tomb: Graves	
Lighthouse: Lightship: Buoy: lighted: unlighted: Anchorage	
Mine: Vine on trellis: Grass: Scrub	
Palm: palm-leaf; other: Plantain: Conifer: Bamboo: Other trees	
Areas: cultivated: wooded: Surveyed tree	
Boundary, international	
State: demarcated; undemarcated	
District: subdivision: taluk or tehsil; forest	
Boundary pillars: surveyed; unlocated	
Height, triangulated: station; point; approximate	
Bench-mark: geodetic; fortification; canal	
Post office, Telegraph office: Overhead tank	
Rest house or inspection bungalow: Circuit house: Police station	
Camping ground: Forest: reserved; protected	
Spaced names: administrative; locality or tribal	
Hospital, Dispensary, Veterinary: Hospital / Dispensary	
Ayodhoma: Helipad, Tower etc.	
Power line: with pylons surveyed; with poles unsurveyed	

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

TOPOSHEET MAP

SCALE- 1:1,00,000

Prepared By:

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

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

TOWARDS
KORATAGIRI

12°35'0.7992"N



77°47'43.9868"E



PLATE No-IC

APPLICANT:

M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART & VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

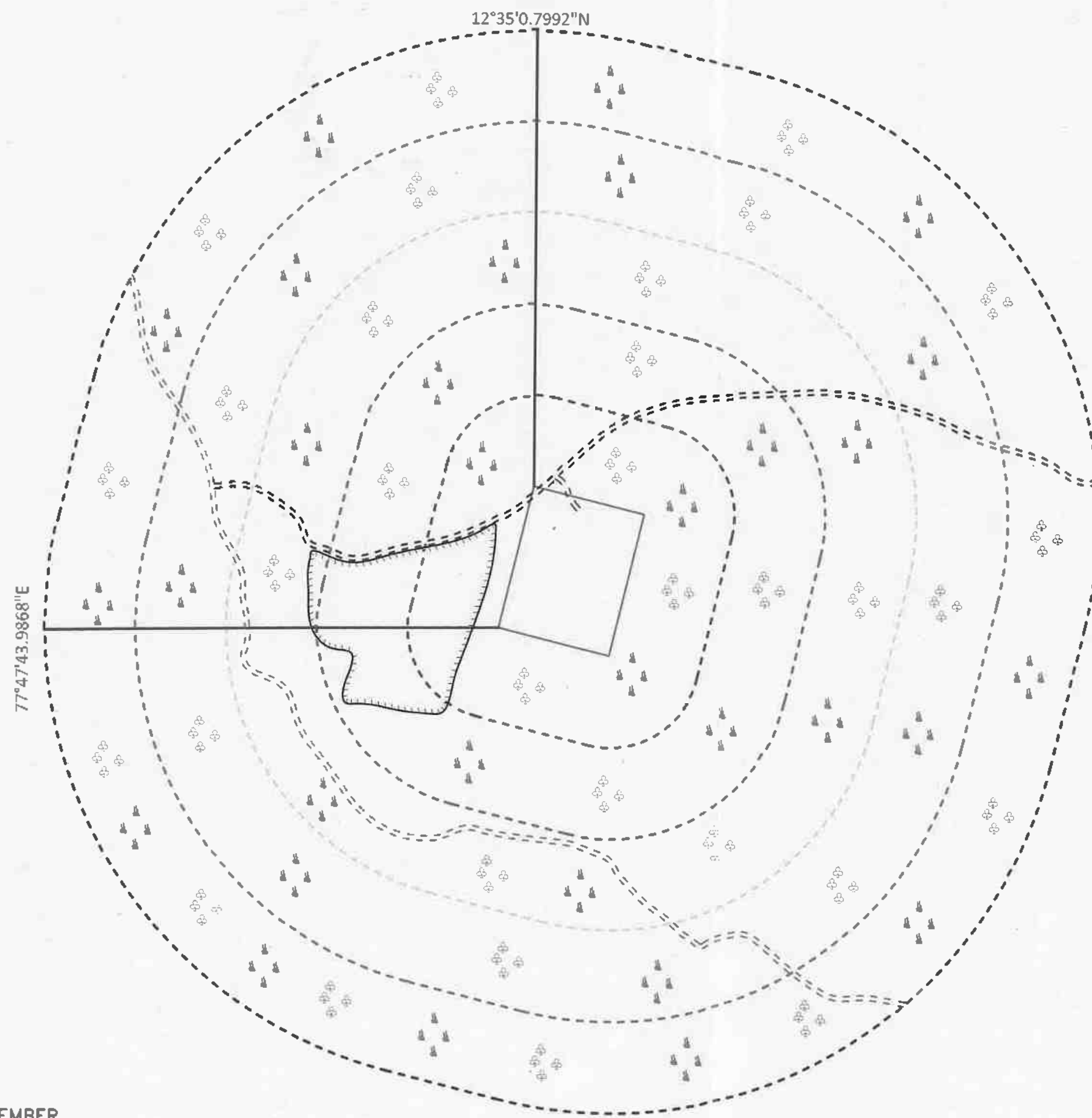
SATELITE IMAGERY MAP

SCALE- 1:5000

Prepared By:

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

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



OCTOBER TO DECEMBER



APPLICANT
M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAL,
DISTRICT : KRISHNAGIRI.

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300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	
SHRUBS & TREES	
HABITATION	
WIND DIRECTION	

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

ENVIRONMENTAL PLAN

SCALE- 1:5000

Prepared By:

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

JULY TO SEPTEMBER

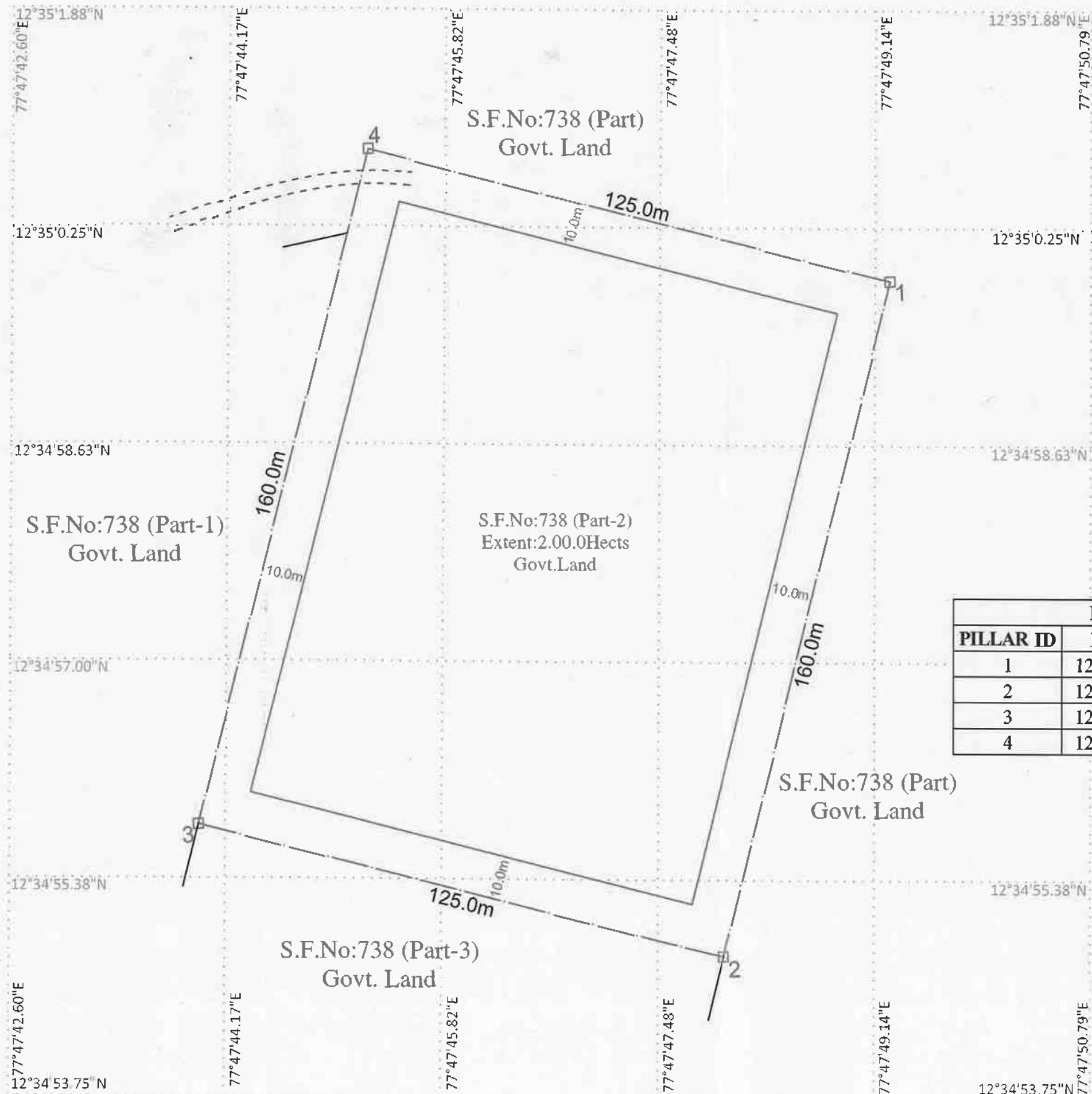


PLATE No- II

APPLICANT:

M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI

PROPOSED LEASE AREA CO-ORDINATES

PILLAR ID	LATITUDE	LONGITUDE	X	Y
1	12°34'59.7873"N	77°47'49.3133"E	803922.001	1392669.417
2	12°34'54.7483"N	77°47'47.9947E	803883.821	1392514.039
3	12°34'55.7602"N	77°47'43.9868"E	883762.432	1392543.867
4	12°35'00.7992"N	77°47'45.3054"E	803800.612	1392699.245

INDEX

MINE LEASE BOUNDARY	
SAFETY BOUNDARY	
APPROACH ROAD	
BOUNDARY PILLAR STONES	

MINE LEASE PLAN

SCALE 1 : 1000

Prepared By:

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TO THE BEST OF MY KNOWLEDGE

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

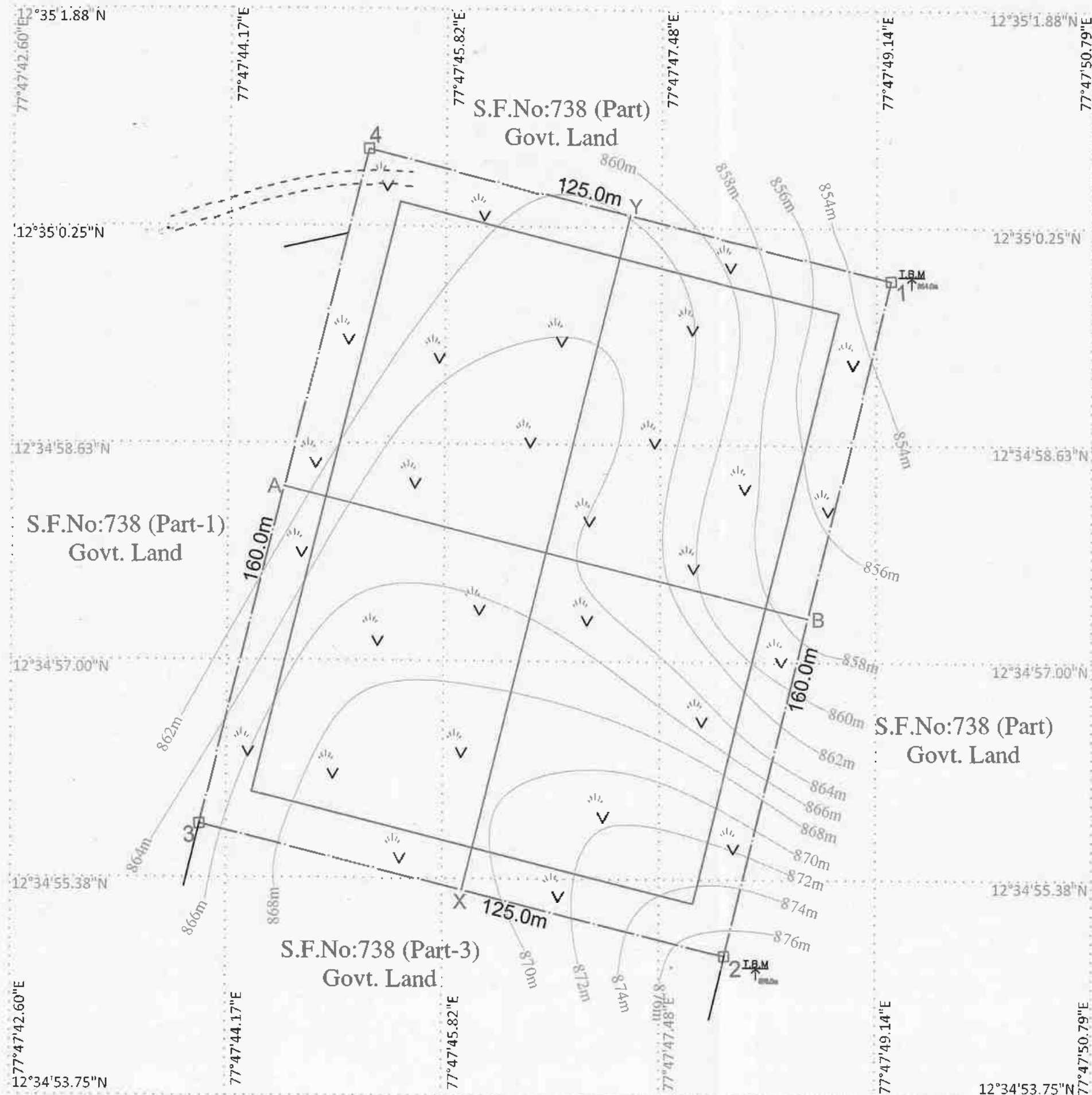


PLATE No- III

APPLICANT:

M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

INDEX

MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
BOUNDARY PILLAR STONES	
TOPSOIL	
SHRUBS	
CONTOUR LINES	
TEMPORARY BENCH MARK	

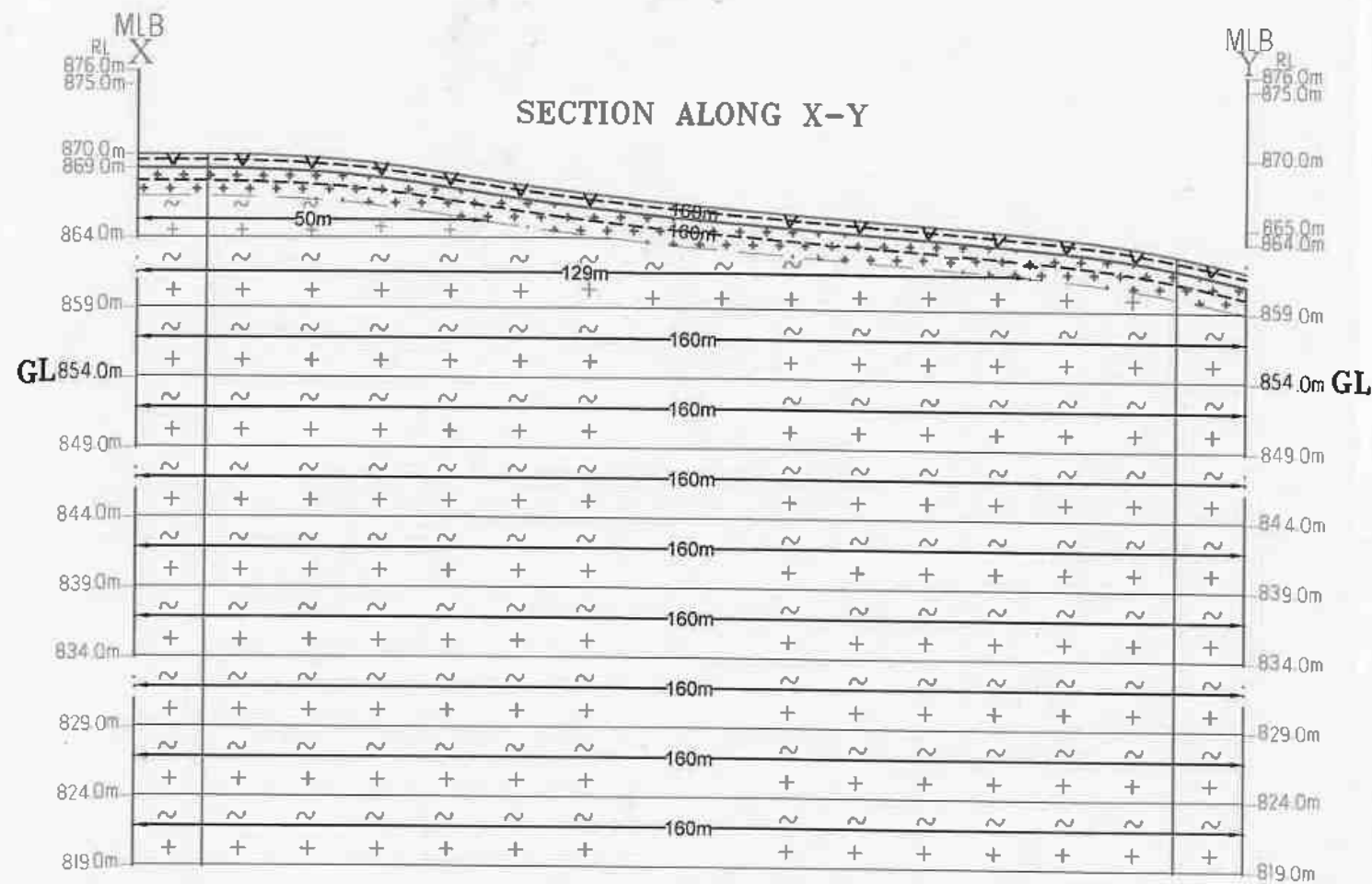
SURFACE & GEOLOGICAL PLAN

SCALE 1: 1000

Prepared By:

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

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



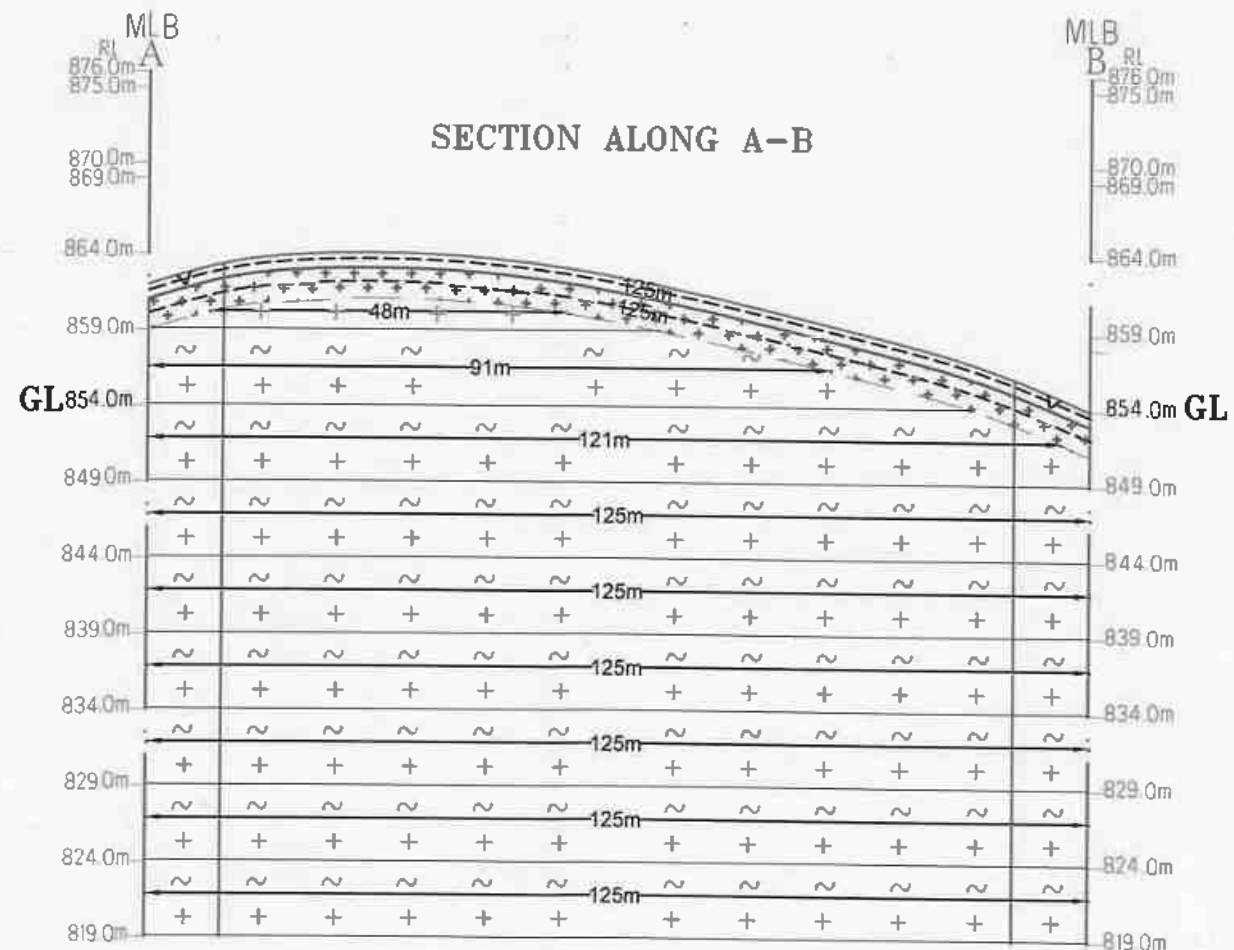
GL = Ground Level



APPLICANT:
M/s. SHRI NATURAL STONES
PARTNER THIRU ANAND KUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:
S.F.No : 738 (PART-2)
EXTENT : 2.00.0 Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAL,
DISTRICT : KRISHNAGIRI.

GEOLOGICAL SECTIONS
SCALE - HOR 1 : 1000 & VER 1 : 500



GEOLOGICAL RESOURCES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Rough stone in M ³	Weathered in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weathered in (Ts)	Topsoil in (Ts)
XY-AB	I	160	125	1	20000	.....	.....	20000	2	.....	.....	40000
	II	160	125	2	40000	.....	40000	.....	2	.....	80000	.....
	III	50	125	3	18750	18750	.....	.....	2.75	51563	.....	.....
	IV	129	48	5	30960	30960	.....	.....	2.75	85140	.....	.....
	V	160	91	5	72800	72800	.....	.....	2.75	200200	.....	.....
	VI	160	121	5	96800	96800	.....	.....	2.75	266200	.....	.....
	VII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	VIII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	IX	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	X	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	XI	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
TOTAL					879310	819310	40000	20000		2253103	80000	40000

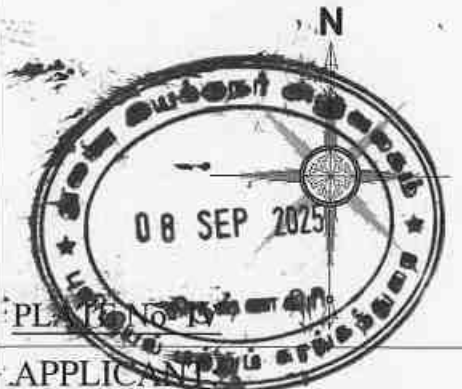
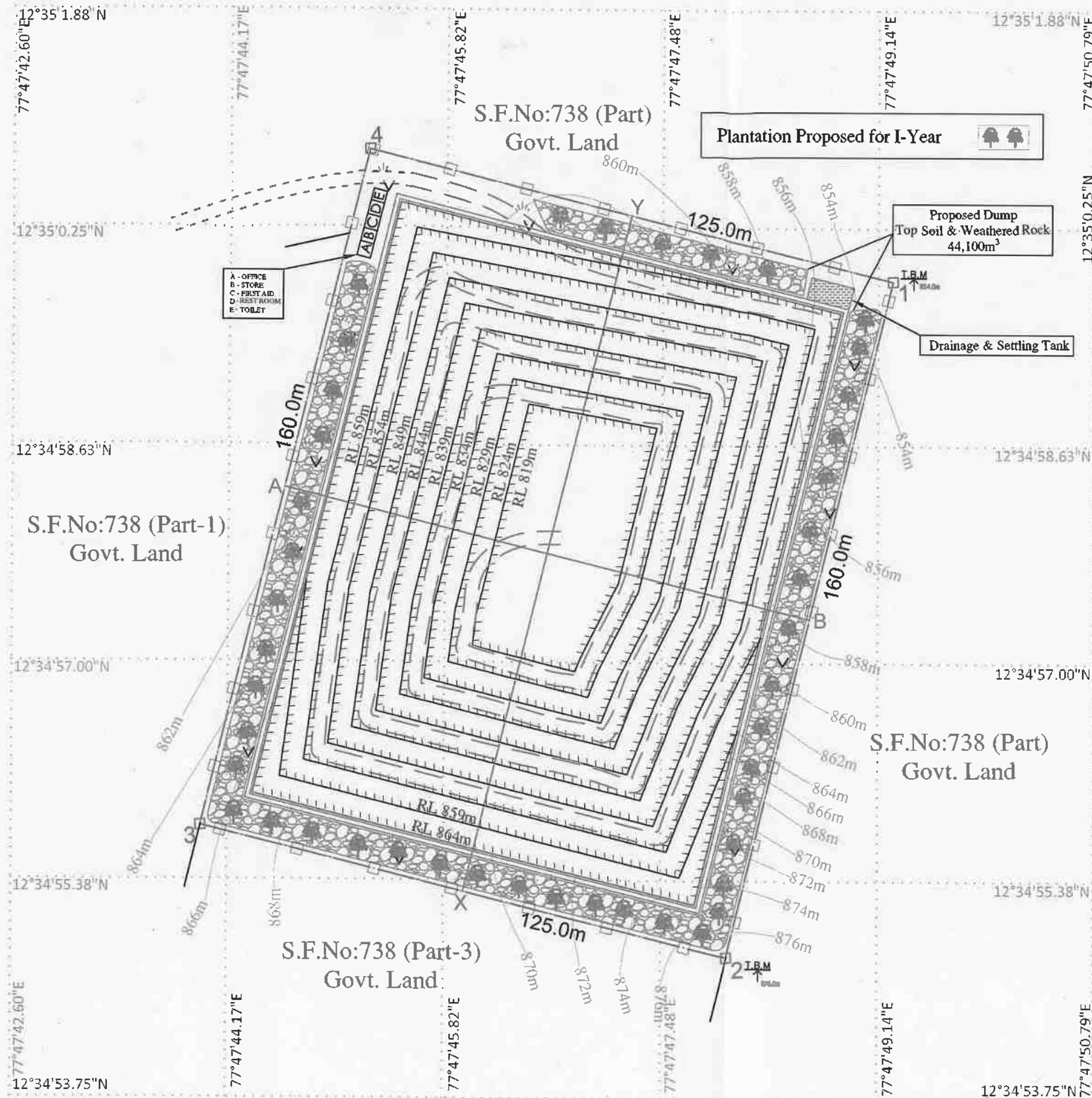
INDEX

MINE LEASE BOUNDARY	=====
SAFETY DISTANCE	=====
TOP SOIL	V V V
WEATHERED ROCK	+++++
ROUGH STONE	~ ~ ~

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

[Signature]

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



APPLICANT
M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:
S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

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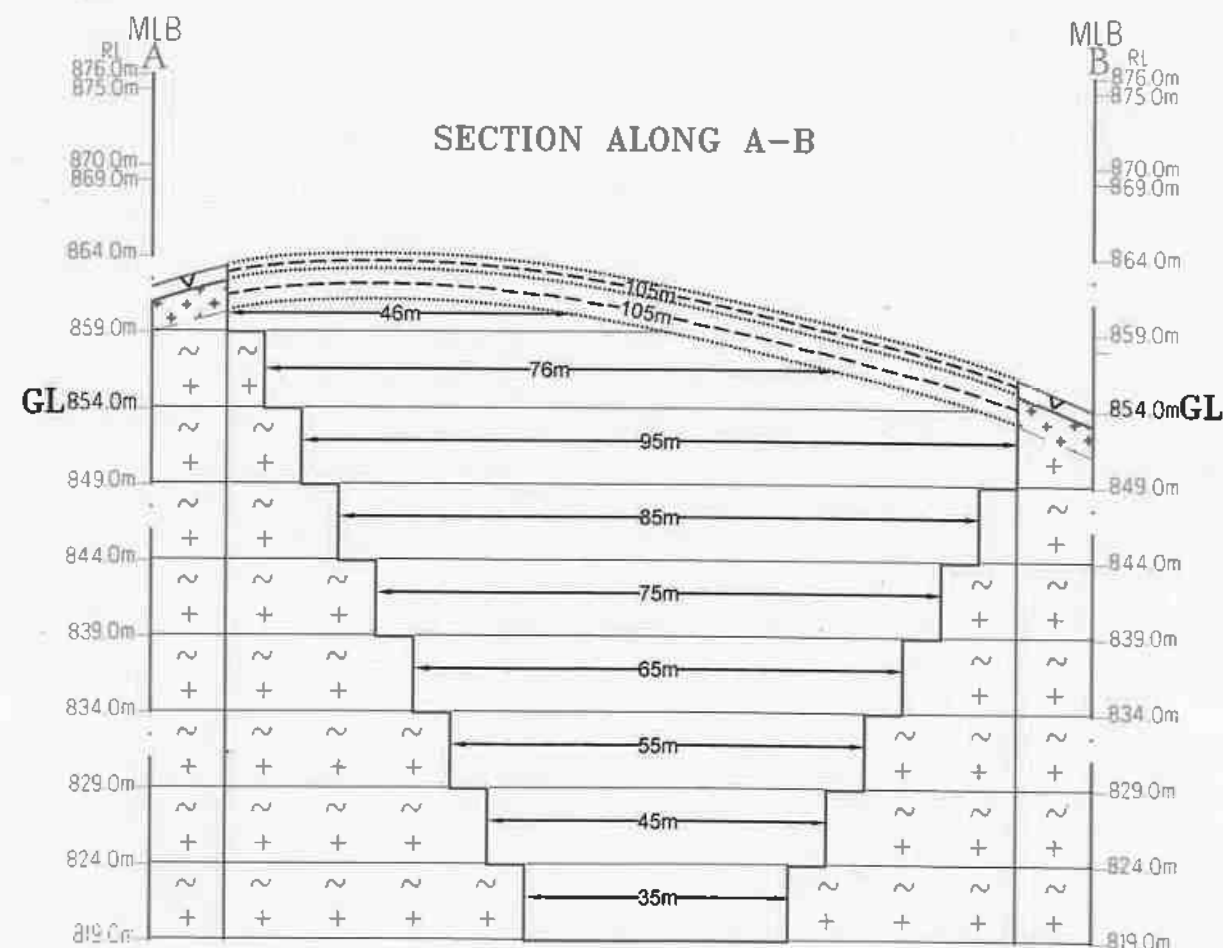
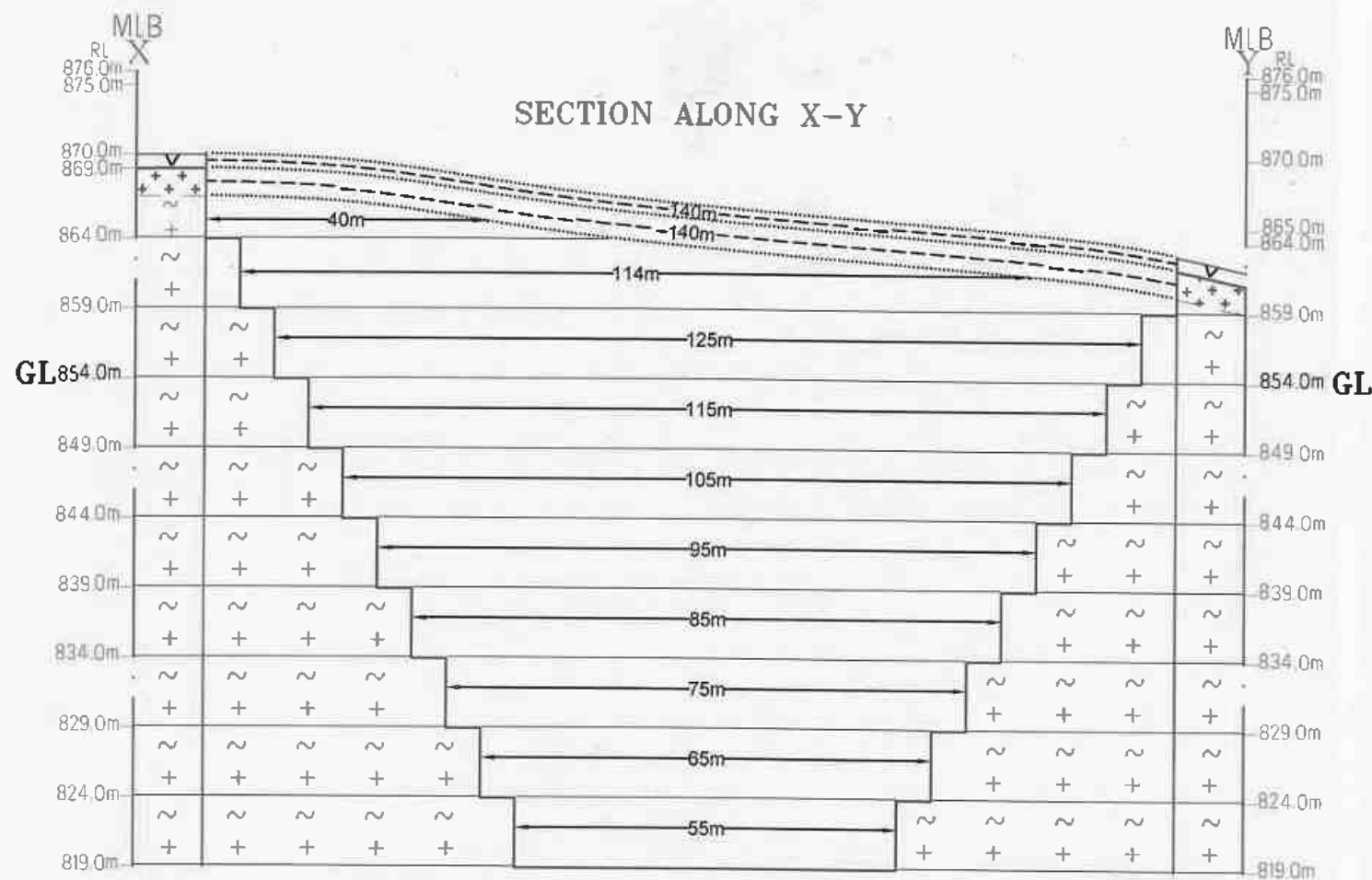
MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
BOUNDARY PILLAR STONES	
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SHRUBS	
CONTOUR LINES	
TEMPORARY BENCH MARK	
ULTIMATE BENCH	
DRAINAGE & SETTLING TANK	
HAUL ROAD	
FENCING	
PROPOSED DUMP	

CONCEPTUAL PLAN
SCALE 1: 1000

Prepared By:

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

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



MINEABLE RESEVES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
XY-AB	I	140	105	1	14700	14700	29400	14700	2	34650	58800	29400
	II	140	105	2	29400	29400	58800	29400	2	34650	58800	29400
	II	40	105	3	12600	12600	37800	12600	2.75	34650	58800	29400
	III	114	46	5	26220	26220	78660	26220	2.75	72105	130625	150219
	III	125	76	5	47500	47500	142500	47500	2.75	130625	150219	150219
	III	115	95	5	54625	54625	163875	54625	2.75	150219	150219	150219
	IV	105	85	5	44625	44625	133875	44625	2.75	122719	150219	150219
	V	95	75	5	35625	35625	106875	35625	2.75	97969	150219	150219
	VI	85	65	5	27625	27625	82875	27625	2.75	75969	150219	150219
	VII	75	55	5	20625	20625	61875	20625	2.75	56718	150219	150219
	VIII	65	45	5	14625	14625	43875	14625	2.75	40219	150219	150219
	IX	55	35	5	9625	9625	28875	9625	2.75	26468	150219	150219
TOTAL					337795	293695	29400	14700		807661	58800	29400

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MINE LEASE BOUNDARY	
SAFETY DISTANCE	
TOP SOIL	
WEATHERED ROCK	
ROUGH STONE	
ULTIMATE BENCH	

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

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NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

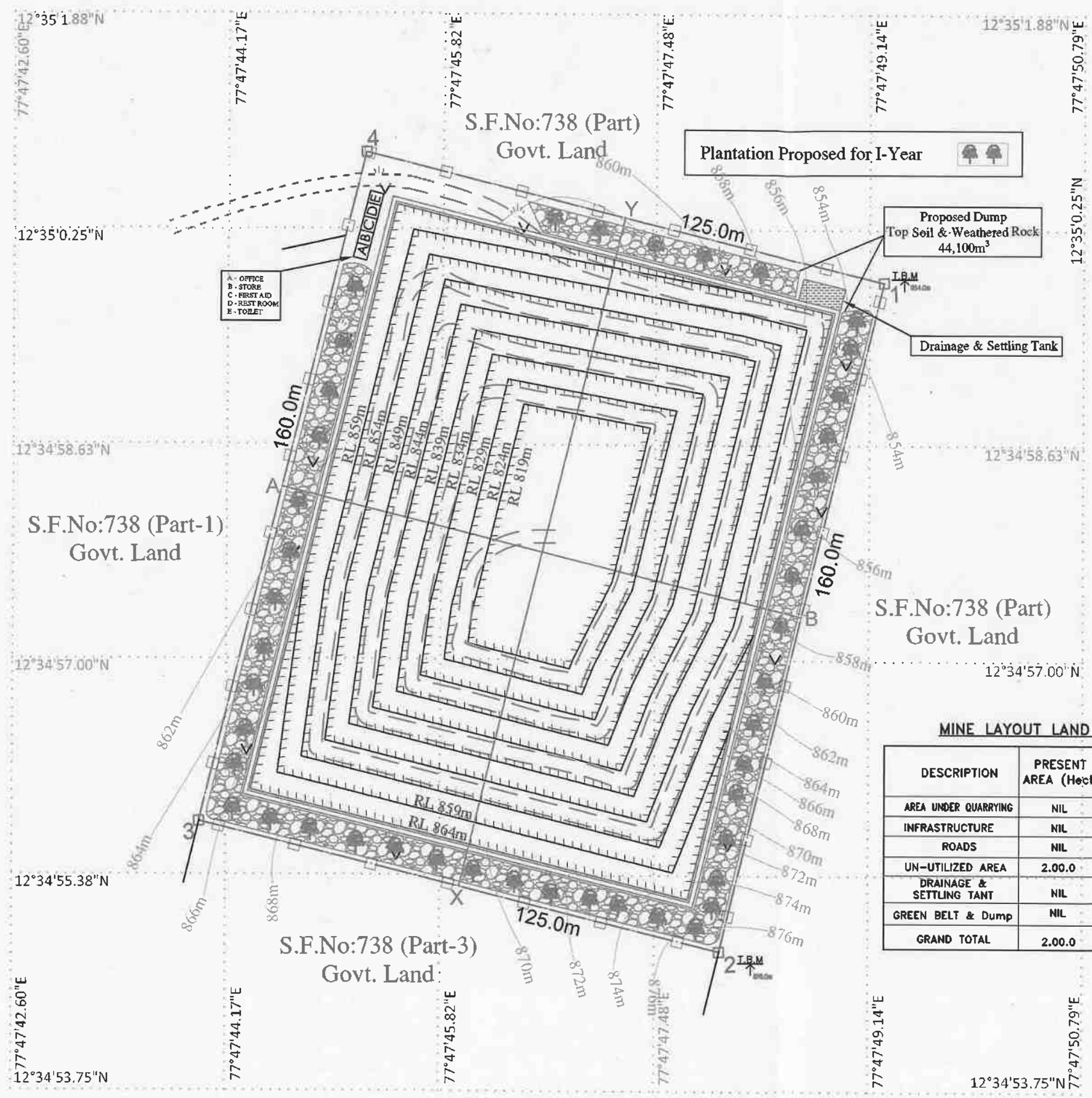
S.F.No : 738 (PART-2)
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VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAL,
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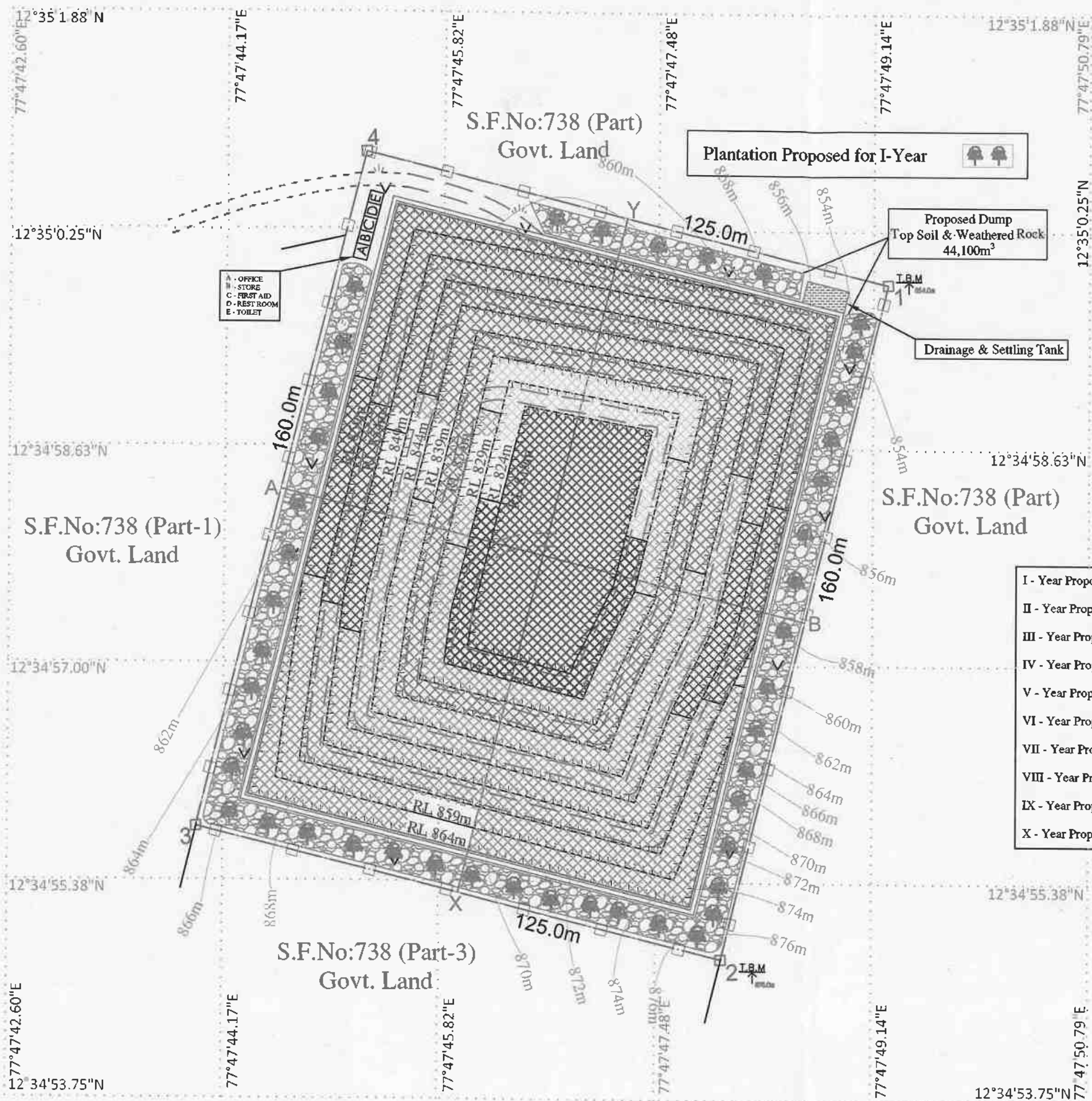
**MINE LAYOUT PLAN &
LAND USE PATTERN**
SCALE 1 : 1000

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

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



MINE LAYOUT LAND USE PATTERN			
DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	NIL	1.47.00	
INFRASTRUCTURE	NIL	0.02.0	
ROADS	NIL	0.03.0	
UN-UTILIZED AREA	2.00.0	NIL	
DRAINAGE & SETTLING TANT	NIL	0.05.48	
GREEN BELT & Dump	NIL	0.42.52	
GRAND TOTAL	2.00.0	2.00.0	



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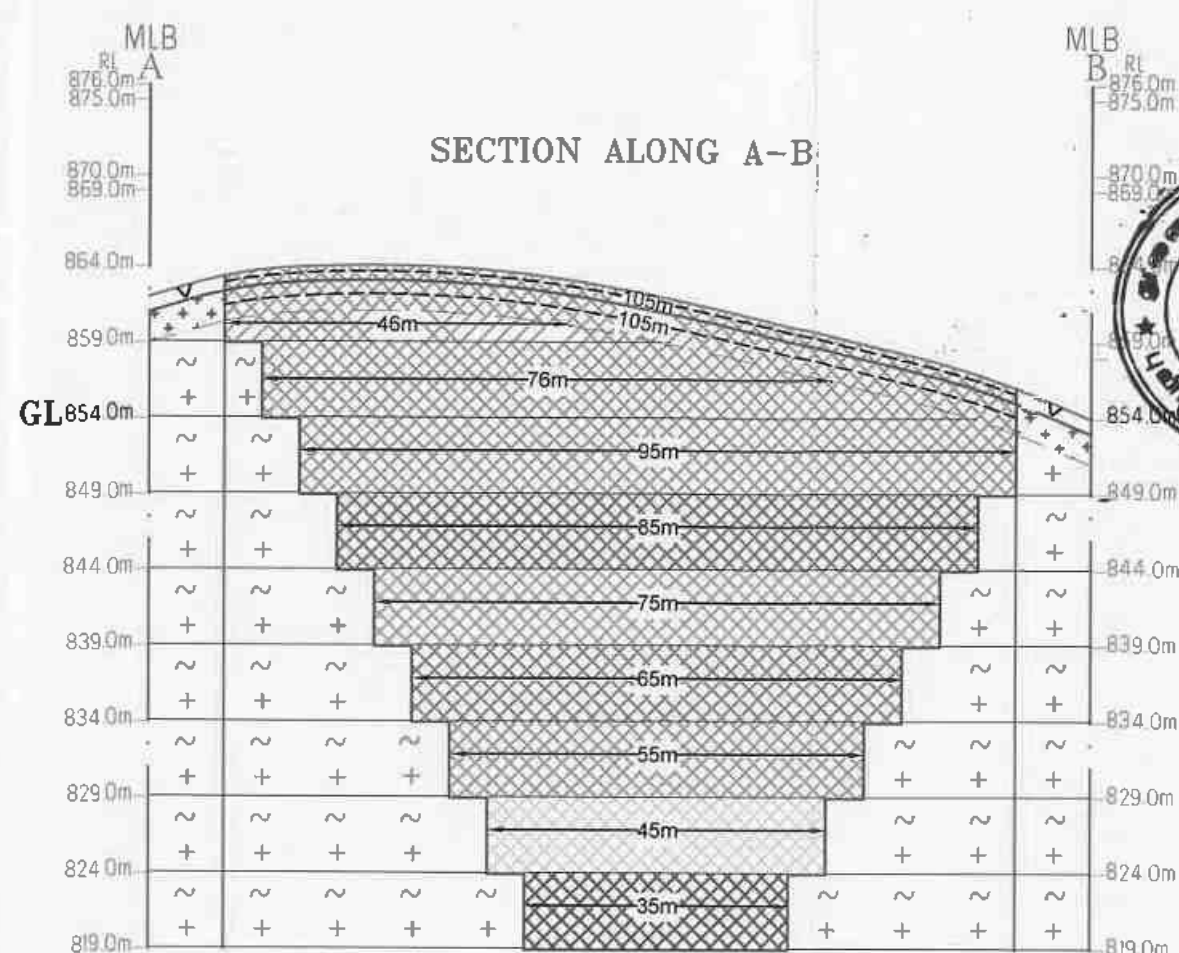
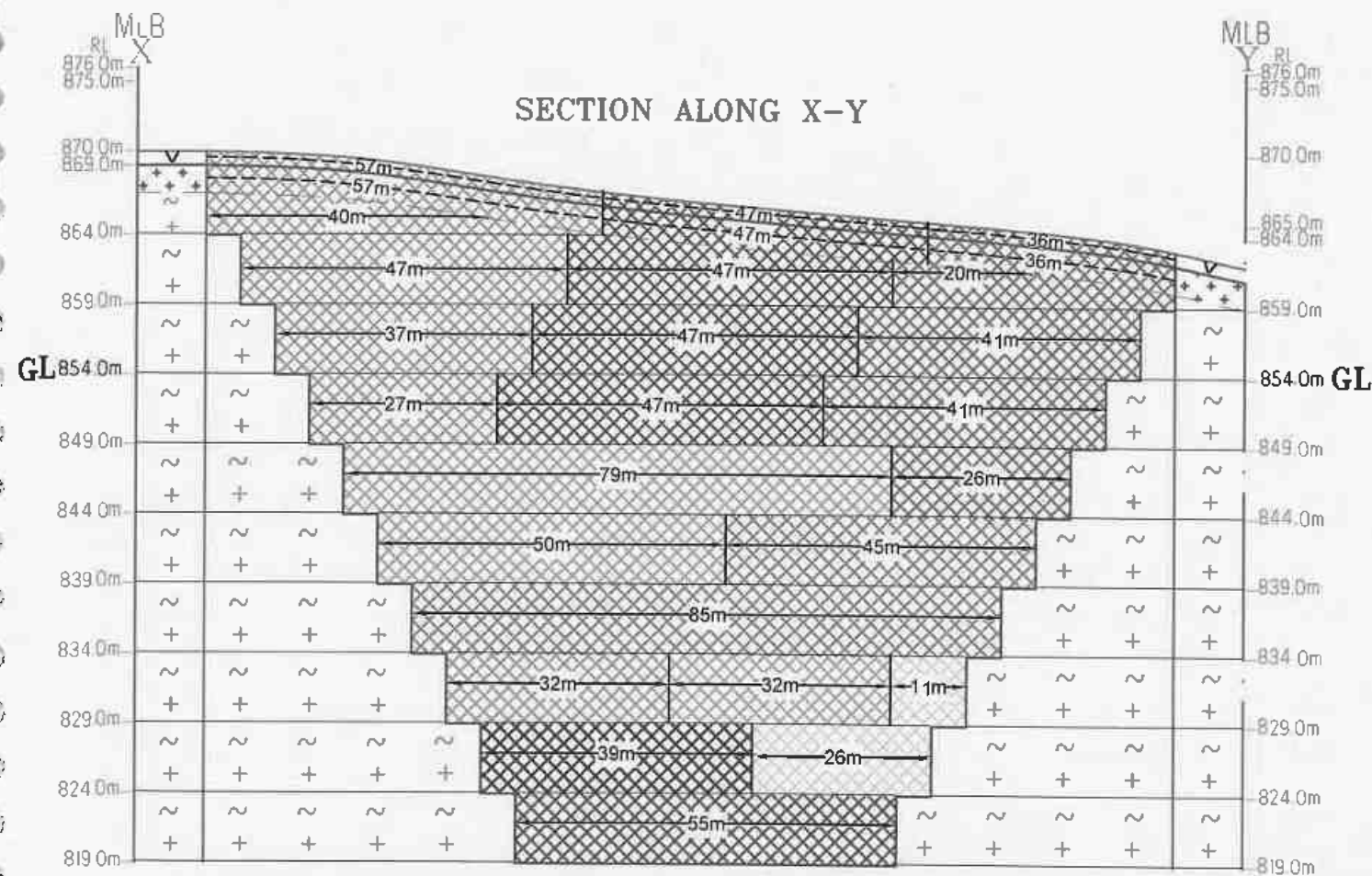
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YEARWISE DEVELOPMENT,
PRODUCTION PLAN
SCALE 1 : 1000

Prepared By:
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YEARWISE PRODUCTION RESERVES													
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
I-YEAR	XY-AB	I	57	105	1	5985	5985	11970	5985	2	23940	11970	
		II	57	105	2	11970	11970			2			
		III	40	105	3	12600	12600			2.75	34650		
		IV	47	46	5	10810	10810			2.75	29727		
		V	37	76	5	14060	14060			2.75	38665		
			27	95	5	12825	12825			2.75	35269		
TOTAL						68250	50295	11970	5985		138311	23940	11970
II-YEAR	XY-AB	I	47	105	1	4935	4935	9870	4935	2	19740	9870	
		II	47	105	2	9870	9870			2			
		III	47	46	5	10810	10810			2.75	29727		
		IV	47	76	5	17860	17860			2.75	49115		
		V	47	95	5	22325	22325			2.75	61394		
		TOTAL						65800	50995	9870	4935		140236	19740	9870
III-YEAR	XY-AB	I	36	105	1	3780	3780	7560	3780	2	15120	7560	
		II	36	105	2	7560	7560			2			
		III	20	46	5	4600	4600			2.75	12650		
		IV	41	76	5	15580	15580			2.75	42845		
		V	41	95	5	19475	19475			2.75	53556		
		VI	26	85	5	11050	11050			2.75	30388		
TOTAL						62045	50705	7560	3780		139439	15120	7560
IV-YEAR	XY-AB	VI	79	85	5	33575	33575			2.75	92331		
		VII	50	75	5	18750	18750			2.75	51563		
TOTAL						52325	52325	0	0		143894	0	0
V-YEAR	XY-AB	VII	45	75	5	16875	16875			2.75	46406		
		VIII	85	65	5	27625	27625			2.75	75969		
TOTAL						44500	44500	0	0		122375	0	0
VI-YEAR	XY-AB	IX	32	55	5	8800	8800			2.75	24200		
TOTAL						8800	8800	0	0		24200	0	0
VII-YEAR	XY-AB	IX	32	55	5	8800	8800			2.75	24200		
TOTAL						8800	8800	0	0		24200	0	0
VIII-YEAR	XY-AB	IX	11	55	5	3025	3025			2.75	8319		
		X	26	45	5	5850	5850			2.75	16087		
TOTAL						8875	8875	0	0		24406	0	0
IX-YEAR	XY-AB	X	39	45	5	8775	8775			2.75	24131		
TOTAL						8775	8775	0	0		24131	0	0
X-YEAR	XY-AB	XI	55	35	5	9625	9625			2.75	26469		
TOTAL						9625	9625	0	0		26469	0	0
GRAND TOTAL						337795	293695	29400	14700		807661	58800	29400

- I - Year Proposed area to be Quarried
- II - Year Proposed area to be Quarried
- III - Year Proposed area to be Quarried
- IV - Year Proposed area to be Quarried
- V - Year Proposed area to be Quarried
- VI - Year Proposed area to be Quarried
- VII - Year Proposed area to be Quarried
- VIII - Year Proposed area to be Quarried
- IX - Year Proposed area to be Quarried
- X - Year Proposed area to be Quarried

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PLATE No- VIA

APPLICANT:

M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

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

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
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TO THE BEST OF MY KNOWLEDGE

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

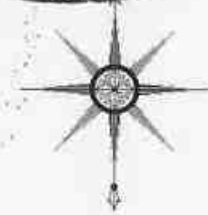


PLATE No-IA

APPLICANT:

M/s. SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
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NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

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S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects.
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

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MINE LEASE AREA: ●

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

LOCATION PLAN

NOT TO SCALE

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
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Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
QUALIFIED PERSON

12°35'0.7992"N

77°47'43.9868"E

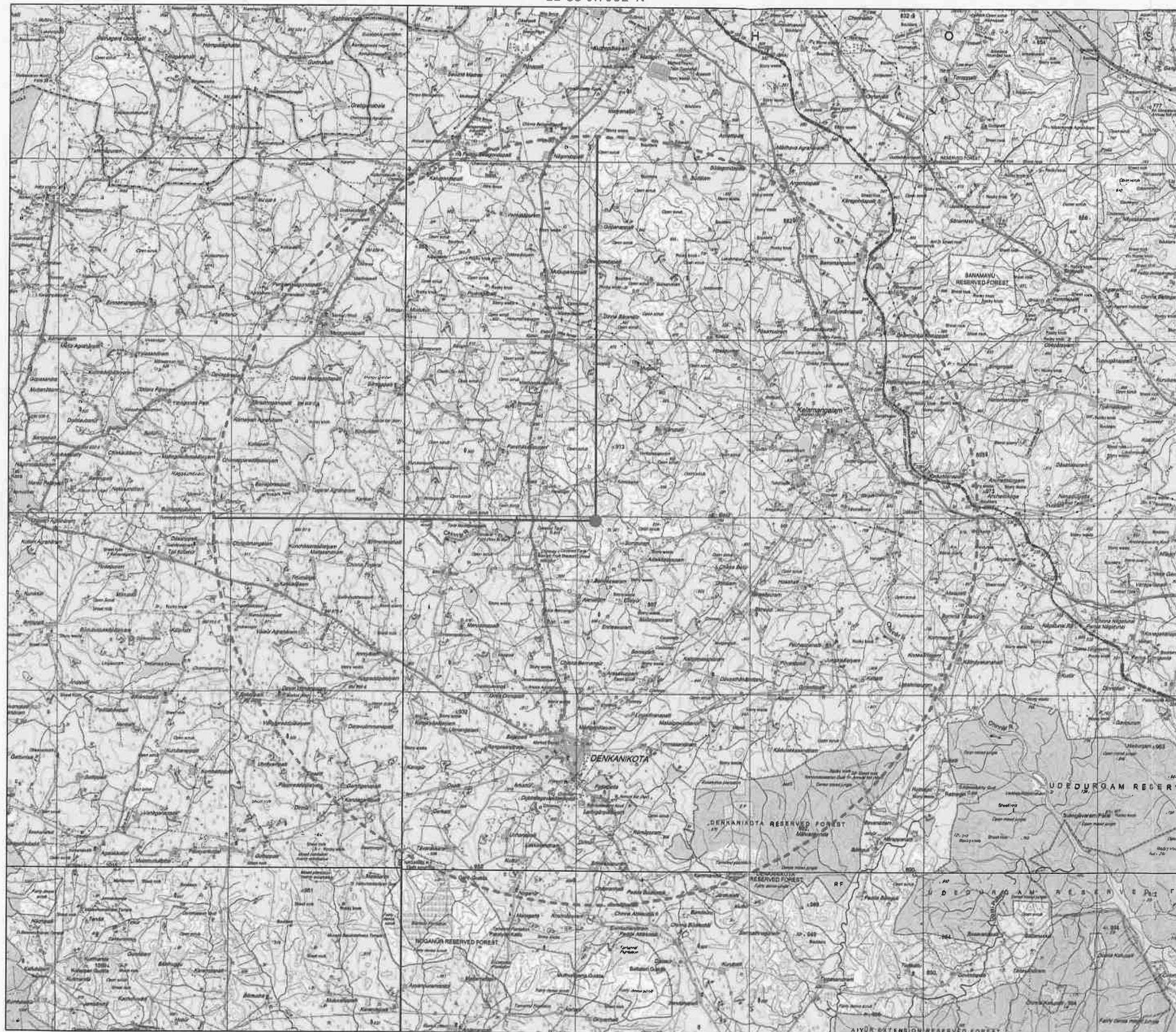


PLATE No-15

APPLICANT: 08 SEP 2025
M/s. SHRI NATURAL STONES,
PARTNER: M. N. RAVIKUMAR
No. 194/18A, JALAKENDESHWAR NAGAR,
OPP TO ANAND ELECTIONS
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone	
Roads, metalled; according to importance	
Roads, double carriageway; according to importance	
Unmetalled road: Cart track: Pack-track with pass: Foot-path	
Stream: with track in bed; undefined: Canal	
Dam: masonry or rock-filled, earthwork: Wall	
River: dry with water channel; with island & rocks: Tidal river	
Submerged rocks: Shoal: Swamp: Roads	
Well: lined: unlined: Tubewell: Spring: Tanks: perennial: dry	
Embankments: road or rail: tank: Broken ground	
Railways, broad gauge: double, single with station; under constn.	
Railways, other gauges: double; single with distance stone; do.	
Mineral line or tramway: Kin. Cutting with tunnel	
Contours with sub-features: Rocky slopes: Cliffs	
Geod features: (1) flat: (2) sand-hill (permanent): (3) dune (shifting)	
Towns or Villages: inhabited: deserted: Fort	
Mts: permanent: temporary: Tower: Antiquities	
Temples: Chhatri: Church: Mosque: Idgah: Tomb: Graves	
Lighthouse: Lightship: Buoys: lighted: unlighted: Anchorage	
Mine: Vine on trellis: Grass: Scrub	
Palms: palm-leaf; other: Plantain: Conifer: Bamboo: Other trees	
Areas: cultivated: wooded: Surveyed tree	
Boundary, international	
State: demarcated; undemarcated	
District: subdivision: taluk or tehsil; forest	
Boundary pillars: surveyed; unlocated	
Height, triangulated: station; point; approximate	200 200 200
Bench-mark: geodetic; fortification; canal	BM 63-3 BM 63-3
Post office: Telegraph office: Overhead tank	
Rest house or inspection bungalow: Circuit house: Police station	
Camping ground: Forest: reserved; protected	RI PF
Spaced names: administrative; locality or tribal	NURU NAGA
Hospital: Dispensary: Veterinary Hospital/Dispensary	
Ayodrome: Helipad: Tourist etc.	
Power line: with pylons surveyed; with poles unsurveyed	

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

TOPOSHEET MAP

SCALE- 1:1,00,000

Prepared By:

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[Signature]

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



PLATE No-IC

APPLICANT:

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200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	

TOPO SHEET NO : 57-H/14

LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N

LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

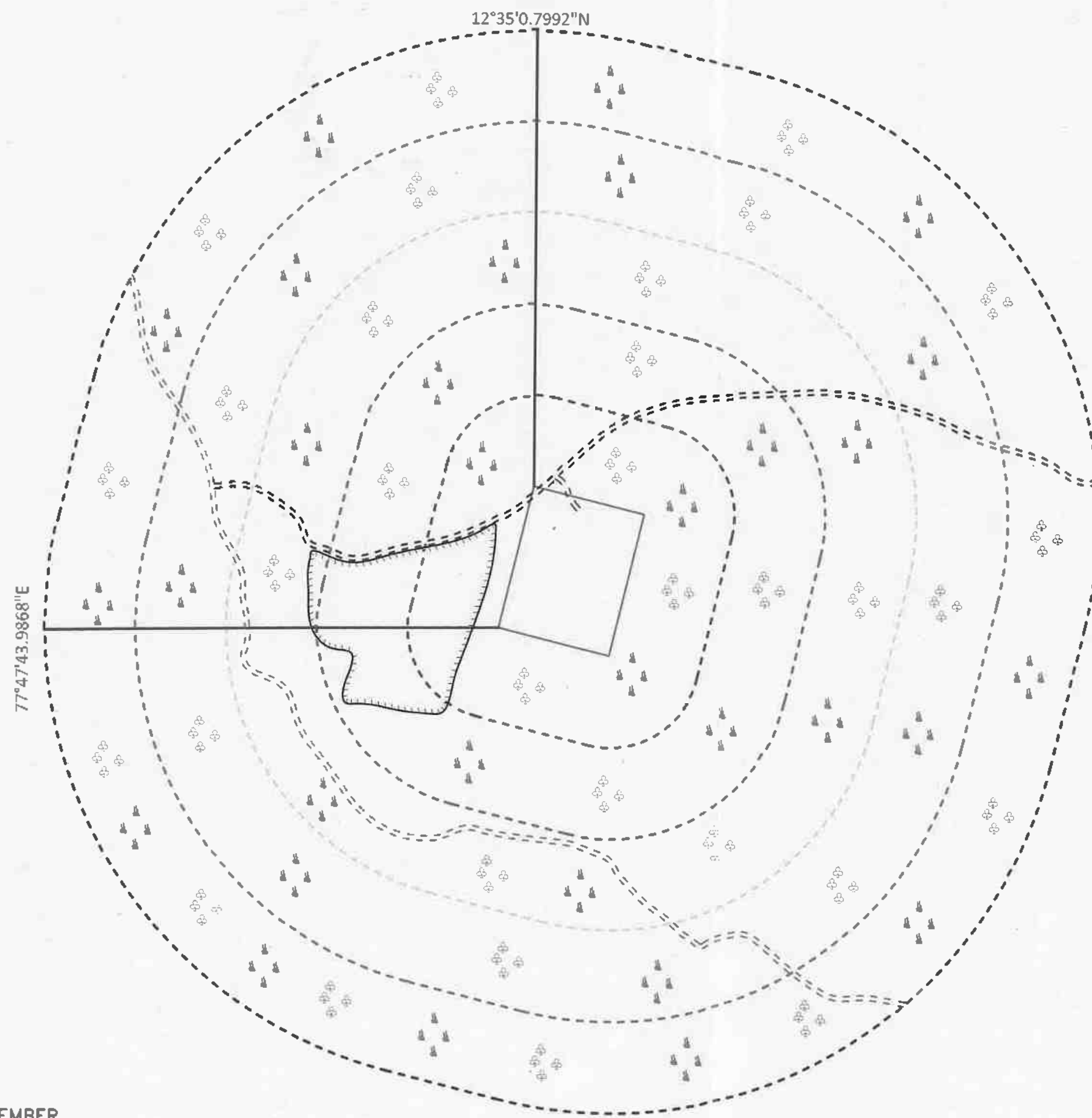
SATELITE IMAGERY MAP

SCALE- 1:5000

Prepared By:

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



OCTOBER TO DECEMBER
 ↗
 ↘

N

08 SEP 2025

APPLICANT

M/s.SHRI NATURAL STONES,
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SHRUBS & TREES	
HABITATION	
WIND DIRECTION	

TOPO SHEET NO : 57-H/14
 LATITUDE : 12°34'54.7483"N to 12°35'0.7992"N
 LONGITUDE : 77°47'43.9868"E to 77°47'49.3133"E

ENVIRONMENTAL PLAN
 SCALE- 1:5000

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↗
 ↘
 JULY TO SEPTEMBER

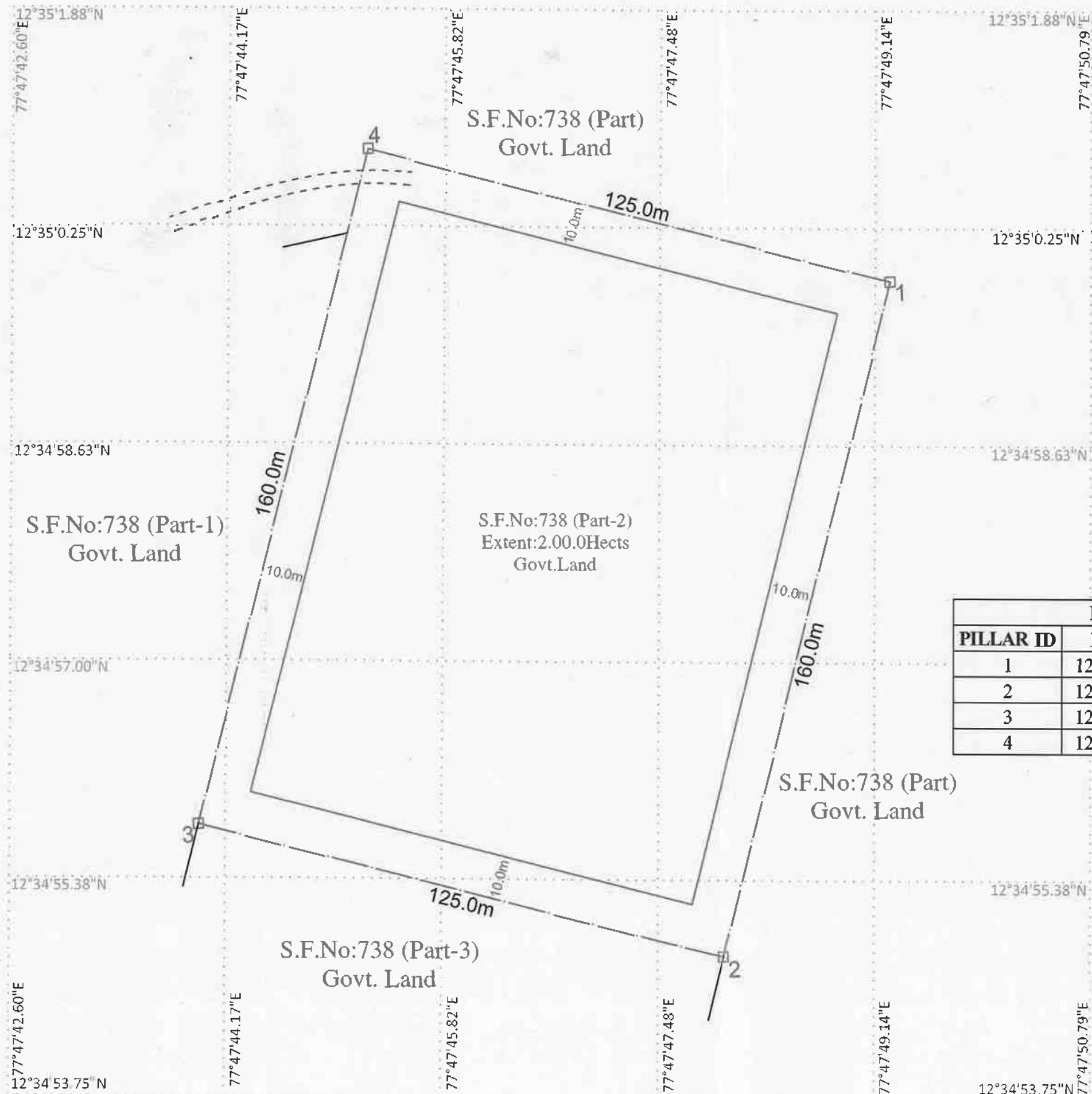


PLATE No- II

APPLICANT:

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DISTRICT : KRISHNAGIRI

PROPOSED LEASE AREA CO-ORDINATES

PILLAR ID	LATITUDE	LONGITUDE	X	Y
1	12°34'59.7873"N	77°47'49.3133"E	803922.001	1392669.417
2	12°34'54.7483"N	77°47'47.9947E	803883.821	1392514.039
3	12°34'55.7602"N	77°47'43.9868"E	883762.432	1392543.867
4	12°35'00.7992"N	77°47'45.3054"E	803800.612	1392699.245

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MINE LEASE BOUNDARY	
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APPROACH ROAD	
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MINE LEASE PLAN

SCALE 1 : 1000

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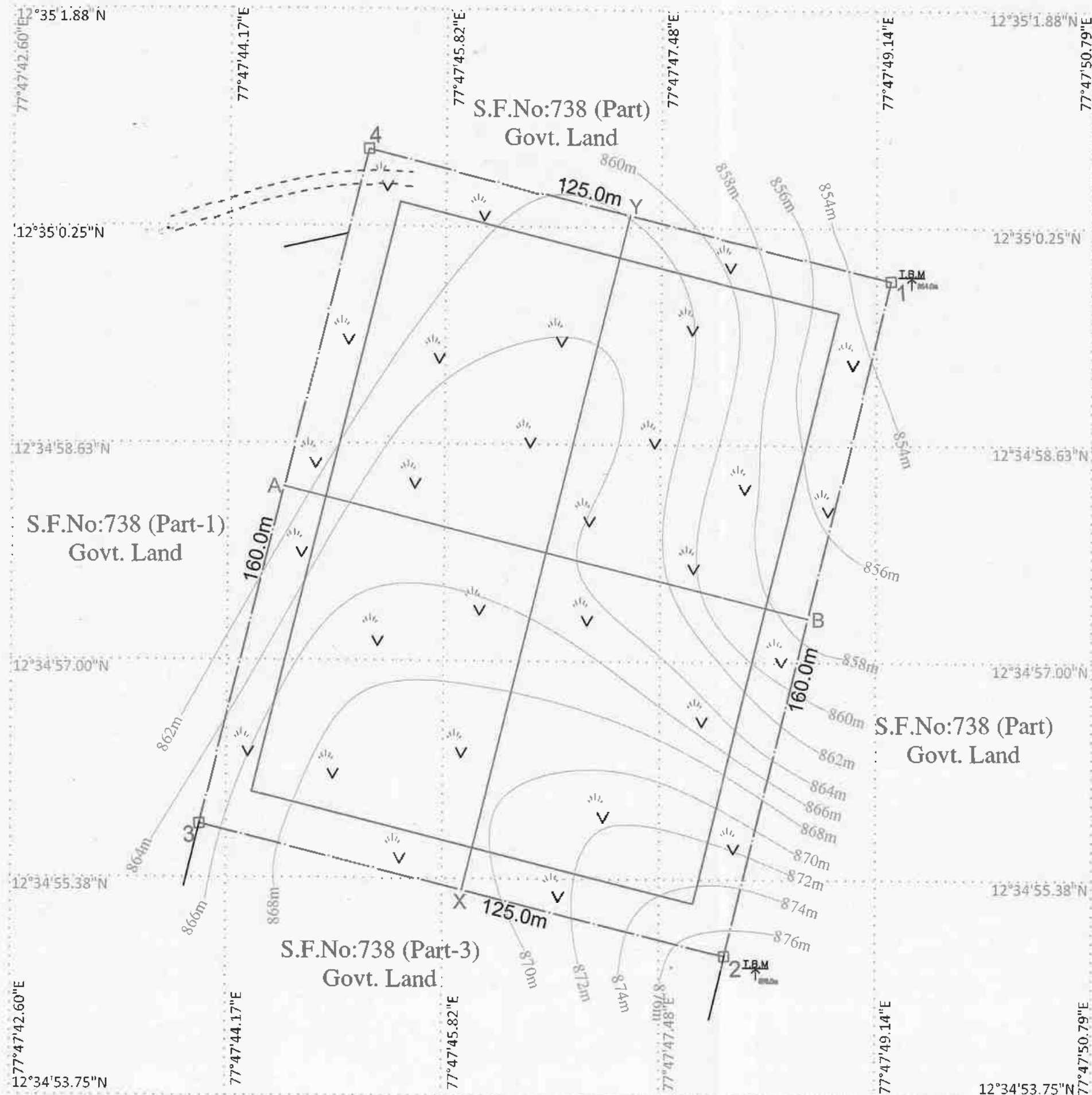


PLATE No- III

APPLICANT:

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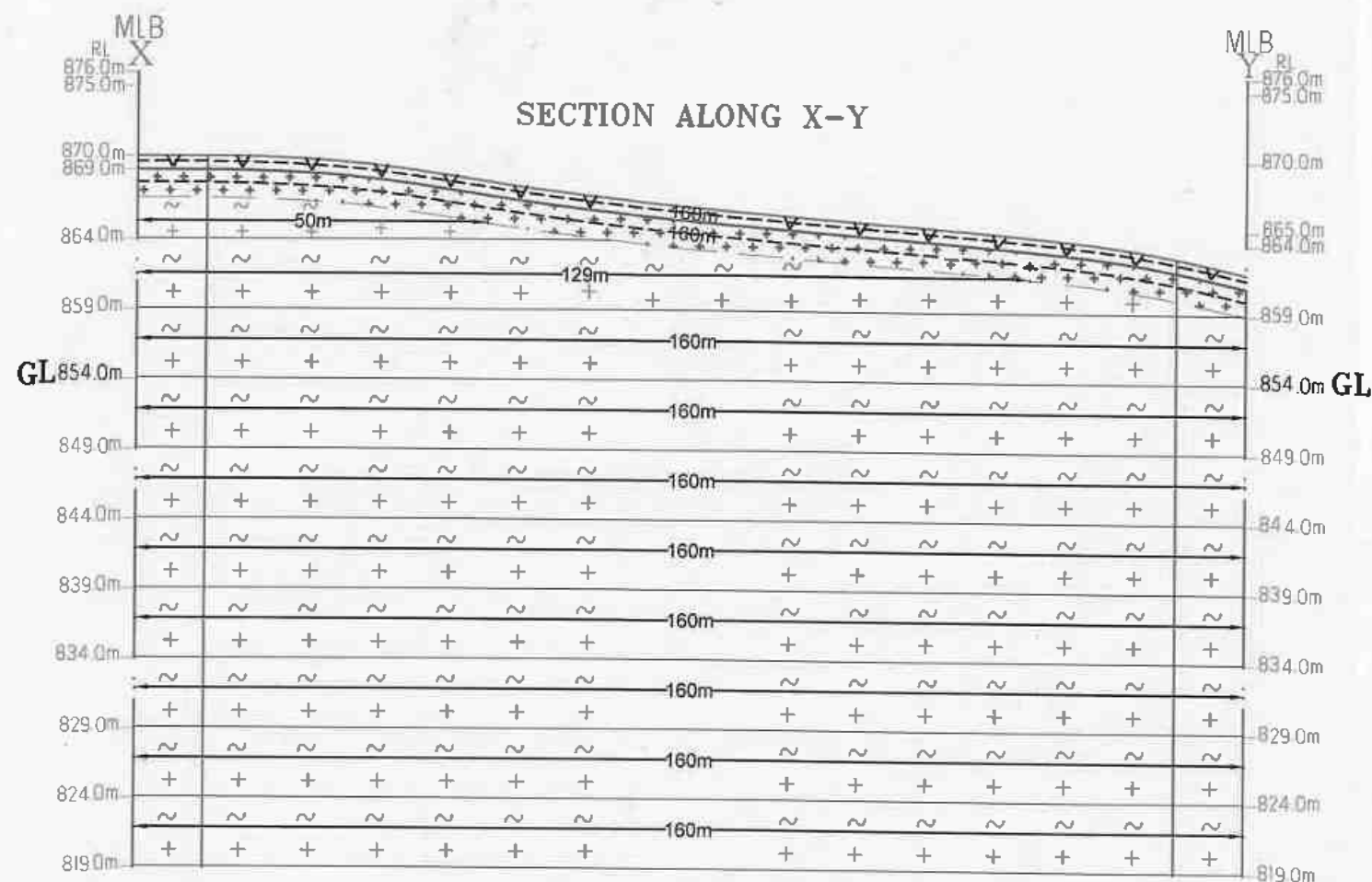
SURFACE & GEOLOGICAL PLAN

SCALE 1: 1000

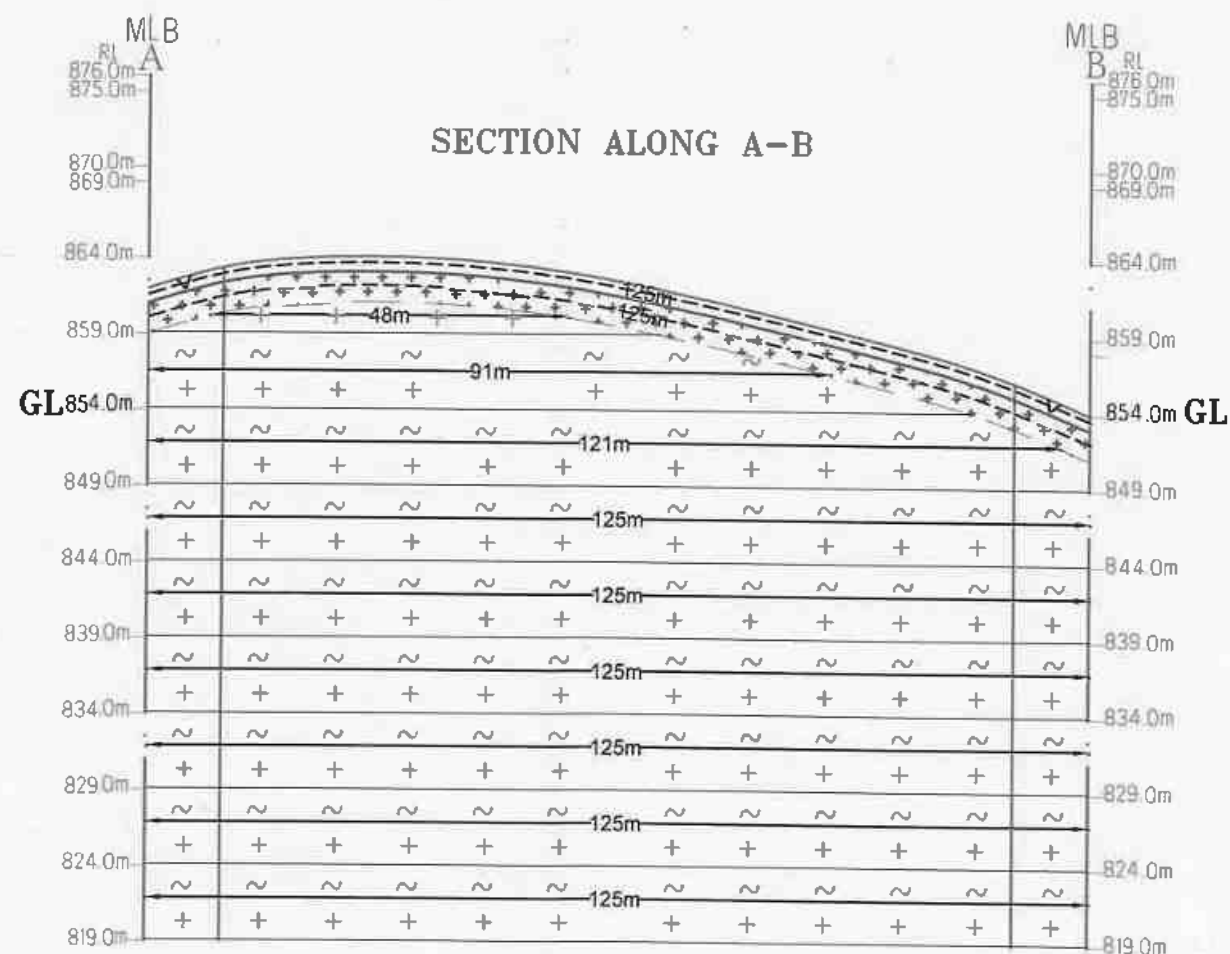
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QUALIFIED PERSON



GL = Ground Level



GEOLOGICAL RESOURCES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Rough stone in M ³	Weathered in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weathered in (Ts)	Topsoil in (Ts)
XY-AB	I	160	125	1	20000	.....	.....	20000	2	.....	.....	40000
	II	160	125	2	40000	.....	40000	.....	2	.....	80000	.....
	III	50	125	3	18750	18750	.....	.....	2.75	51563	.....	.....
	IV	129	48	5	30960	30960	.....	.....	2.75	85140	.....	.....
	V	160	91	5	72800	72800	.....	.....	2.75	200200	.....	.....
	VI	160	121	5	96800	96800	.....	.....	2.75	266200	.....	.....
	VII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	VIII	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	IX	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	X	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
	XI	160	125	5	100000	100000	.....	.....	2.75	275000	.....	.....
TOTAL					879310	819310	40000	20000		2253103	80000	40000

INDEX

MINE LEASE BOUNDARY



SAFETY DISTANCE



TOP SOIL



WEATHERED ROCK



ROUGH STONE

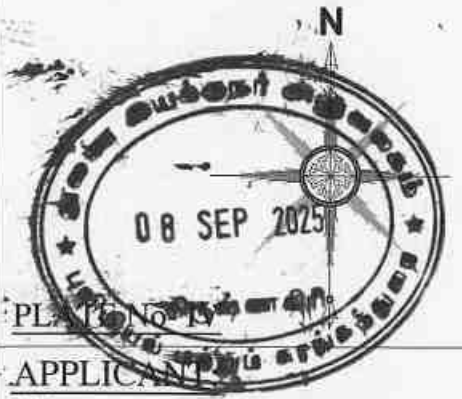
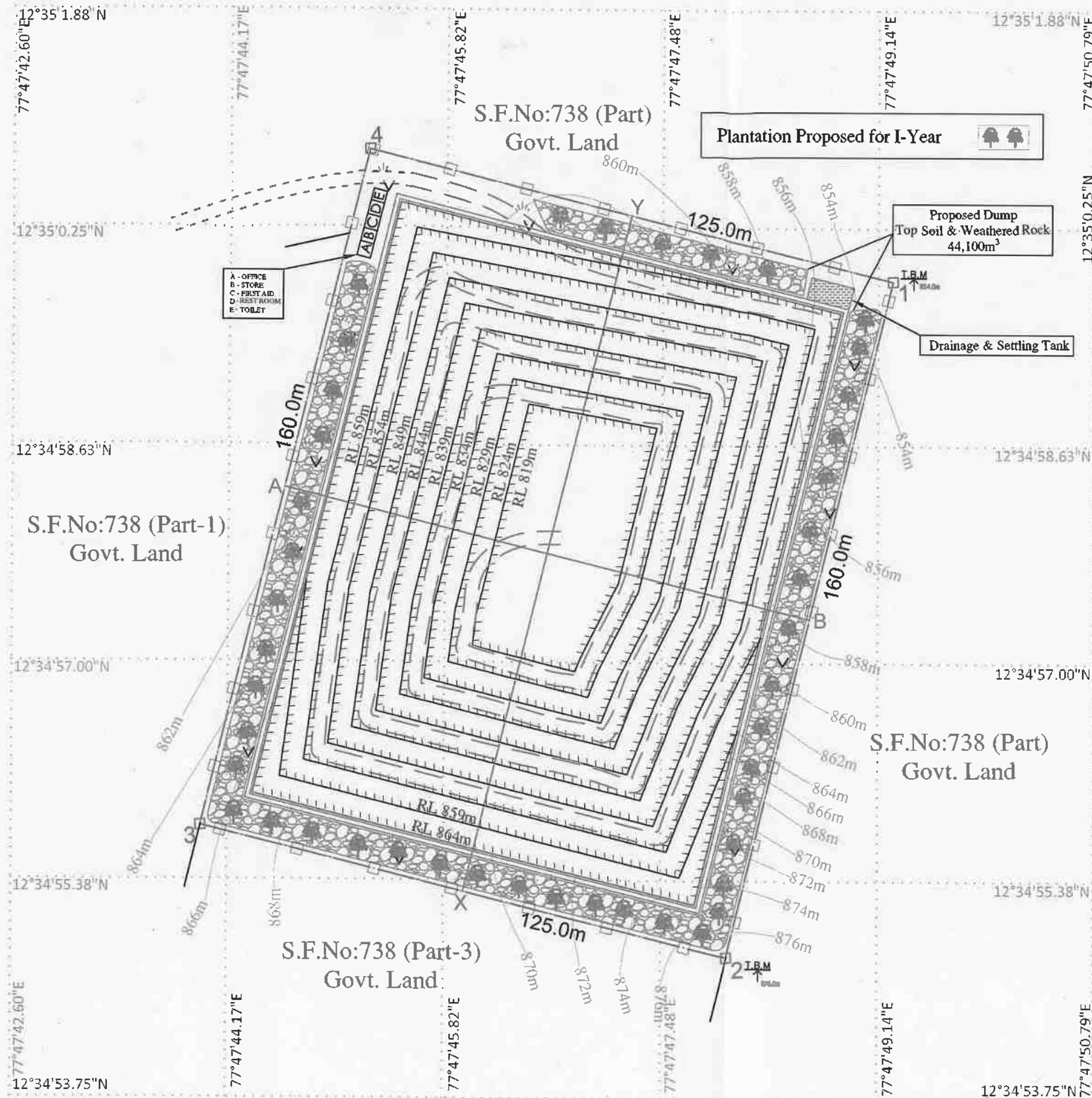


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[Signature]

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



APPLICANT
M/s.SHRI NATURAL STONES,
PARTNER THIRU.M.N.RAVIKUMAR,
No.194/18A, JALAKENDESHWARA NAGAR,
OPP TO ANAND ELECTRONICS,
NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:
S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

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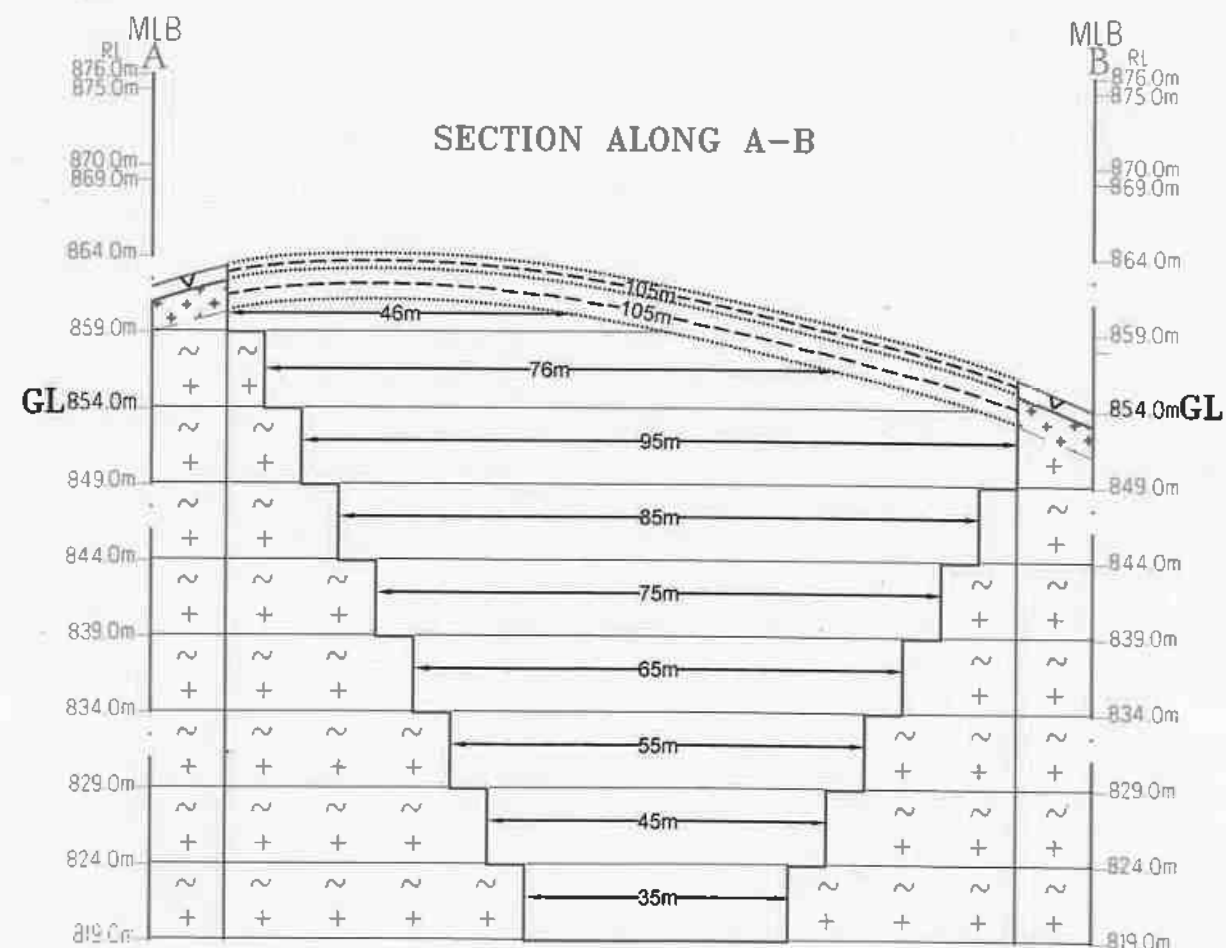
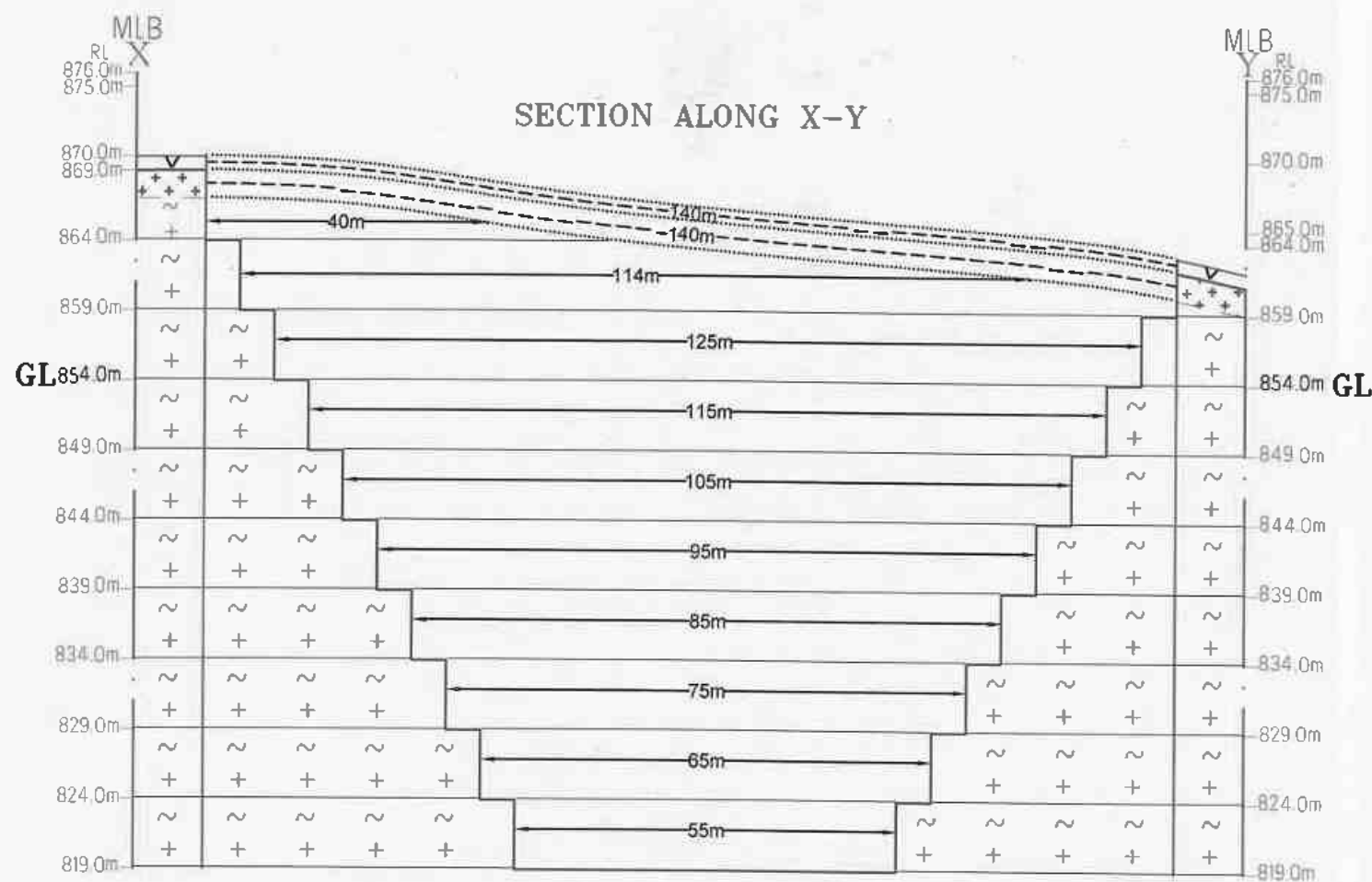
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TOPSOIL	
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TEMPORARY BENCH MARK	
ULTIMATE BENCH	
DRAINAGE & SETTLING TANK	
HAUL ROAD	
FENCING	
PROPOSED DUMP	

CONCEPTUAL PLAN
SCALE 1: 1000

Prepared By:

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



MINEABLE RESEVES												
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
XY-AB	I	140	105	1	14700	14700	29400	14700	2	34650	58800	29400
	II	40	105	3	12600	12600	29400	14700	2	34650	58800	29400
	III	114	46	5	26220	26220	29400	14700	2.75	72105	58800	29400
	III	125	76	5	47500	47500	29400	14700	2.75	130625	58800	29400
	III	115	95	5	54625	54625	29400	14700	2.75	150219	58800	29400
	IV	105	85	5	44625	44625	29400	14700	2.75	122719	58800	29400
	V	95	75	5	35625	35625	29400	14700	2.75	97969	58800	29400
	VI	85	65	5	27625	27625	29400	14700	2.75	75969	58800	29400
	VII	75	55	5	20625	20625	29400	14700	2.75	56718	58800	29400
	VIII	65	45	5	14625	14625	29400	14700	2.75	40219	58800	29400
	IX	55	35	5	9625	9625	29400	14700	2.75	26468	58800	29400
TOTAL					337795	293695	29400	14700		807661	58800	29400

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MINE LEASE BOUNDARY	
SAFETY DISTANCE	
TOP SOIL	
WEATHERED ROCK	
ROUGH STONE	
ULTIMATE BENCH	

Prepared By:
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NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

LEASE APPLIED AREA:

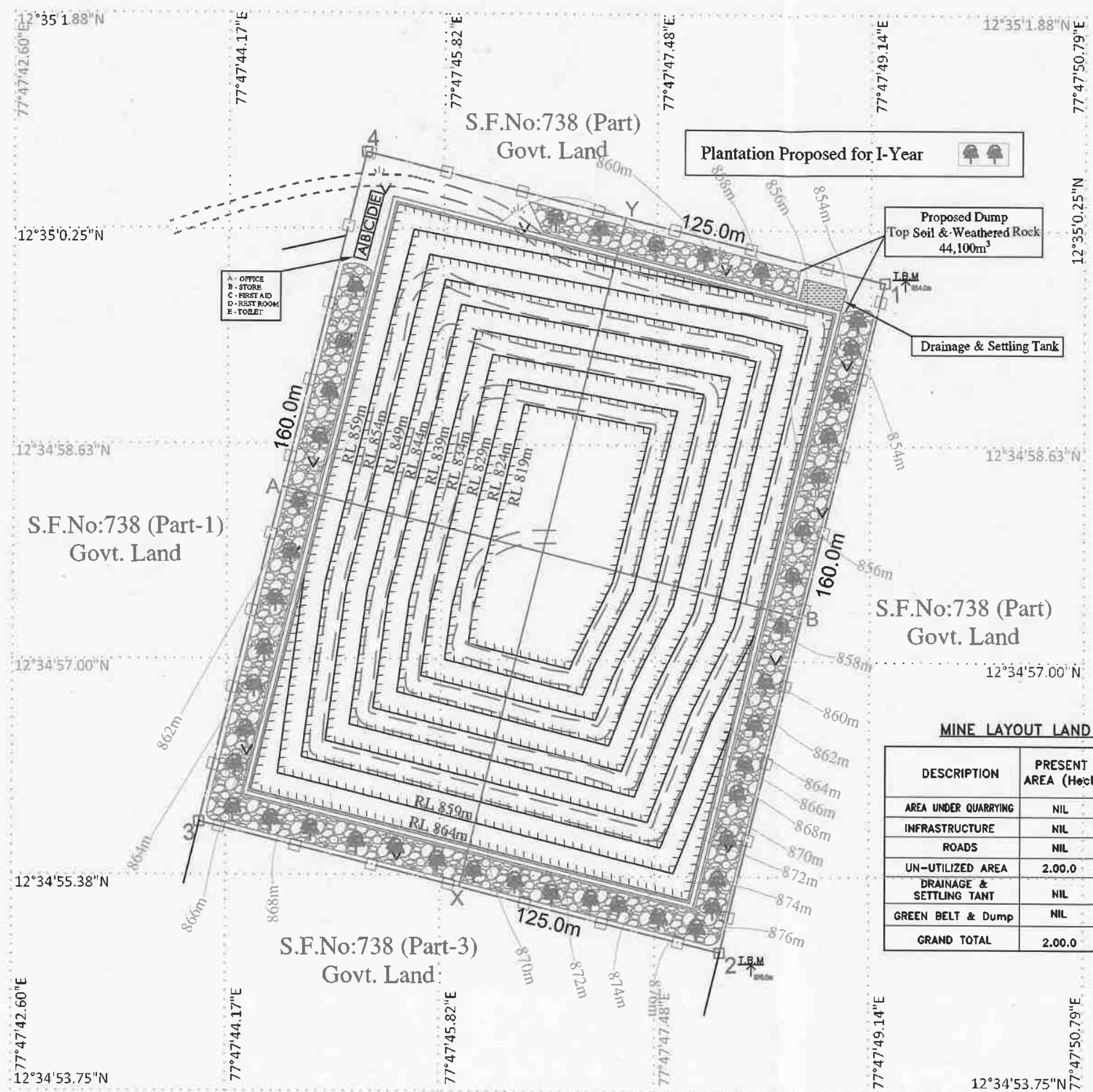
S.F.No : 738 (PART-2)
EXTENT : 2.00.0Hects,
VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI
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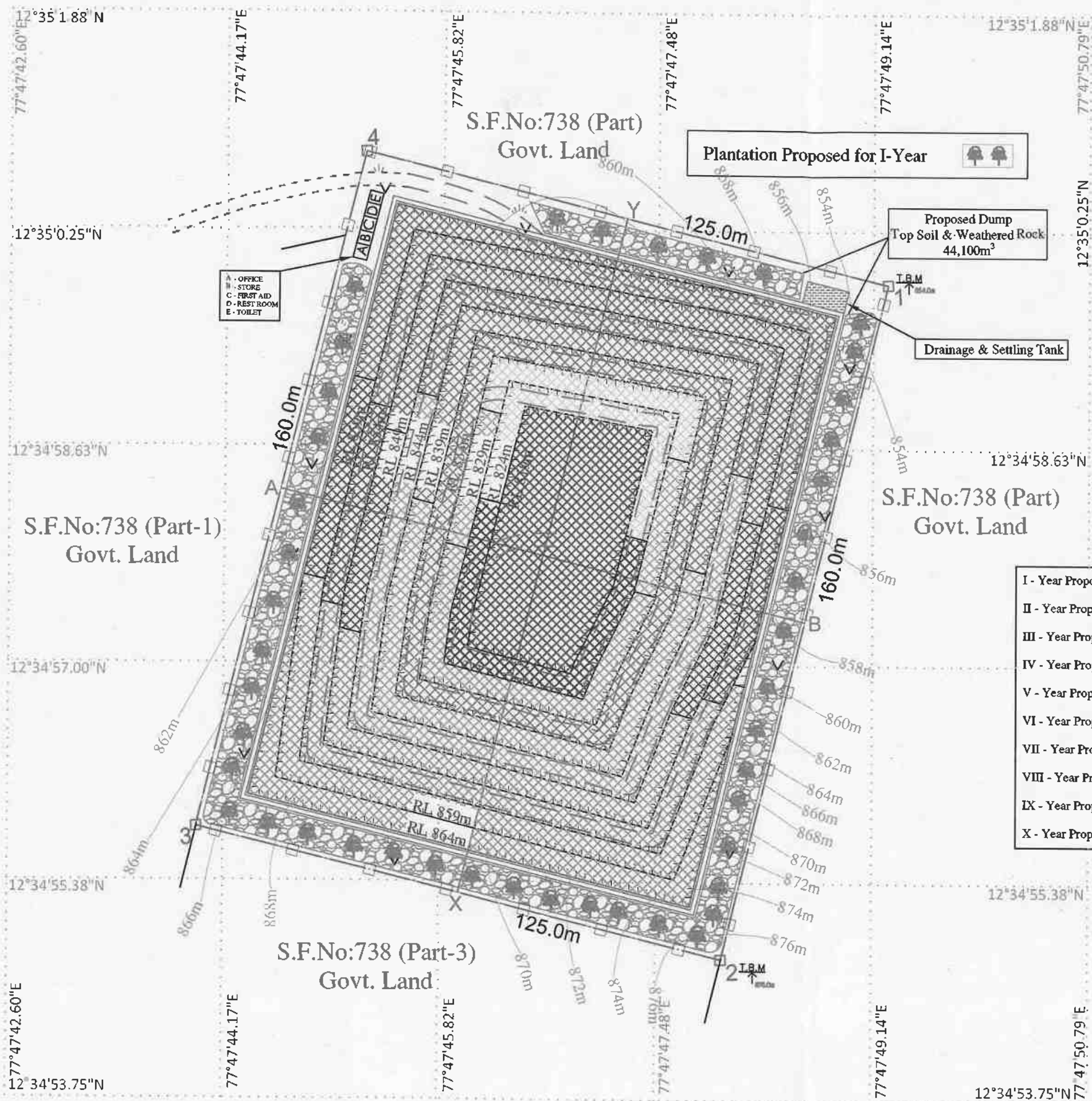
**MINE LAYOUT PLAN &
LAND USE PATTERN**
SCALE 1 : 1000

Prepared By:
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BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE**

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



MINE LAYOUT LAND USE PATTERN			
DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	NIL	1.47.00	
INFRASTRUCTURE	NIL	0.02.0	
ROADS	NIL	0.03.0	
UN-UTILIZED AREA	2.00.0	NIL	
DRAINAGE & SETTLING TANT	NIL	0.05.48	
GREEN BELT & Dump	NIL	0.42.52	
GRAND TOTAL	2.00.0	2.00.0	



APPLICANT:
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NH ROAD, HOSUR TALUK,
KRISHNAGIRI DISTRICT.

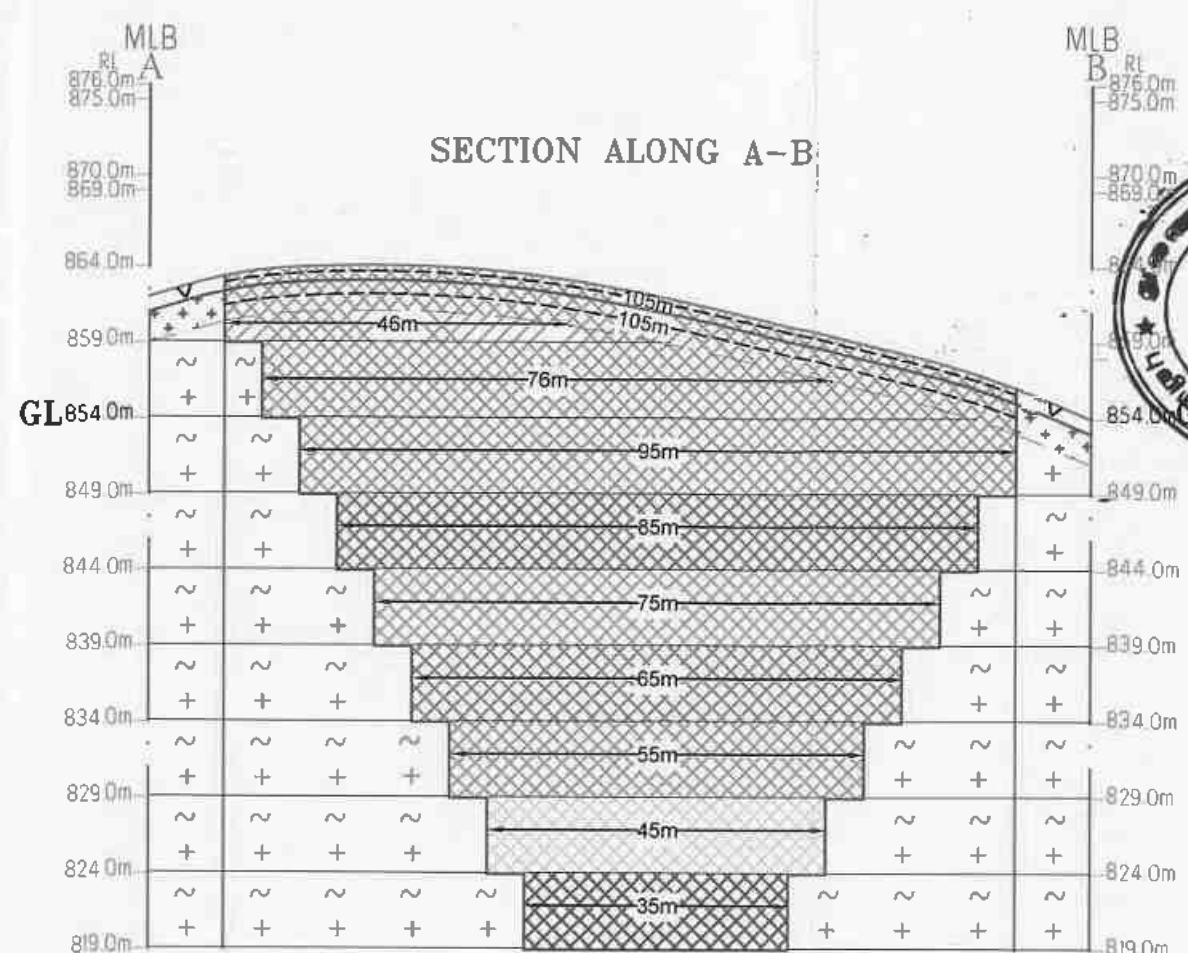
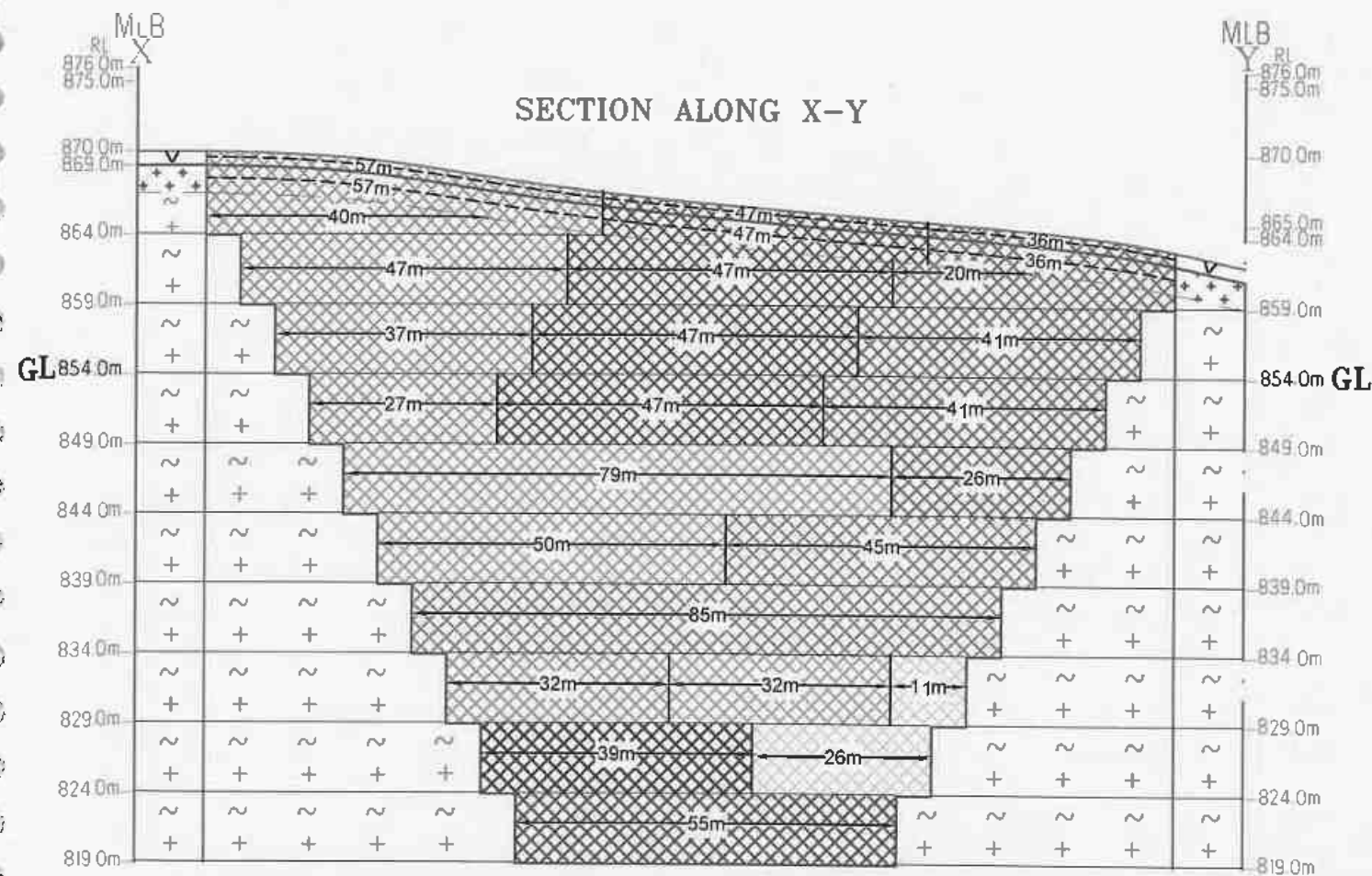
LEASE APPLIED AREA:
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VILLAGE : THANDARAI,
TALUK : DENKANIKOTTAI,
DISTRICT : KRISHNAGIRI.

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**YEARWISE DEVELOPMENT,
PRODUCTION PLAN**
SCALE 1 : 1000

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

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



YEARWISE PRODUCTION RESERVES													
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in M ³	Recoverable reserve in M ³	Weatherd in M ³	Topsoil in M ³	Bulk Density	Rough Stone in (Ts)	Weatherd in (Ts)	Topsoil in (Ts)
I-YEAR	XY-AB	I	57	105	1	5985	5985	11970	5985	2	34650	23940	11970
		II	57	105	2	11970	11970			2			
		III	40	105	3	12600	12600			2.75	34650		
		IV	47	46	5	10810	10810			2.75	29727		
		V	37	76	5	14060	14060			2.75	38665		
		V	27	95	5	12825	12825			2.75	35269		
TOTAL						68250	68250	11970	5985		138311	23940	11970
II-YEAR	XY-AB	I	47	105	1	4935	4935	9870	4935	2	29727	19740	9870
		II	47	105	2	9870	9870			2			
		III	47	46	5	10810	10810			2.75	29727		
		IV	47	76	5	17860	17860			2.75	49115		
		V	47	95	5	22325	22325			2.75	61394		
		TOTAL						65800	65800	9870	4935		140236	19740	9870
III-YEAR	XY-AB	I	36	105	1	3780	3780	7560	3780	2	23940	15960	7980
		II	36	105	2	7560	7560			2			
		III	20	46	5	4600	4600			2.75	12650		
		IV	41	76	5	15580	15580			2.75	42845		
		V	41	95	5	19475	19475			2.75	53556		
		VI	26	85	5	11050	11050			2.75	30388		
TOTAL						62045	62045	7560	3780		139439	15120	7560
IV-YEAR	XY-AB	VI	79	85	5	33575	33575	67150		2.75	92331		
		VII	50	75	5	18750	18750			2.75	51563		
TOTAL						52325	52325	0	0		143894	0	0
V-YEAR	XY-AB	VII	45	75	5	16875	16875			2.75	46406		
		VIII	85	65	5	27625	27625			2.75	75969		
TOTAL						44500	44500	0	0		122375	0	0
VI-YEAR	XY-AB	IX	32	55	5	8800	8800			2.75	24200		
TOTAL						8800	8800	0	0		24200	0	0
VII-YEAR	XY-AB	IX	32	55	5	8800	8800			2.75	24200		
TOTAL						8800	8800	0	0		24200	0	0
VIII-YEAR	XY-AB	IX	11	55	5	3025	3025			2.75	8319		
		X	26	45	5	5850	5850			2.75	16087		
TOTAL						8875	8875	0	0		24406	0	0
IX-YEAR	XY-AB	X	39	45	5	8775	8775			2.75	24131		
TOTAL						8775	8775	0	0		24131	0	0
X-YEAR	XY-AB	XI	55	35	5	9625	9625			2.75	26469		
TOTAL						9625	9625	0	0		26469	0	0
GRAND TOTAL						337795	293695	29400	14700		807661	58800	29400

- I - Year Proposed area to be Quarried
- II - Year Proposed area to be Quarried
- III - Year Proposed area to be Quarried
- IV - Year Proposed area to be Quarried
- V - Year Proposed area to be Quarried
- VI - Year Proposed area to be Quarried
- VII - Year Proposed area to be Quarried
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PLATE No- VIA

APPLICANT:
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PARTNER THIRU.M.N.RAVIKUMAR,
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TALUK : DENKANIKOTTAL,
DISTRICT : KRISHNAGIRI.

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

Prepared By:
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[Signature]
Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
QUALIFIED PERSON

திராவிட குடியாட்சி அமைப்பின் சமீபம்

தருமபுரம் டிஸ்ட்ரிக்ட், தேனி
தாலுகா கோட்டை வட்டம், தனி டிராவிட
திராவிட முன்னணி 738 திட்டத்தில் திராவிட
PART II - ல் கனம் அங்கு போகும் நிலங்கள்
தேனி டிராவிட 61-78.0 கிலோ 2.00.0 ஏக்கர்கள்
கட்டும், கெட்டுப் போன நிலத்தை அந்த 300 க
திராவிட டிராவிட, கோட்டை, அராத்திரம் திட்டம். அந்த
புறங்களை உடல் உட்கொடுக்கப்பட்டு, கலவி நிக்
புறங்களை, தனிவாரி கட்டப்படுகின்றன, அந்த
கட்டப்படுகின்றன, பெரும்பாலும் நிலம் உட்கொடுக்கப்பட்டு, கனம்
திராவிட முன்னணி அந்திராவிட அந்திராவிட
திராவிட முன்னணி கலவி நிக்.


23/06/2023
Village Administrative Officer
53. Thanderai Village,
DENKANIKOTTAI Taluk.

National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Technical Mining Solutions, Dharmapuri

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

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

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

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

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

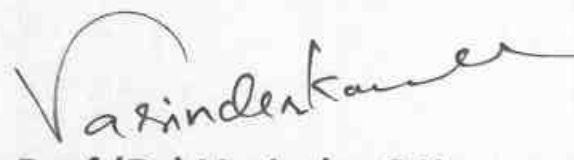
Issue Date
Feb 19, 2024

Valid up to
Dec 31, 2026




 Mr. Ajay Kumar Jha
 Sr. Director, NABET

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


 Prof (Dr) Varinder S Kanwar
 (CEO NABET)

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