

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

Environmental Clearance under EIA Notification – 2006

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

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

CLUSTER EXTENT = 8.78.50 hectares

At

Pasinayanapalli Village, Bargur Taluk,

Krishnagiri District, Tamil Nadu State

ToR Lr. No. SEIAA-TN/F.No.10473/SEAC/1(a)ToR-1633/2023 dated 12.12.2023

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.	Mineral Production
M/s.Pranita Granites No.62/33, Pulikuthi Street, Gugai, Salem – 636006	3.46.0 Ha & 10 (Part)	Granite 20% - 27729 m³ Granite Waste @ 80% -110916 m³

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



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

Oddapatti, Collectorate Post office,

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

Valid till: December, 31, 2026



ENVIRONMENTAL LAB

EXCELLENCE LABORATORY

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

Madurai, Tamil Nadu

NABL Certificate Number: TC-6932, Valid Until : 19.03.2024

Baseline Study Period – October 2023 through December 2023

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR issued vide Lr No. SEIAA-TN/F.No.10473/SEAC/1(a)ToR-1633/2023

Dated:12.12.2023 for M/s. Pranita Granites

1	The PP shall obtain a letter from AD (Mines) regarding the existing pit conditions within the proposed mine lease area.	The proposed quarry is a new lease area, so the condition is not applicable.
2	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc located within 1 km of the proposed quarry.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.35-49.
3	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.
4	The Proponent shall carry out Bio diversity study through Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report.	The detailed Biodiversity report will be submitted during final EIA report.
5	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 and provided in Tables 10.1 & 10.2 under Chapter X, pp.136-142.
6	The PP shall submit the 'Action Plan' on the issues raised during the Public Hearing with budgetary provisions for the same.	An 'Action Plan' on the issues raised during the public hearing and budget allocation for the same will be attached in the final EIA report.
7	The PP shall submit the action plan for the controlled blasting measures so as to reduce the impacts due to the blasting operation in	The Controlled Explosive Measures to Minimize Impacts from Blasting Activities in Proposed Quarries within 1

	the proposed quarries within the 1km of the proposed quarry.	km of Proposed Quarry given in Section 2.6 under Chapter II, pp.15-23.
ANNEXURE-I		
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	It is a new lease area and the conditions are not applicable.
	(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 the 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, (iv) 300 m, (v) 500 m with details such as dwelling houses with number of occupants, whether it belongs to	The details regarding within the radius of 50m, 100m, 200m, 300m, 500m will be included in the final EIA report.

	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 water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.35-49.
5	The proponent shall carry out Bio diversity study through reputed institution and the same shall be included in EIA Report.	The biodiversity study report 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	This project does not require the Slope Stability Plan because the quarry was operated only above ground level and the details regarding the conceptual plan is given in the Figure 2.8 under Chapter II, p.21.

	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.	It is a new lease area; the condition is not applicable.
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 has been enclosed in the approved mining plan report in Annexure III.
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	A conceptual design of blasting has been given in Section 2.6 under Chapter II, pp.15-23.
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.	Photographic evidences showing mining activities of the project proponent will be submitted during the final EIA presentation.
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?	It is a new lease area and the condition is not applicable.
14	Quantity of minerals mined out.	
	<ul style="list-style-type: none"> Highest production achieved in any one year 	
	<ul style="list-style-type: none"> Detail of approved depth of mining. 	
	<ul style="list-style-type: none"> Actual depth of the mining achieved earlier. 	
	<ul style="list-style-type: none"> Name of the person already mined in that lease area. 	
	<ul style="list-style-type: none"> If EC and CTO already obtained, the copy of the same shall be submitted. 	
	<ul style="list-style-type: none"> 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 2.4 under Chapter II, p.13.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	The drone video will be submitted during final EIA presentation.
17	The proponent shall furnish photographs of adequate fencing, green belt along the	Photographs of adequate fencing, green belt along the periphery of the project

	periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	area and the photographs showing nearby water bodies will be included in final EIA report.
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves planned production capacity proposed working methodology with justifications. The anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for The same.	The Resources and Reserves of colour granite were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. The plate used for reserve estimation has been presented in Figure 2.5 results of geological resources and reserves have been shown in Table 2.3. under Chapter II, pp.14 & 15.
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of 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 2.11 under Chapter II, p.22.
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open 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	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp. 35-49.

	<p>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.</p>	
21	<p>The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.</p>	<p>The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III, pp. 24-95.</p>
22	<p>The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p>	<p>Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII, pp.126-129.</p>
23	<p>Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p>	<p>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.</p>
24	<p>Land use of the study area delineating forest area, agricultural land, gazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be</p>	<p>Land use of the study area delineating forest area, agricultural land2grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological</p>

	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.	features has been discussed in Section 3.1, under Chapter III pp.25-34. The details of surrounding sensitive ecological features have been provided in Table 3.43 under Chapter III, p.92. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.20.
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.
28	Impact on local transport infrastructure due to the project should be indicated.	The traffic density study is given in EIA report in Section 3.7, under Chapter III. pp.89-91.

29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	A detailed tree survey was carried out within 300 m radius and the results have been discussed in Section 3.5 under Chapter III, pp.63-86.
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 2.8 under Chapter II, p.20.
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the importance of protecting the biological environment.
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV, pp.108-111.
33	Taller/one year old Saplings raised in	The FAE of ecology and biodiversity has

	appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities, botanist/Horticulture with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
34	A Disaster management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII, pp.124-126.
35	A Risk Assessment and management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A risk assessment plan for the project has been provided in Section 7.1 under Chapter VII, pp.122-124.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV, pp.112 & 114.
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.132 & 133.

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 16 people directly as discussed in Section 8.1 under Chapter VIII, pp.131-133.
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII, pp.131-133.
41	If any quarrying operation were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF & CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	It is a new lease area, the condition is not applicable.
42	The PP Shall prepare the EMP for the entire life/lease period of mine and also Furnish the sworn affidavit stating to Abide the EMP for the entire life of mine.	A detailed environment management plan has been prepared following the suggestion made by SEAC, as shown in Chapter X, pp.135-142. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted during final EIA presentation.

43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act' 1986.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act, 1986.
<p><u>Discussion by SEIAA and the Remarks: -</u></p> <p>The subject was placed in the 678th Authority meeting held on 11.12.2023 & 12.12.2023 The Authority noted that the subject was appraised in 423rd SEAC meeting held on 15.11.2023.</p> <p>Based on the presentation and documents furnished by the project proponent, SEAC after detailed deliberations, decided to recommend the proposal for the grant of Terms of Reference (ToR).</p> <p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in additional to the following conditions and the conditions mentioned in Annexure 'B' of this minutes.</p>		
Annexure 'B'		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	A cluster management committee including all the proponents of the colour granite quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt	The members of the cluster management committee will be instructed to carry out EMP in coordination.

	Development Water sprinkling, tree plantation, blasting etc.,	
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	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, pp.15-23.
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	It will be advised to the cluster management committee to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised will be given in detail.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall furnish the Emergency	The committee will submit the

	Management plan within the cluster.	emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The committee will submit the fire safety and evacuation plan as discussed in Section 7.2 under Chapter VII, pp.122-124.
Impact study of Mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following	
	a) Soil health & soil biological, physical land chemical features.	Soil health and biodiversity have been discussed in Sections 3.1 and 3.5 respectively under Chapter III, pp.25-34 & pp.63-86.
	b) Climate change leading to Droughts, Floods etc.	Climatic condition of the proposed project area has been discussed in Section 3.3 under Chapter III, pp.49-59.
	c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local People.	The information about CO ₂ emission has been added to Section 4.6 under Chapter IV, pp.108-111.
	d) Possibilities of water contamination and impact on aquatic ecosystem health.	Possibilities of both surface and ground water contamination have been discussed in Section 4.3 under Chapter IV, pp.97 &

		98. The impact on aquatic species has been discussed in Section 4.6 under Chapter IV, pp.108-111.
	e) Agriculture, Forestry, & Traditional practices.	Sorghum, millet, groundnut, and coconut are the primary crops that are cultivated in the study area.
	f) Hydrothermal/Geothermal effect due to destruction in the Environment.	The average geothermal gradient of earth is 25 ⁰ C/km. As the proposed depth of mining is 10 m below the local ground level, the temperature will increase by 0.25 ⁰ C at the depth of mining.
	g) Bio-geochemical processes and its foot prints including environmental stress.	Data is not included.
	h) Sediment geochemistry in the surface streams.	The details regarding sediment geochemistry is discussed in the Table 3.4 under Chapter III, p.34.
Agriculture & Agro-Biodiversity		
13	Impact on surrounding agricultural fields around the proposed mining area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6 under Chapter IV, pp.108-111.
14	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III, pp.63-86. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or

		threatened category as per IUCN. There is no endangered red list species found in the study area.
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area shall be given and if so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.5 under Chapter III, pp. 63-86. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV, pp.108-111.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.5 under Chapter III, pp. 63-86 and measures have been provided in Section 4.6 under Chapter IV, pp. 108-111.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore the ecosystem, as discussed in Chapter IV, pp.96-115.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV, p.96.
	Forests	
19	The project proponent shall study on impact of mining on Reserve forests free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site.
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV, pp. 108-111.

21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV, pp. 108-111.
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National parks, corridors and wildlife pathways, near project site.	The details of protected areas, National Parks, Corridors and Wildlife pathways near project site and the list of environmentally sensitive areas has been provided in Table 3.43 under Chapter III, p.93.
Water Environment		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.35-49.
24	Erosion control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV, pp.97 & 98.
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, waterbodies/rivers & any ecological fragile areas.	The matter has been discussed under Chapter IV, pp.96-115.

26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.5 under Chapter 3, pp. 63-86.
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV, pp. 96-115.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sits possible land form changes visual and aesthetic impacts.	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV, pp. 108-111.
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV, p.97.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV, pp.97 & 98.
Energy		
31	The measures taken to control Noise, Air, water, Dust control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control noise, air, water, and dust have been given under Chapter IV, pp.96-115.
Climate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV, pp.108-111.

	control of other emission and climate mitigation activities.	
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The matter has been discussed in Chapter IV, pp. 96-115.
Mine Closure Plan		
34	Detailed Mine closure plan covering the entire mine lease period as per precise area communication order issued.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II, p.20.
EMP		
35	Detailed Environment Management plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	A detailed Environment Management plan has been given under Chapter X, pp.135-142.
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X, pp.136-142.
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII, pp.122-124.
Disaster Management Plan		
38	To furnish disaster management plan and disaster mitigation measures in regard to all	The disaster management plan for this project has been provided in Section 7.3

	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.	under Chapter VII, pp.124-126.
Others		
39.	The project proponent shall furnish VAO certificate with reference to 300 m radius regard to approved habitations, schools, Archaeological sites, structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, river, lake pond, tank etc.	The VAO certificate of 300 m radius have been attached in the attached in the Annexure IV.
40	As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	The concerns raised during the public consultation will be submitted in the final EIA report.
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in Section 7.5 under Chapter VII, pp.129-130.
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	Not applicable. This is not a violation category project. This proposal falls under B1 category.

	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.	The proposed site for quarrying is a private land. A copy of the document showing that the proponent is the rightful lessee has been enclosed along with the approved mining plan in Annexure III.
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	All the documents related to mining plan, EIA and public hearing are compatible to each other and have been provided in the annexure part.
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 2.4 under Chapter II, p.13.
5.	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III.
6.	Details about the land proposed for mining	The lease area was inspected by the

	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.	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 proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under Chapter X, pp.135 & 136.
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 colour granite 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, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1 under Chapter III, pp.25-34. The details of surrounding sensitive ecological features have been provided in Table 3.43 under Chapter III, p.92. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.20.
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 colour granite will be transported to the needy customers.
12.	Certificate from the Competent Authority in the State Forest Department should be	It is not applicable as there is no forest land involved within the proposed project

	<p>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.</p>	<p>area. The details have been discussed in Table 3.43 under Chapter III, p.92.</p>
13.	<p>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.</p>	<p>It is not applicable as the proposed project area does not involve any forest land.</p>
14.	<p>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.</p>	<p>Not Applicable.</p> <p>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.</p>
15.	<p>The vegetation in the RF / PF areas in the study area, with necessary details, should be given.</p>	<p>No Reserve Forest is found within the study area. The details of reserve forest within 10km have been discussed Table</p>

		3.43 under Chapter III, p.92. Flora and Fauna vegetation details is attached in the Annexure IV.
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 from the periphery of the project area. Information regarding wildlife /protected area within 10km has been given in Table 3.43 under Chapter III, p.92. Flora and Fauna vegetation details is attached in the Annexure IV.
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	The details of National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area has been given in Table 3.43 under Chapter III, p.92.
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	A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.5 under Chapter III, pp.63-86.

	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 '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 weaker	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

	<p>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.</p>	<p>Affected People (PAP) are not provided.</p>
<p>22.</p>	<p>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</p>	<p>Baseline data were collected for the period of October 2023 - December 2023 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III, pp. 25-92.</p>

	PM10, particularly for free silica, should be given.	
23.	Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV, pp.98-105.
24.	The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II, p.22.
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	Part of the working pit will be allowed to collect rain water during the spell of rain.

	be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
27.	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV, pp. 97 & 98.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	Not Applicable. The ground water table is found at the depth of 60 m below ground level. The ultimate depth of quarry is 10 m (7m above base level & 3m below base level). Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III, pp.35-49.
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 467 m AMSL. Ultimate depth of the mine is 10 m (7m above base level & 3m below base level). Depth to the water level in the area is 60 m BGL.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Greenbelt development plan has been given in Section 4.6 under Chapter IV, pp.108-111.
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	Traffic density survey was carried out to analyse the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III, p.89 & 91.

	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.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6.7 under Chapter II, p.18.
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 Table 2.8 under Section 2.6. under Chapter II, p.20.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV, pp.112 & 114.
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.132 & 133.

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 27 people directly as discussed in Section 8.1 under Chapter VIII, p.131.
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X, pp.136-142.
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 in 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.3,8,41,500/- CER Cost is Rs. 6,00,000/- In order to implement the environmental protection measures, an amount of Rs.11219496 as capital cost and recurring cost as Rs.1272540 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per

		year, the overall EMP cost for 5 years will be Rs.18368722, as shown in Tables 10.1 & 10.2 under Chapter X, pp.136-142.
42	A disaster management Plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII, pp.124-126.
43.	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project details have been given under Chapter VIII, pp.131-133.
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 report 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 attached 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 4th August, 2009 have been followed while preparing the EIA report.
h)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	No changes 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.	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 as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided in to B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B2 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 100 ha, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance.

In compliance with ToR obtained vide Lr No. SEIAA-TN/F.No.10473/SEAC/1(a)ToR-1633/2023 dated 12.12.2023. This EIA report is prepared for the project proponent, M/s.Pranita Granites applied for Colour Granite quarry lease in the patta land falling in S.F.No.10 (Part) over an extent of 3.46.0 ha in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District and Tamil Nadu. Considering cumulative load of all the colour granite quarry projects including two proposed quarries and two existing quarries falling in the cluster of 500 m radius from the periphery of the proposed project. The total extent of all the quarries in the cluster is 8.78.5 ha. All the quarries in the cluster are shown in Figure 1.1.

1.1 PURPOSE OF THE REPORT

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

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

Proposed Quarries					
Code	Name of the Lease	S.F. No	Village	Extent (ha)	Lease Period
P1	M/s.Pranita Granites	10 (Part)	Pasinayanapalli	3.46.0	Proposed Area
P2	Tmt.M.Sadhana	366 (Part)	Jagadevipalayam	1.87.0	Applied Area
Existing Quarry					
E1	Thiru.K.Sekaran	367/1N1, 362/2N2 (P), 367/201 (P)	Jagadevipalayam	1.10.5	13.07.2012 to 12.07.2032
E2	Thiru.V.Venu	5	Jagadevipalayam	2.35.0	16.12.2015 to 15.12.2035
Expired Quarry					

Total Cluster Extent				8.78.5	---

Source:

DD Letter – Rc.No.1043/2020/Mines dated 07.06.2023

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

1.2 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages.

These stages are given below:

- ❖ Screening
- ❖ Scoping
- ❖ Public consultation &
- ❖ Appraisal

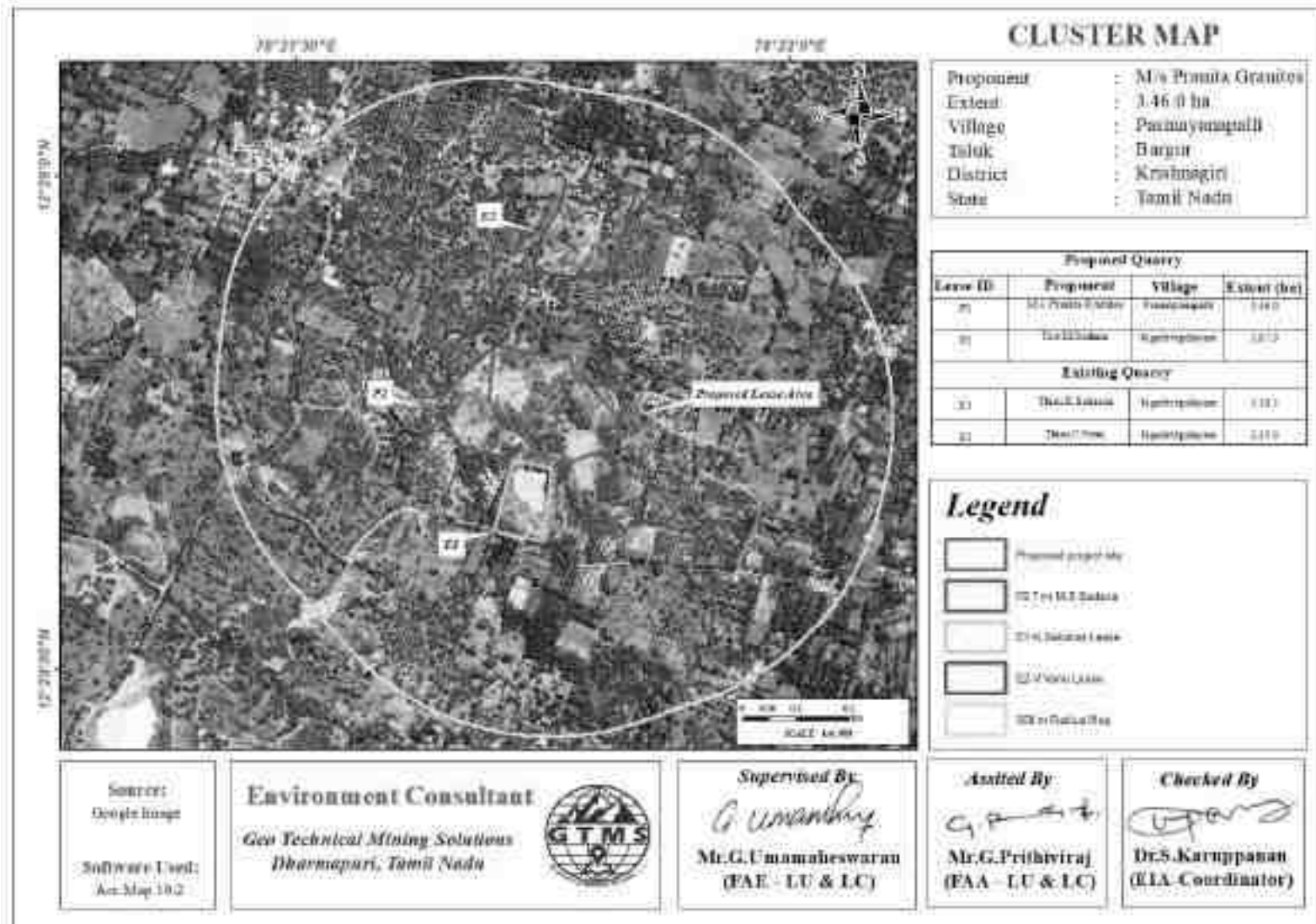


Figure 1.1 Location of Proposed and Existing Coloured Granite Quarries in the Cluster of 500 m Radius

Screening

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No. SIA/TN/MIN/448443/2023 dated:11.10.2023) and decided that the project requires detailed environmental studies for the preparation of EIA report. Therefore, the proponent submitted application for Terms of Reference (ToR) on 13.10.2023.

Scoping

The proposal was placed in the 423th meeting of SEAC on 15.11.2023. Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Terms of Reference (ToR) and the recommendation for ToR is subjected to the outcome of the Honourable NGT, Principal Bench, New Delhi (O.A No.186 of 2016 (M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.1122/2016, M.A.No.12/2017 & M.A. No. 843/2017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No.384/2017).

Public Consultation

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

Appraisal

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

1.3 TERMS OF REFERENCE (ToR)

The SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued ToR to the proponent vide Lr No. SEIAA-TN/F.No.10473/SEAC/1(a)ToR-1633/2023 dated 12.12.2023 for the preparation of an EIA report.

1.4 POST ENVIRONMENT CLEARANCE MONITORING

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

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

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

1.6 IDENTIFICATION OF THE PROJECT PROPONENT

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

Table 1.2 Details of Project Proponent

Name of the Project Proponent	M/s.Pranita Granites
Address	No.62/33, Pulikuthi Street, Gugai, Salem – 636006
Status	Proprietor

1.7 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of colour granite which is primarily used in construction projects. The method adopted for colour granite excavation is open cast semi-mechanized method involving formation of benches with 5 m height and 5 m width. The proposed project site is located in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu. Some of the important features of the proposed project have been provided in Table 1.3.

Table 1.3 Details of the Project

Name of the Quarry	M/s.Pranita Granites, Colour granite	
S.F.No.	10 (Part)	
Land Type	Government land	
Extent	3.46.0 ha	
Existing Depth	10 m (7m AGL + 3m BGL)	
Toposheet No	57 L/07	
Latitude between	12°28'42.3501"N to 12°28'49.6385"N	
Longitude between	78°21'41.4649"E to 78°21'49.6891"E	
Highest Elevation	467 m ASML	
Topography	Elevated Topography	
Geological Reserves	Colour Granite 20% Recovery	Granite Waste 80%
	320079	1280316
Mineable Reserves	Colour Granite 20% Recovery	Granite Waste 80%
	110805	443220
Proposed production for 5 years	Colour Granite 20% Recovery	Granite Waste 80%
	27729	110916
Method of Mining	The quarrying operation is carried out by Open cast semi mechanized mining method with 5.0 m vertical bench with a bench width of 5.0 m.	
Machinery proposed	Jack Hammer	4
	Compressor	2
	Tippers	2
	Excavator	1
Proposed manpower deployment	27	
Project cost	Rs. 3,80,41,500/-	
CER cost	Rs 6,00,000/-	
Proposed Water Requirement	4.28 KLD	

Source: Approved mining plan book

1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. A detailed account of the emission sources, emissions control equipment, background air quality levels, meteorological measurements, dispersion model and all other aspects of pollution like effluent discharge, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of **October-December 2023** for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.

1.9 LEGISLATION APPLICABLE TO MINING OF MINERAL SECTOR

A few important legislations are given below:

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

CHAPTER II

PROJECT DESCRIPTION

2.0 INTRODUCTION

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

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

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

2.1 DESCRIPTION OF THE PROJECT

The proponent M/s.Pranita Granites is involved in the undertaking of establishment, construction, development, and closure of open cast mines. He, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of granite. Therefore, the proponent had applied for quarry lease on 07.11.2020 to extract granite and produce dimension stones. The precise area communication letter was issued by Industries (MME.2) Department, Secretariat Chennai Rc.No.900/MME.2/2021-1, Dated 26.02.2021. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Director of Geology and Mining, Chennai Rc.No.6939/MM4/2020 Dated: 18.05.2023. The overall view of the project site is shown in Figure 2.1.



Figure 2.1 Overall View of Proposed Project Site

2.2 LOCATION AND ACCESSIBILITY

The proposed project area is Pasinayanapalli Village, Bargur Taluk, Krishnagiri District as shown in Figure 2.2. The area is located between a latitude of $12^{\circ}28'42.3501''\text{N}$ to $12^{\circ}28'49.6385''\text{N}$ and a longitude of $78^{\circ}21'41.4649''\text{E}$ to $78^{\circ}21'49.6891''\text{E}$. Accessibility details to the proposed project site have been given in Table 2.1.

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	NH – 77 Krishnagiri - Uthangarai	2.68 km	W
Nearest Railway Station	Tirupattur	21.3 km	E
Nearest Town	Bargur	6.5 km	N
Nearest Airport	Salem	82.2 km	S
Nearest Port	Chennai	217.1km	E
Nearest Village	Kondappanayakempalli	2.5 km	N
	Samalpatti	2.3 km	S
	Kappalvadi	2.5 km	E
	Kheel Srenivasapuram	3.5 km	W

2.3 LEASEHOLD AREA

- ❖ 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.

Corner Coordinates

The extent of the proposed project site is **3.46.0 ha**. The boundary corner coordinates are given in Table 2.2 and the location of 8 boundary corners are shown in Figure 2.4.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude
1	12°28'48.8832"N	78°21'46.6283"E
2	12°28'47.5252"N	78°21'46.9984"E
3	12°28'47.5413"N	78°21'47.5142"E
4	12°28'45.2132"N	78°21'49.6891"E
5	12°28'43.5213"N	78°21'49.2889"E
6	12°28'42.3501"N	78°21'45.5003"E
7	12°28'46.3863"N	78°21'41.4649"E
8	12°28'49.6385"N	78°21'41.8319"E

Source: Approved Mining plan

2.4 GEOLOGY

The lease area geologically occurs on Biotite Hornblende Gneiss. Also, the lease area geomorphologically occurs Low Dissected Denudational Hills and Valleys.

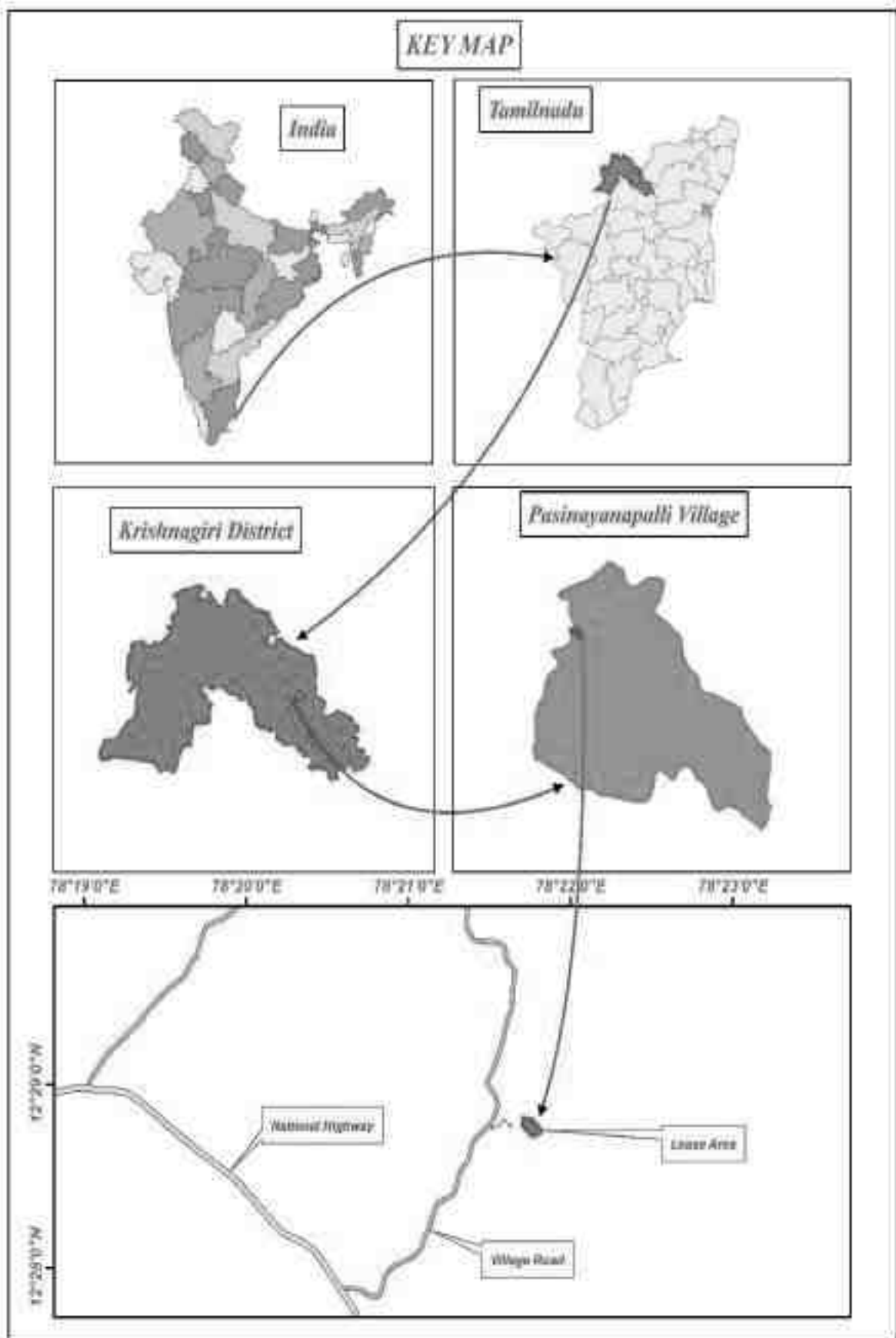
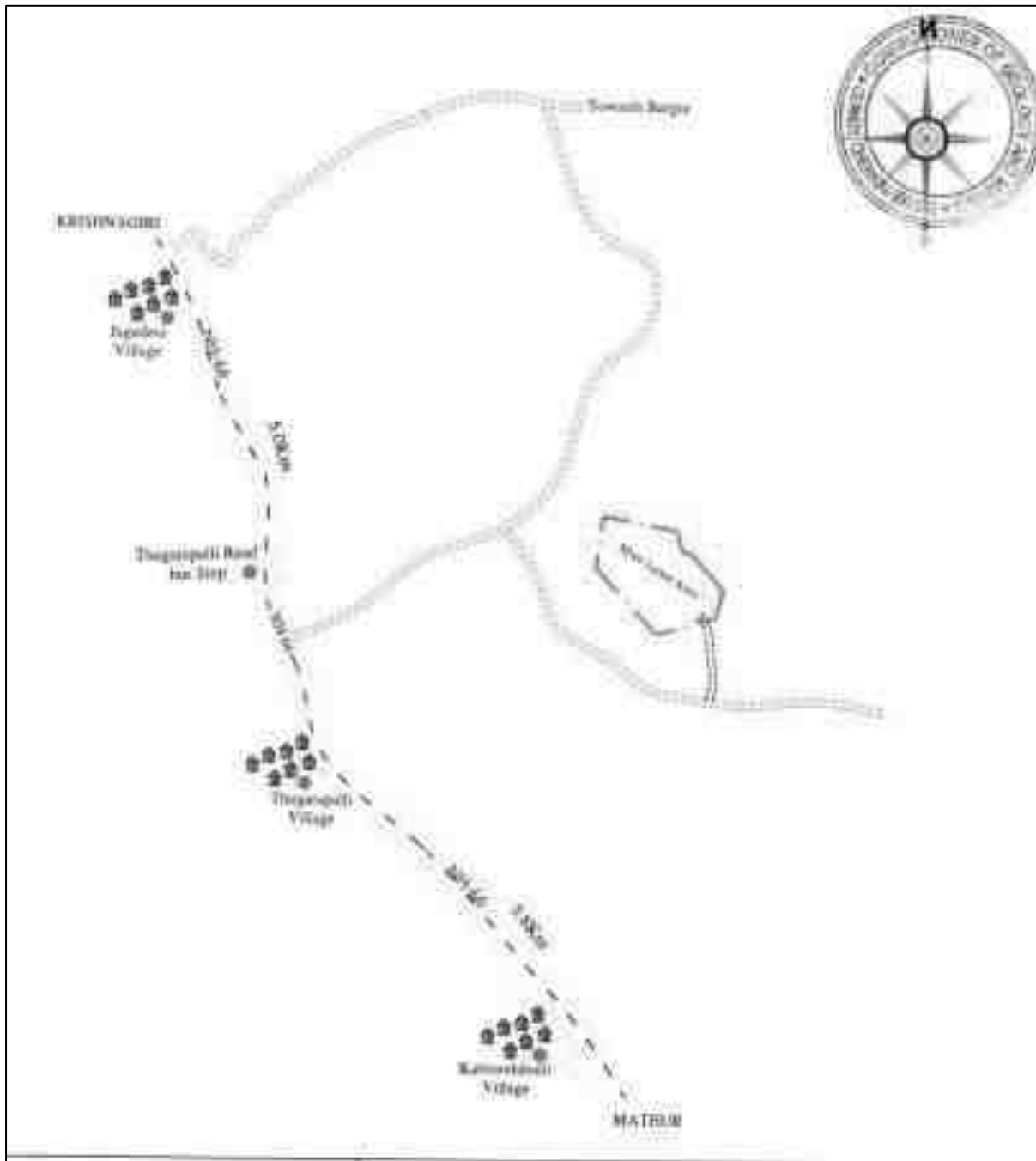


Figure 2.2 Key Map Showing Location of Project Site



<p>APPLICANT: MA PRANITA GRANITES, No. 6233, PULIUTHI STREET, GUGAI, SALEM-636006.</p>	<p>PLATE NO.1</p>	<p>ROUTE MAP Nil, or Scale</p>
<p>LOCATION: EXTENT : 3.46 (Hect.) S.F NO : 10 (Part) VILLAGE : PASINAYANAPALLI, TALUK : BARGUR, DISTRICT : KRISHNAGIRI, STATE : TAMIL NADU.</p>	<p>INDEX</p> <p>QUARRY LEASE AREA [Dashed Line]</p> <p>APPROACH ROAD [Dotted Line]</p> <p>VILLAGE ROAD [Dashed Line]</p> <p>NH-66 [Dashed Line]</p>	<p>Prepared By:</p> <p>I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE</p> <p><i>[Signature]</i></p> <p>Dr. S. L. ABIR PANNAN, M.Sc., Ph.D., RECOGNIZED QUALIFIED PERSON RQP/MAS/06/2014/A</p>

Figure 2.3 Site Connectivity of the Lease Area

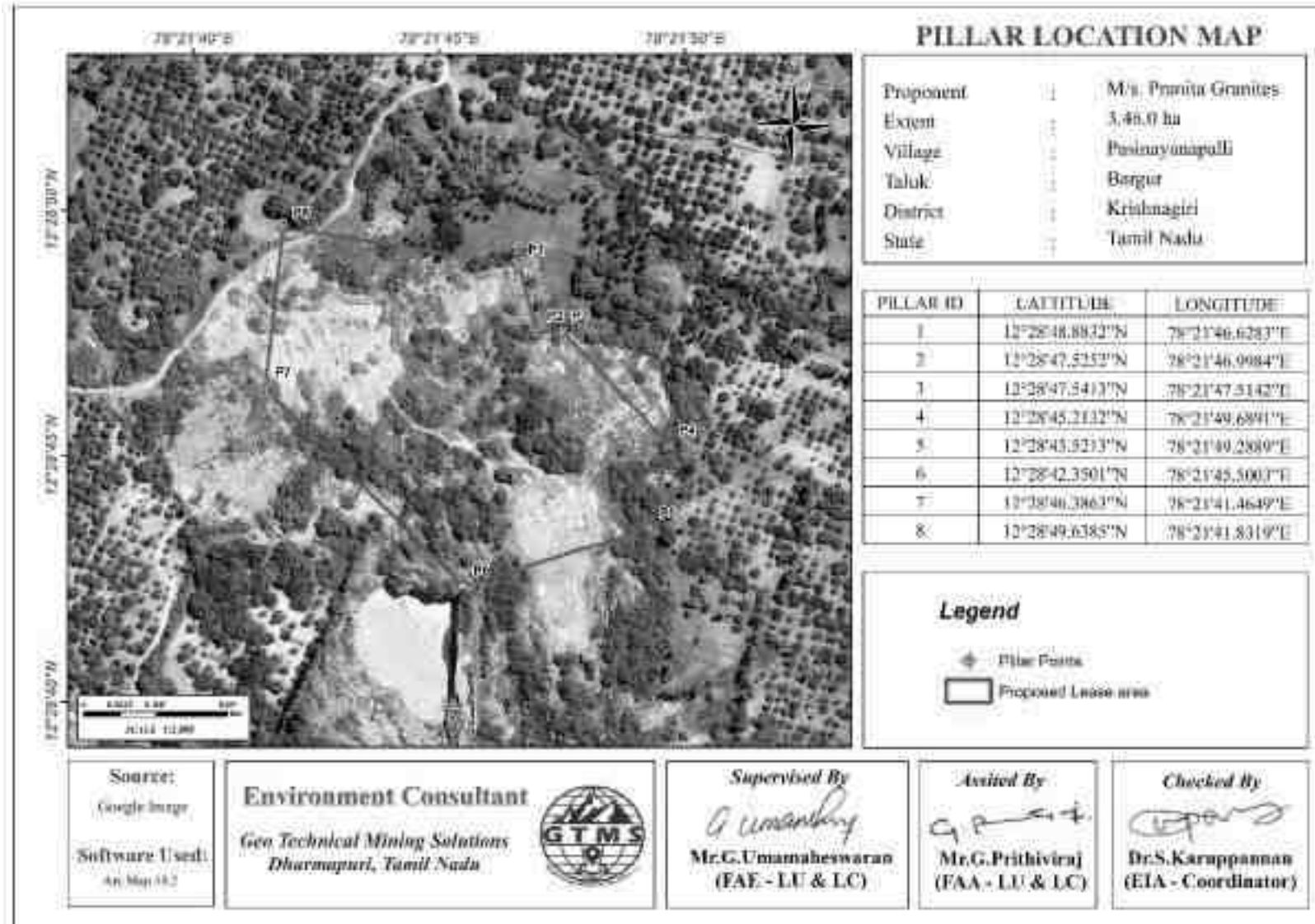


Figure 2.4 Google Earth Image Showing Lease Area with Pillar

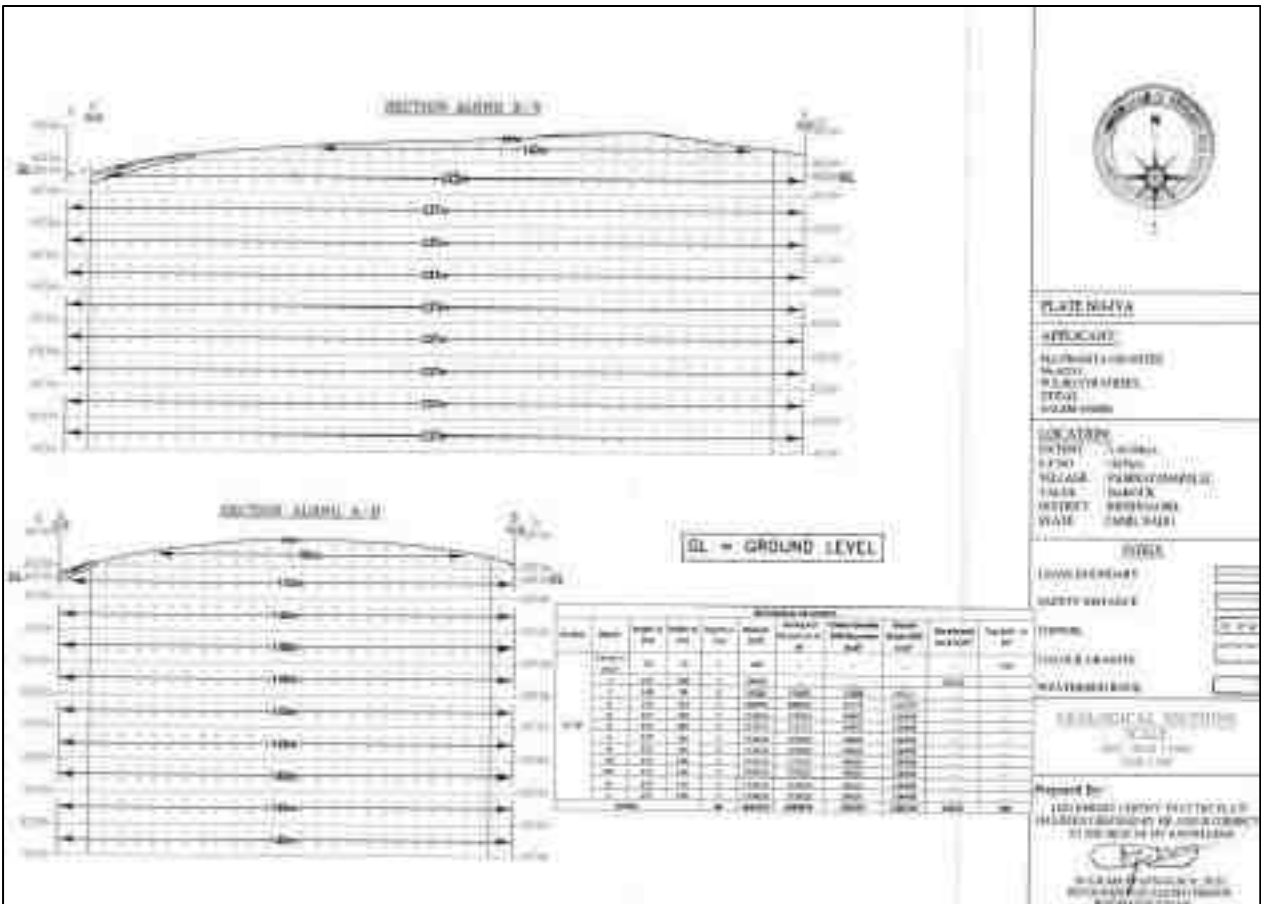
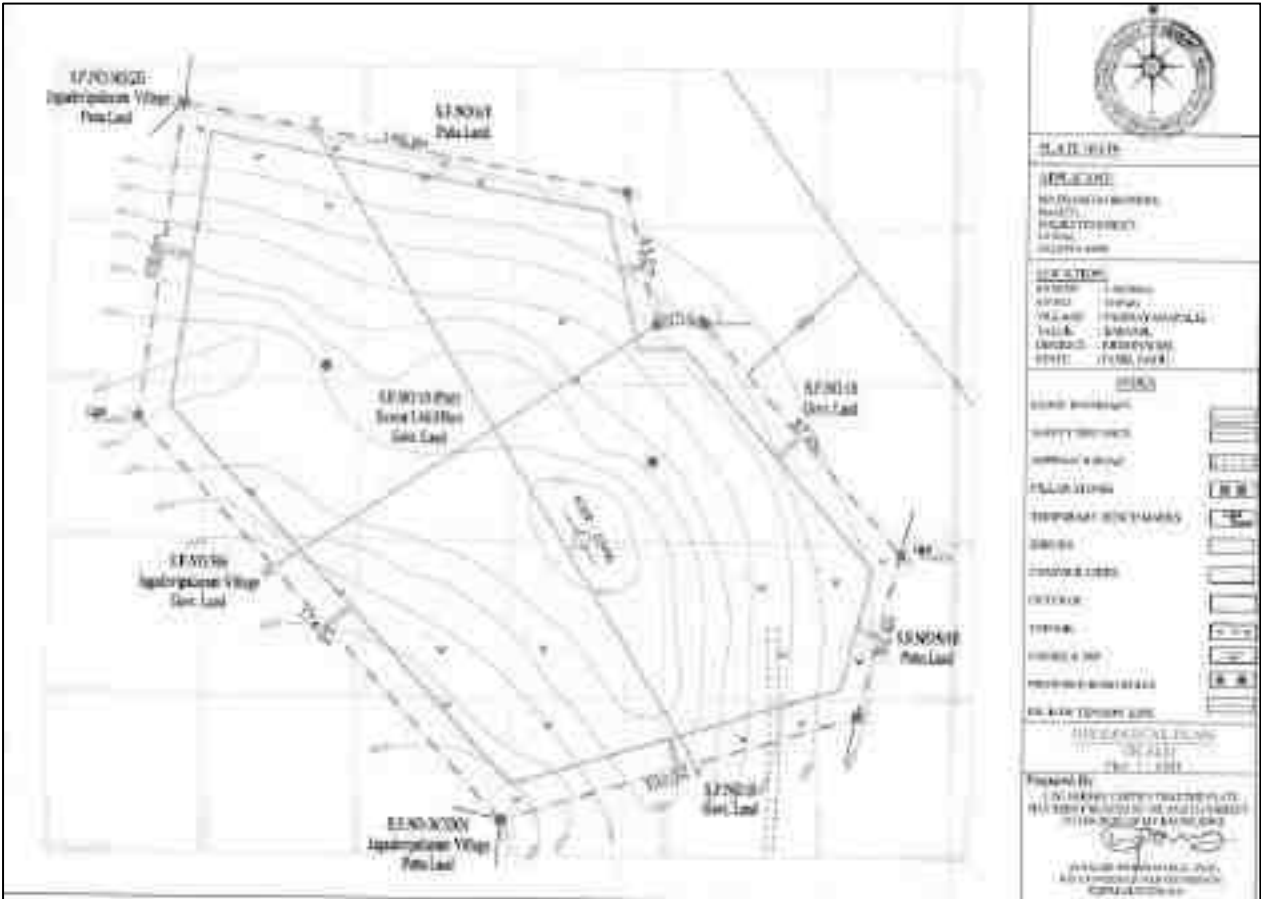


Figure 2.5 Surface and Geological Plan & Sections.

2.5 RESOURCES AND RESERVES

The estimated geological resources and mineable reserves of the proposed project is shown in Figure 2.5 and provided in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Description	ROM in (m ³)	Granite Waste @ 80 % (m ³)	Colour Granite @ 20% Recovery(m ³)	Weathered Rock (m ³)
Geological Resources	1635337	1280316	320079	34602
Mineable Reserves	574278	443220	110805	20253

Year-Wise Production

On the basis of year-wise development plan and its sections, as shown in Figure 2.6, year-wise production details are given in Table 2.4.

Table 2.4 Year wise Production Details

Year	ROM in m ³	Colour Granite @ 20% Recovery in m ³	Granite Waste @ 80 % in m ³	Weathered Rock in m ³
I	38040	5544	22176	10320
II	37653	5544	22176	9933
III	27735	5547	22188	--
IV	27735	5547	22188	--
V	27735	5547	22188	--
Total	158898	27729	110916	20253

Source: Approved Mining plans

2.6 MINING METHOD

The quarrying operation is proposed to be carried out by opencast semi-mechanized mining method with the bench height and width of 5m each. The open cast mining method offers several benefits to the proponent when compared to the more complex underground mining methods. The most important benefits include relatively smaller capital and operating costs, lesser safety hazards, ease of use for mass production, small closure costs, no restrictions on the use of heavy machinery if required, and easy drainage of subsurface water. Moreover, it provides a reasonable return on investments to the proponent and contributes to the growth of the local economy. A part of the profits generated from such mining practices will be used for the development of the local community infrastructures, social services, and capacity building.

Excavator, eco-friendly diamond wire saw cutting will be used in this method. In addition, drilling and blasting activities are inevitable in any quarry operations. In this project, shallow drilling with spacing of 0.1-0.3 m, burden of 1.6 m, and the depth of 10m (7m AGL + 3m BGL) is proposed. After drilling, expanding chemicals like calcium carbide powder will be used for splitting the required size of dimensional stone blocks. In this project primary (deep hole drill) blasting is not practiced. Some of the important aspects of mining are discussed below.

Magnitude of Operation

Based on the results of estimated production for the 5 years, details about the size of operation have been provided in Table 2.5.

Table 2.5 Operational Details for Proposed Project

	Colour Granite Recovery @ 20 % in m³
Quantity of Material to be Quarried out in five years	27729
Number of working days/Annum	270
Production of /Day (m ³)	21
No. of Lorry Loads	3

Extent of Mechanization

To achieve the above-mentioned production, various machineries are proposed for the quarrying operation, as given in Table 2.6.

Table 2.6 Machinery Details

Drilling Equipment					
Type	No. of Unit	Dia. of Hole (mm)	Size capacity	Make	Motive Power
Compressor	2	-	-	Atlas Capco	Diesel Drive
Jack Hammer	4	32		Atlas Copco	Compressed air
Loading Equipment					
Excavator	1	-	300	Tata Hitachi	Diesel Drive
Haulage & Transport Equipment					
Tipper	2		20 tons	TATA	Diesel Drive

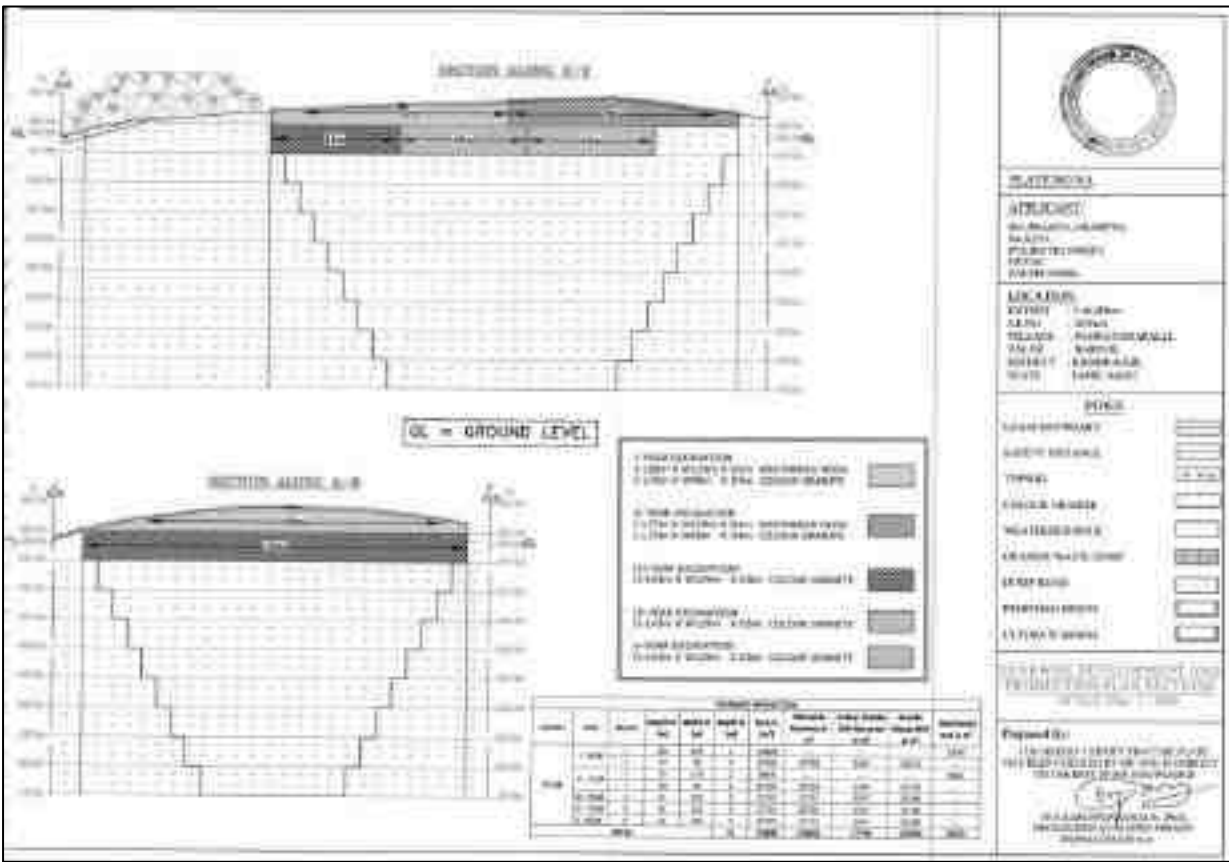
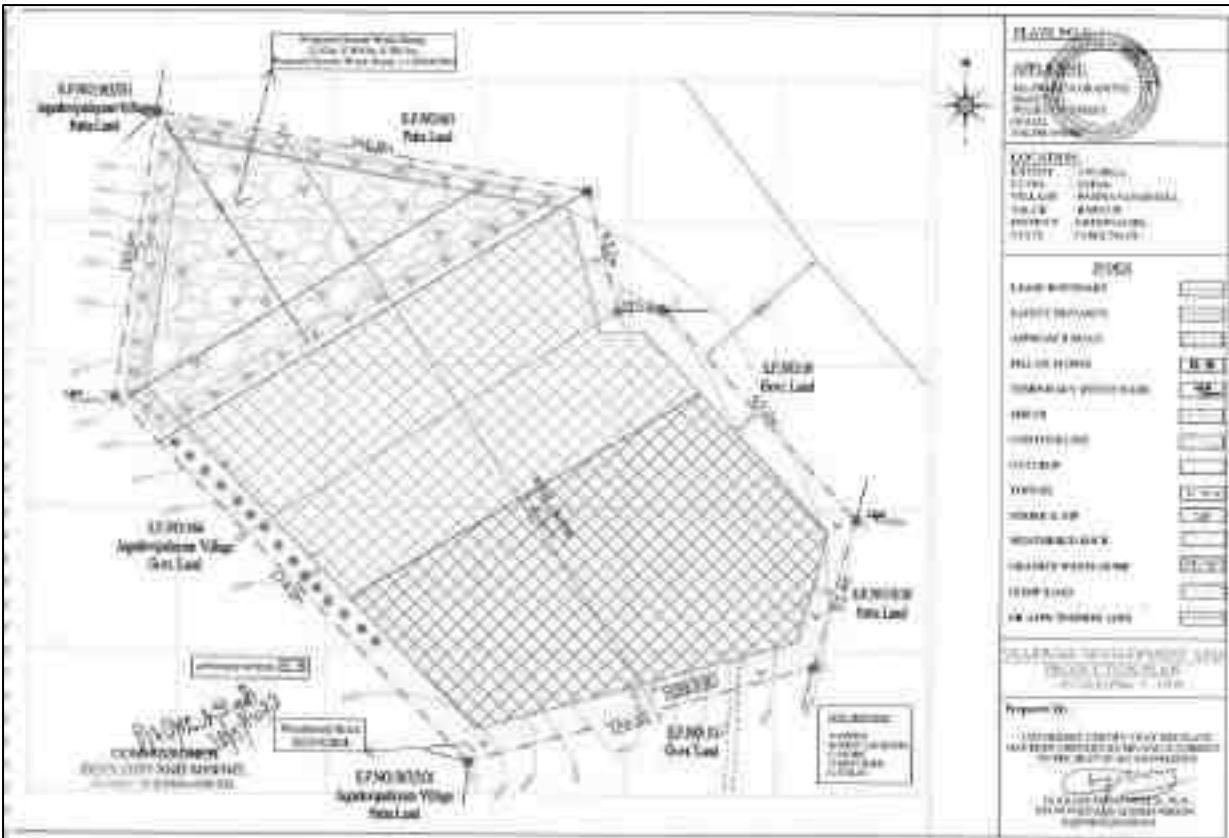


Figure 2.6 Year-Wise Development Production Plan & Sections

Disposal of Waste

The colour granite rejects are 110916 m³ in this lease area. The weathered rock is 20253 m³ shall be removed and stacked for earth bund of lease hold area and to prevent inherent entry of cattle's and human as per rules 106, Metalliferous Mines Regulation,1961. If colour granite may be unsold will be keep within the lease boundary.

Progressive Quarry closure plan

The progressive quarry closure plan of the proposed project showing present, and future land use statistics is provided in Table 2.7. According to data shown in the table, at the end of the quarry life, about 2.14.0 ha of land would have been utilized for quarrying, 0.80.0 ha of land for waste dump, 0.01.0 ha for infrastructures, 0.02.0 ha for roads, 0.10.5 ha for green belt development, and the remaining 0.38.5 ha would have been left as unutilized area.

Table 2.7 Land use data at present, during scheme of mining, and at the end of mine life

Description	Present Land Use Area (ha)	Land Use Area at the end of mine life (ha)
Area under quarry	Nil	2.14.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.10.5
Waste Dump	Nil	0.80.0
Unutilized Area	3.46.0	0.38.5
Total	3.46.0	3.46.0

Conceptual Mining Plan

On the basis of conceptual plan and its sections, as shown in Figures 2.8, the ultimate pit dimension of the quarry is 157 m in length, 129 m in width, and 50 m in depth.

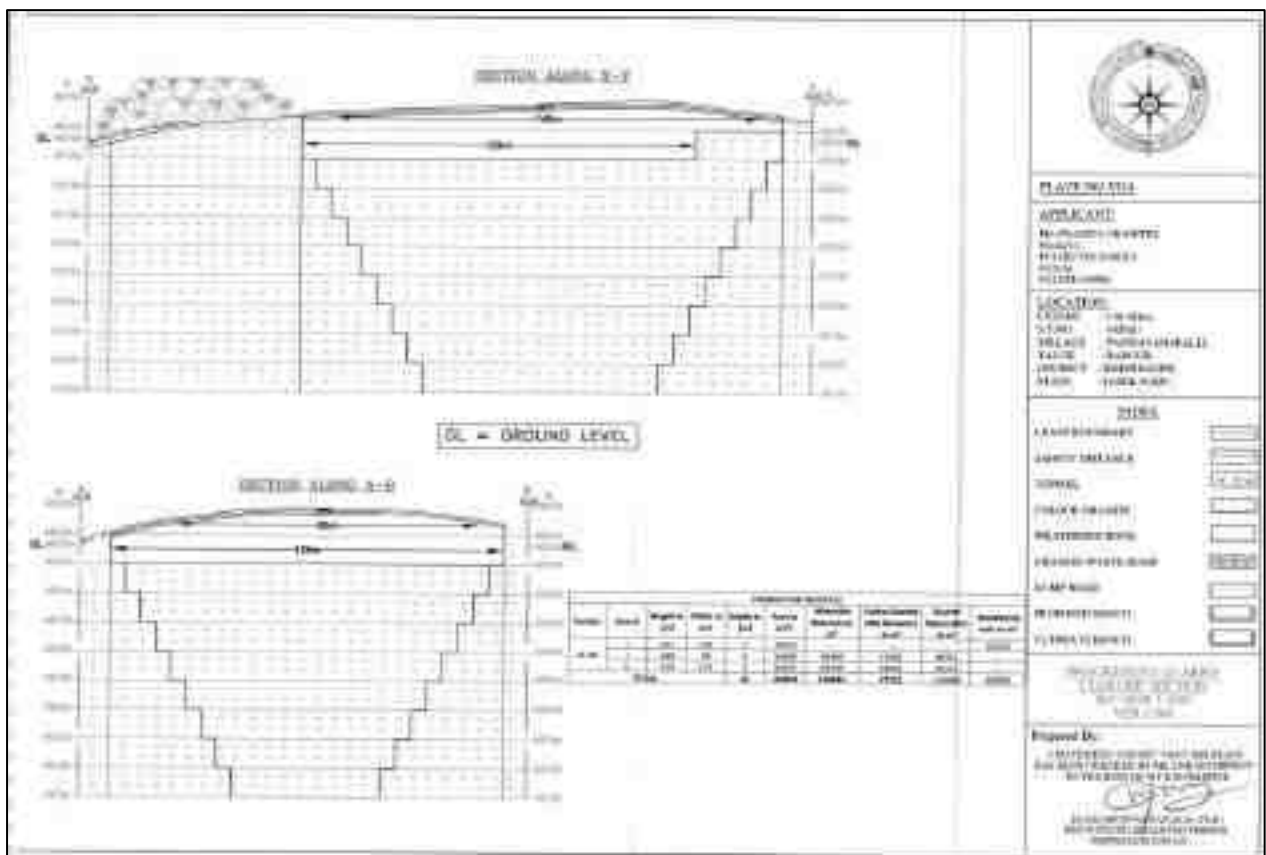
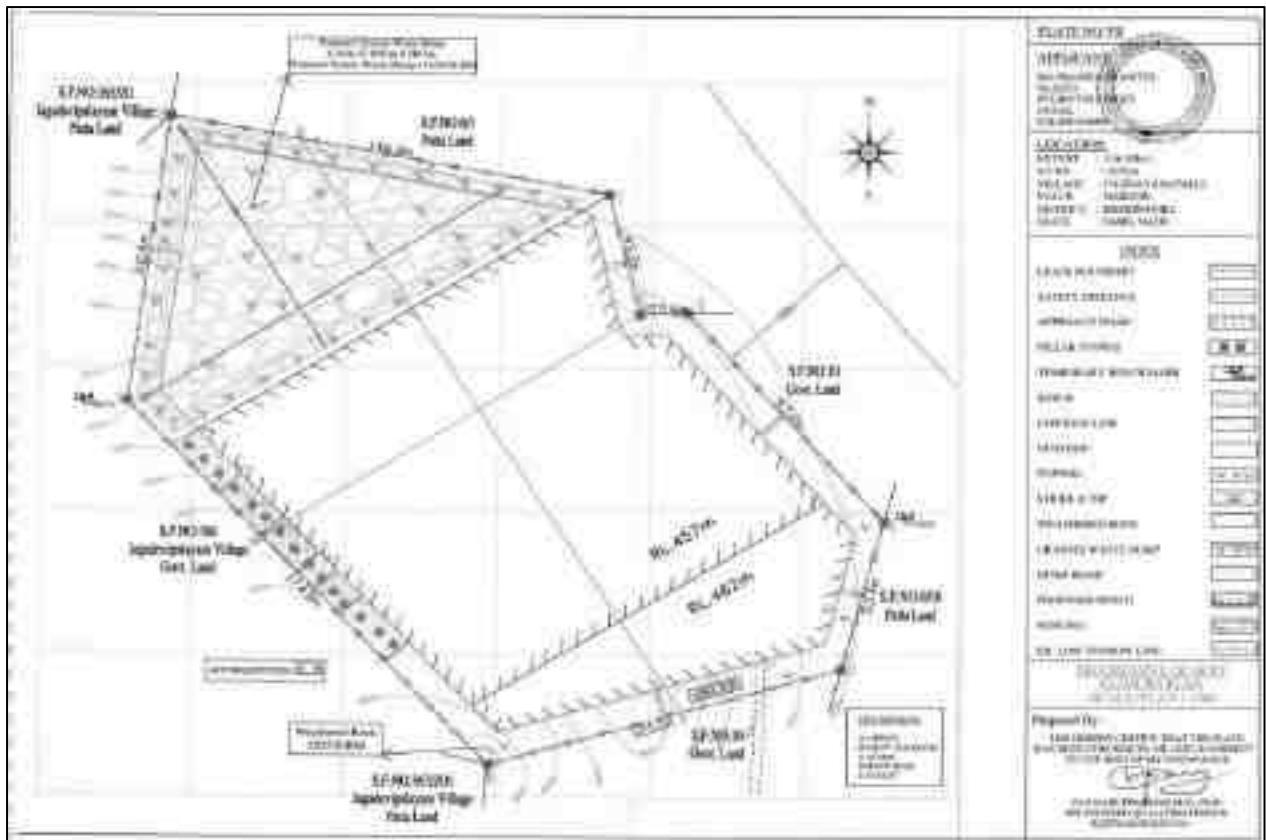


Figure 2.7 Progressive Quarry Closure Plan & Sections

Mine closure

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 progressive mine closure cost is given in Table 2.8.

Table 2.8 Progressive Mine Closure Budget

Activity	Capital Cost
692 plants inside the lease area	138400
1038 plants outside the lease area	311400
Wire Fencing	692000
Garland Drain	34600
Total	11,76,400

Source: Environment Management Plan

Project Requirement

The project requires water, power, fuel, and other infrastructures as discussed below:

i) Water Requirement

Detail of water requirement in 4.28 KLD is given in Table 2.9.

Table 2.9 Water Requirement for the Project

Purpose	Quantity Required (KLD)	Source
Domestic & Drinking	1.28 KLD	Water for domestic, dust suppression, and green belt development purposes will be sourced from existing bore wells and drinking water from approved water vendors.
Dust Suppression	1.5 KLD	
Green Belt	1.5 KLD	
Total	4.28 KLD	

Source: Prefeasibility Report.

ii) Energy Requirement

The electricity from high tension power supply is utilized for diamond wire saw cutting machine, disc double blade cutting machine, air compressor, derrick crane and pumps for de-watering and is also used for mines office and lighting purpose

In addition to electricity, around 6,56,778 litres of HSD are used for total diesel consumption for Excavator, Compressor and Tipper. It will be brought to the site from nearby diesel pumps. Details on the estimation of fuel requirements are provided in Table 2.10.

Table 2.10 Fuel Requirement Details

Fuel Requirement for Excavator				
Details	Colour Granite Recovery @20% (27729 m³)	Granite Waste @80% (110916 m³)	Weathered Rock (20253 m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	16	16	---
Working Capacity (m ³ /hr)	20	20	20	---
Time Required (hours)	1386	5546	1013	---
Total Diesel Consumption for 5 years (litre)	22183	88733	16202	127118
Fuel Requirement for Tipper				
Average Rate of Fuel Consumption/Trip (litre)	20	20	20	---
Carrying Capacity in m ³	6	6	6	---
Number of Trips / days	3	14	3	---
Number of Trips / 5 years	4622	18486	3376	---
Total Diesel Consumption for 5 years (litre)	92430	369720	67510	529660
Total Diesel Consumption by Excavator, Compressor and Tipper				656778

iii) Employment 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 2.11.

Table 2.11 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1	Highly Skilled	Quarry Manager	1
		Mines Forman	---
		Geologist	1
		Accountant cum & admin	1
2	Skilled	Earth moving operator	2
		Driver	4

		Mechanic	1
		Blaster / Mat	---
3	Semi-Skilled	Helpers/Greasers	4
		Musdoor / labours	10
4	Unskilled	Cleaners	2
		Attendant's	1
Total			27

Source: Approved Mining Plan

iv) Infrastructure Requirement

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. Hence, there will not be any process effluent generation from the proposed lease area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. As there is no toxic effluent expected to generate in the form of solid, liquid or gaseous form, there is no requirement of waste treatment plant.

v) Capital Requirement

The summary of capital required for the project is provided in Table 2.12.

Table 2.12 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	3,15,00,000/-
2	Machinery Cost	30,00,000/-
3	Expenditure Cost	35,41,500/-
Total Project Cost		3,80,41,500/-

Source: Mining plan report

2.7 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the environmental clearance will be compiled before the start of mining operation. Expected time schedule for the quarrying operation is given Table 2.13.

Table 2.13 Expected Time Schedule

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

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

CHAPTER III
DESCRIPTION OF THE ENVIRONMENT

3.0 GENERAL

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

Study Area

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

Table 3.1 Monitoring Attributes and Frequency of Monitoring

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land Use/ Land Cover	Land-use Pattern within 5 km radius of the study area	Once during the study period	Study Area	Satellite Imagery & Primary Survey
*Soil	Physico- Chemical characteristics	Once during the study period	7 (1 nearby core & 6 in buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture

				Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	8 (3 surface water & 5 ground water)	IS 10500 & CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ , PM _{2.5} SO ₂ , NO _x , and	24 hours, twice a week	6 (1 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	6 (1 core & 5 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 monitoring and testing have been carried out as per the guidelines of CPCB and MoEF & CC.*

3.1 LAND ENVIRONMENT

3.1.1 Geology and Geomorphology

Study area is mainly composed of biotite hornblende genesis and grey hornblende biotite genesis, as shown in Figure 3.1.

Among the geomorphic units, low dissected denudational hills, valleys, and structural hills valleys dominate the study area, as shown in Figure 3.2. The lease area occurs in low dissected denudational hills and valleys.

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LU/LC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius. Totally, 7 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 12.83 ha of which lease area of 3.46.0 ha contributes only about 0.045%. This small percentage of mining activities shall not have any significant impact on the land environment.

Table 3.2 LULC Statistics of the Study Area

S. No	Classification	Extent (ha)	Area (%)
1	Barren Rocky/stony waste	220.30	2.87
2	Crop Land	3385.26	44.18
3	Dense Forest	240.52	3.14
4	Land with or without scrub	1286.33	16.79
5	Mining / Industrial lands	12.83	0.17
6	Plantations	2505.91	32.70
7	Settlements	11.94	0.16
Total		7663.09	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The applied lease area exhibits an elevated topography, which is elevation difference of 07 m. The highest elevation observed in lease area is 467 m AMSL, whereas the lowest elevation is 460 m AMSL.

3.1.4 Drainage Pattern

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

3.1.5 Seismic Sensitivity

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

3.1.6 Soil Environment

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

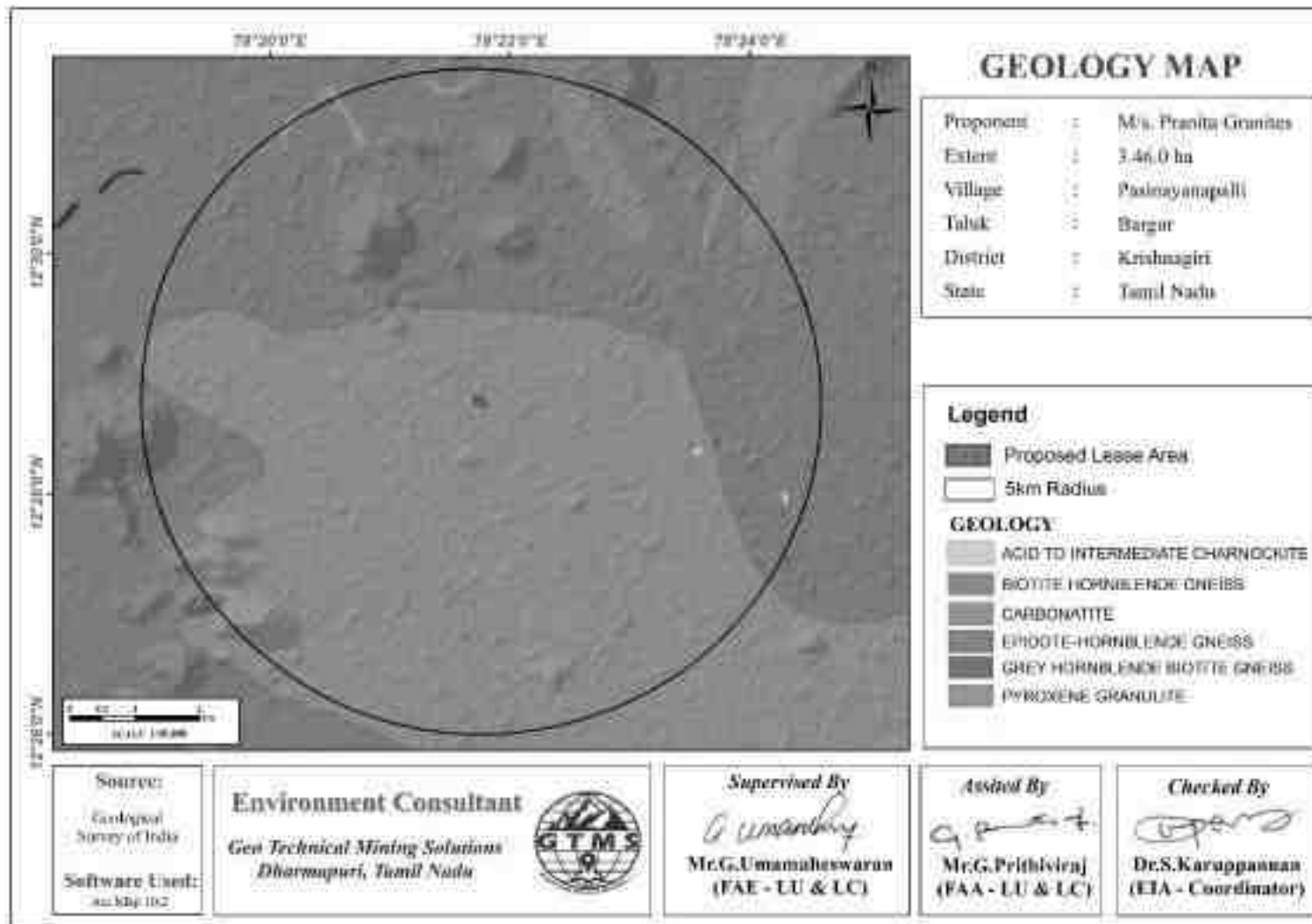


Figure 3.1 Geology Map of 5 km Radius from the Proposed Project Site

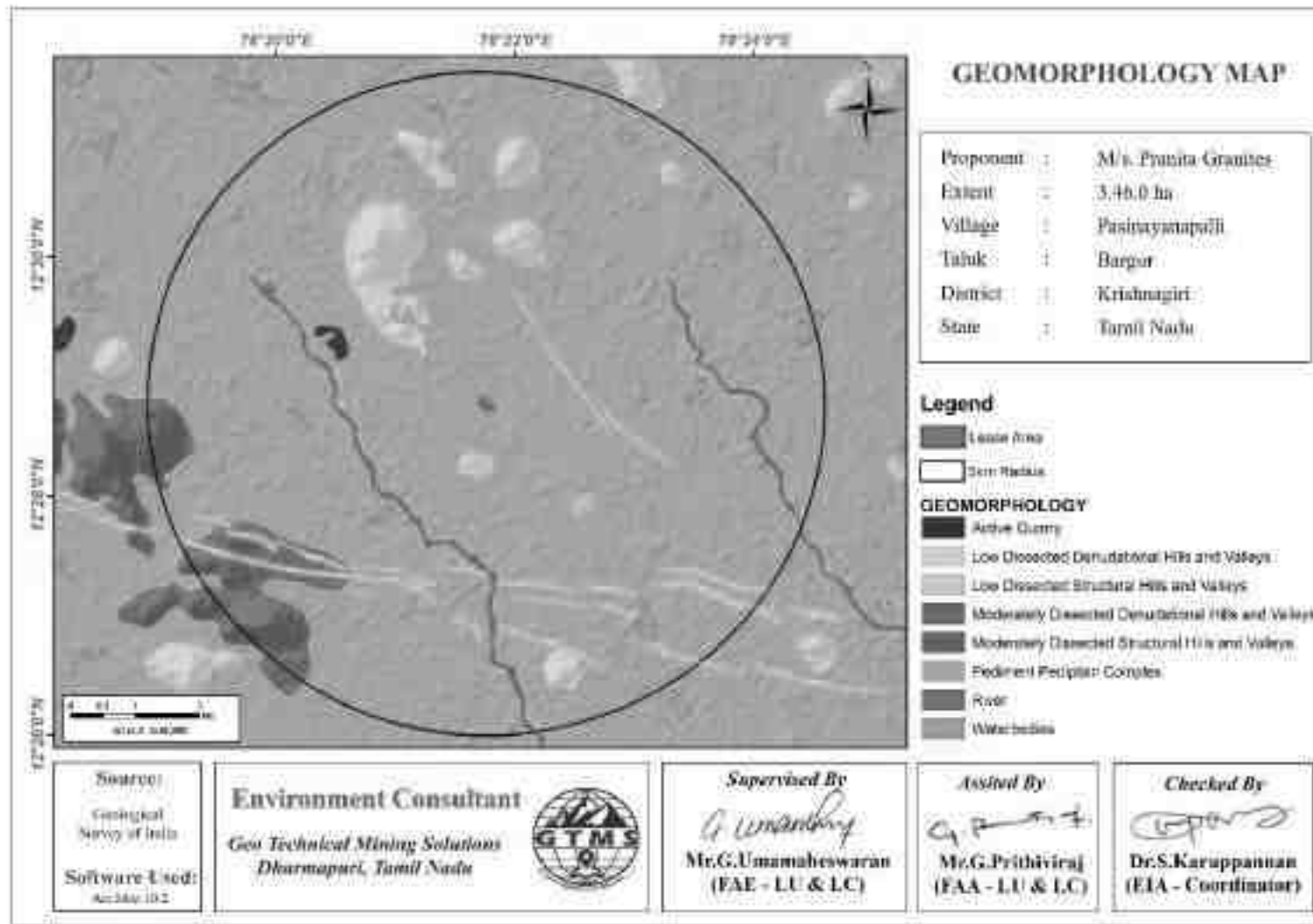


Figure 3.2 Geomorphology Map of 5 km Radius from the Proposed Project Site

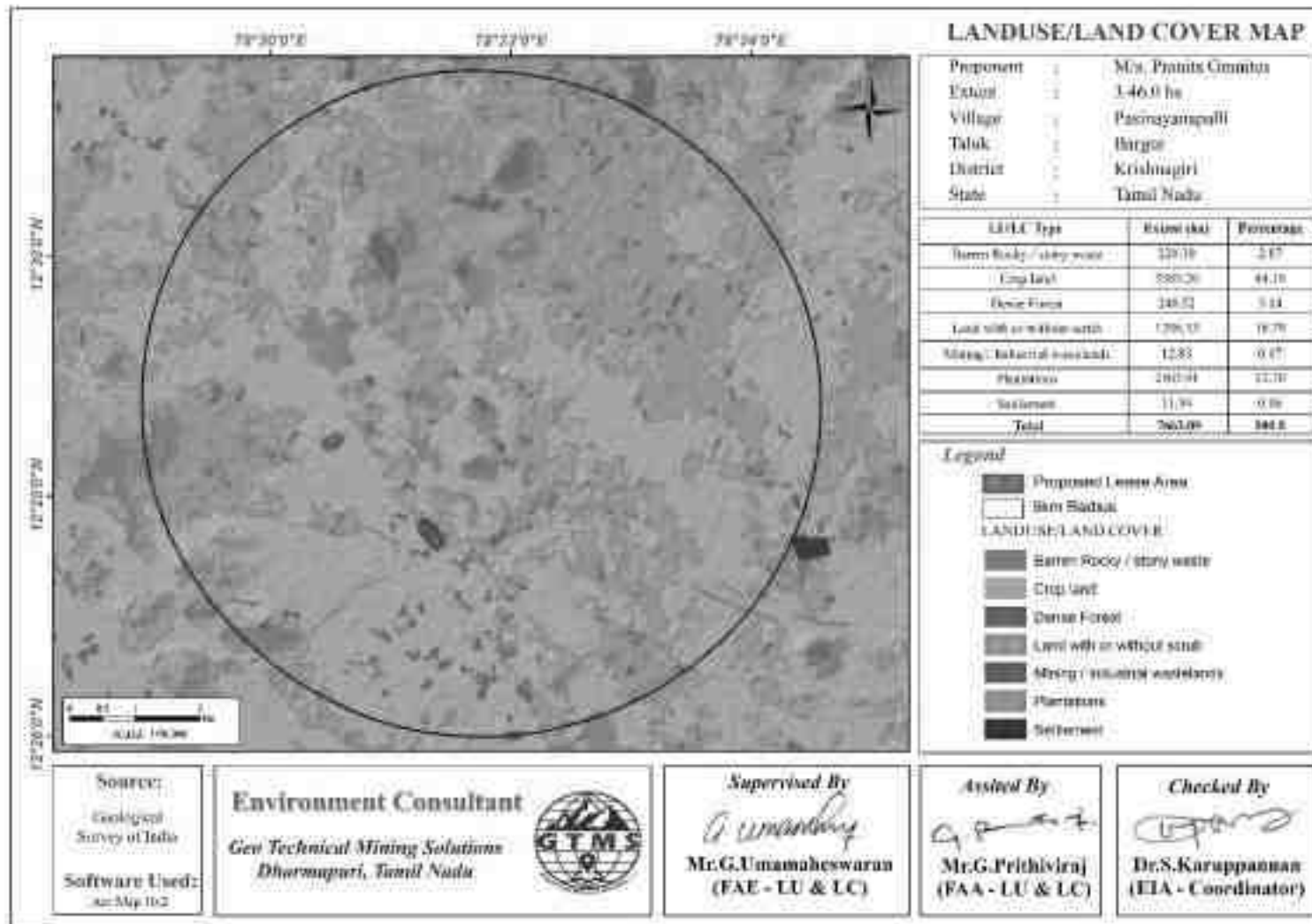


Figure 3.3 LULC Map of 5 km Radius from the Proposed Project Site

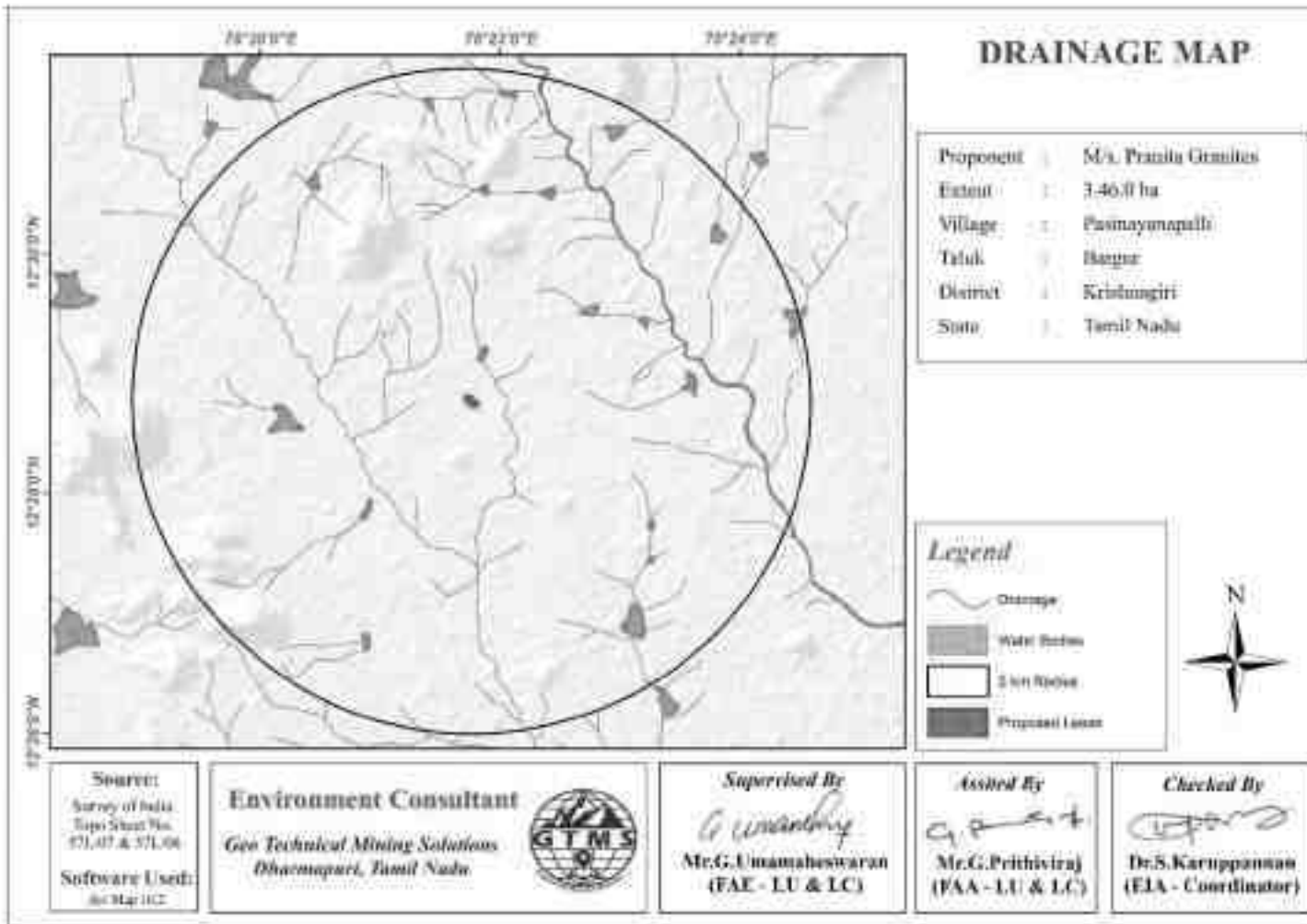


Figure 3.4 Drainage Map of 5 km Radius from the Proposed Project Site Showing Dendritic Pattern

3.1.6.1 Methodology

7 locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.6. The samples thus collected were analysed for physical and chemical characteristics as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

Table 3.3 Soil Sampling Locations

S. No.	Sampling ID	Location	Distance	Direction	Coordinates
1	S01	Sadhana Core	0.05	W	12°28'43.32"N, 78°21'42.18"E
2	S02	Pranitha Core	---	---	12°28'49.38"N, 78°21'42.90"E
3	S03	Bagimanoor	0.49	NNW	12°29'1.68"N, 78°21'30.90"E
4	S04	Battlapalli	3.44	SE	12°27'48.06"N, 78°23'28.20"E
5	S05	Mallapadi	3.92	NNE	12°30'50.40"N, 78°22'26.16"E
6	S06	Vedarkottai	3.28	W	12°28'31.38"N, 78°19'53.82"E
7	S07	Thogarapalli	4.74	SSW	12°26'18.72"N, 78°20'47.82"E

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

3.1.6.2 Results and Discussion

Physical Characteristics

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.2 to 7.8 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 45 to 560 $\mu\text{s}/\text{cm}$ water content ranges between 1.2 and 5.9%.

Chemical Characteristics

Nitrogen ranges between 0.8 and 1.4 mg/kg. Phosphate ranges between 0.03 and 0.09%. Potassium ranges between 0.018 and 0.055% Calcium ranges between <1.0 and <1.0 mg/kg. Organic matter content ranges between 3.1 and 9.4 %.

Soil erosion

Soil erosion map shows that:

- ❖ Soil erosion is moderate in the proposed lease area
- ❖ Low to moderate soil erosion is in South side of the lease area. Showing in Figure 3.5

Soil erosion map

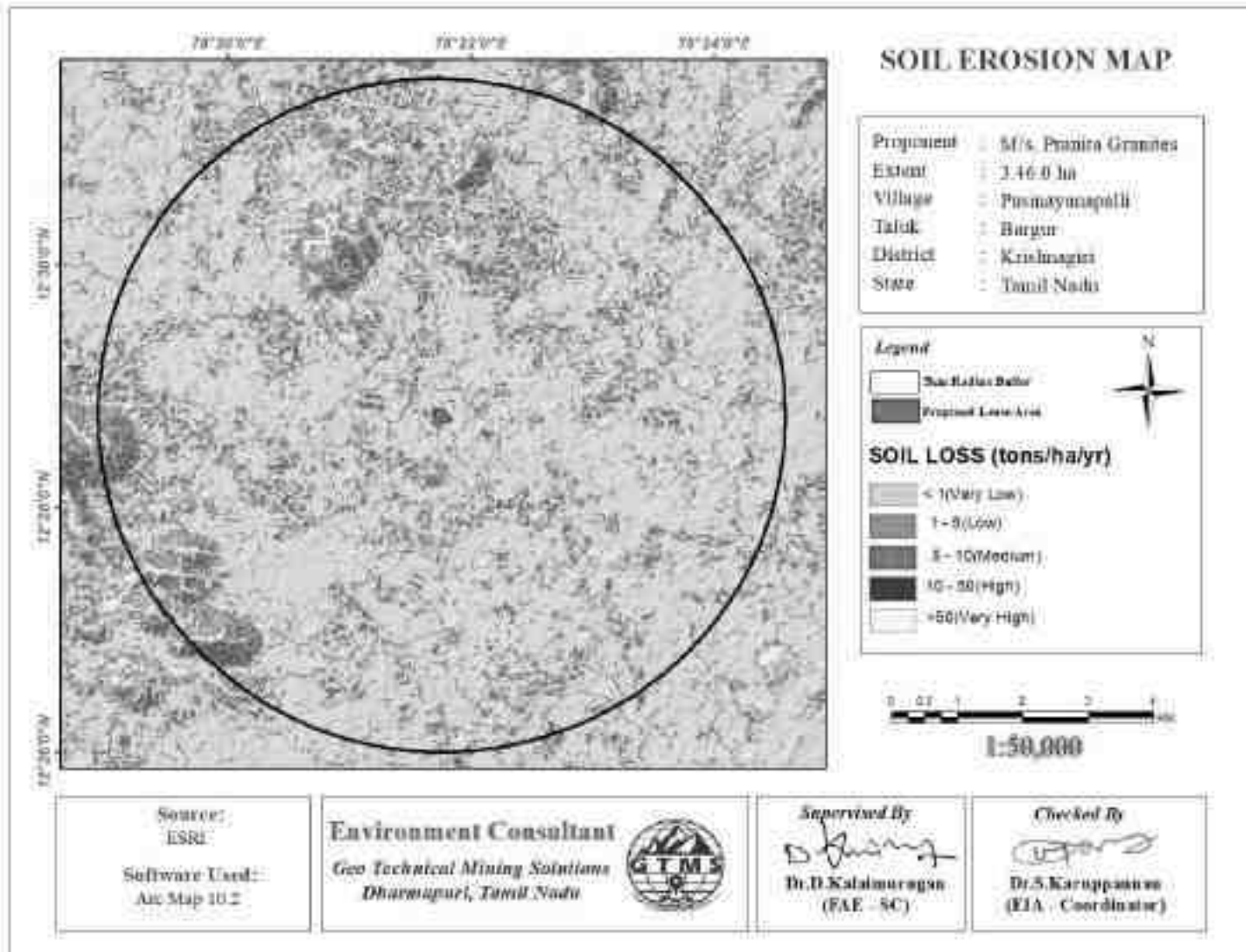


Figure 3.5 Soil Erosion Map within 5 km Radius around the Proposed Project Site

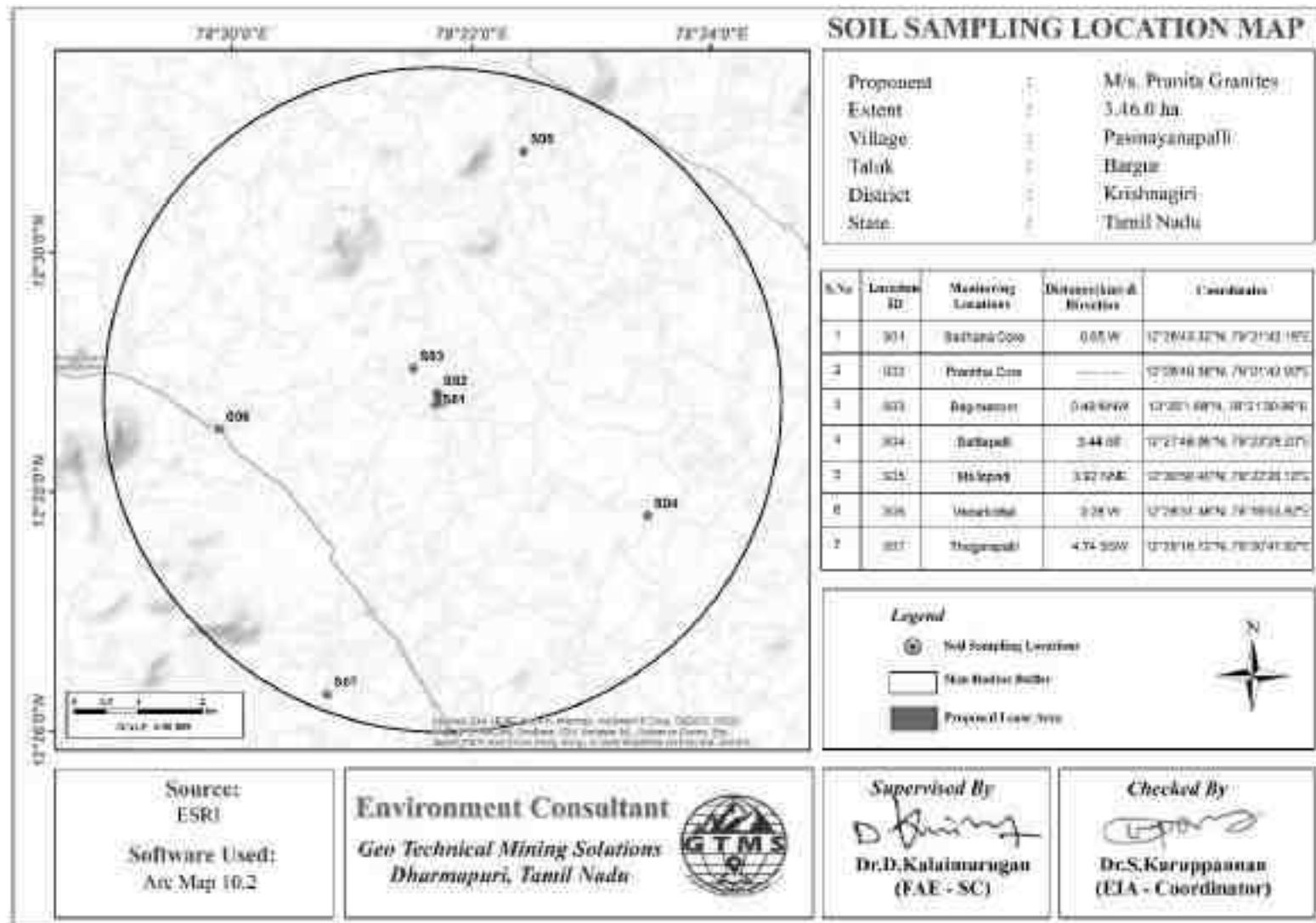


Figure 3.6 Toposheet Showing Soil Sampling Locations within 5 km Radius around the Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S. No	Name of the Test	Units	S1 (Pranitha Core)	Minimum	Maximum	Average
1	Arsenic	mg/Kg	<0.1	<0.1	<0.1	<0.1
2	Cadmium (as Cd)	mg/Kg	<1.0	<1.0	<1.0	<1.0
3	Cation Exchange Capacity	meq%	<1.0	<1.0	0.27	0.15
4	Chromium (as Cr)	mg/Kg	42	<2.0	18	16.67
5	Copper (as Cu)	mg/Kg	13	3.3	13	7.37
6	Lead (as Pb)	mg/Kg	<1.0	<1.0	<1.0	<1.0
7	Manganese. (as Mn)	mg/Kg	120	26	112	76.5
8	Nickel (asNi)	mg/Kg	16	<1.0	<1.0	<1.0
9	Nitrogen (as N)	%	1.1	0.8	1.4	1.15
10	Organic Matter @ 155°C	%	3.3	2.4	9.4	5.68
11	pH value @ 25°C	---	7.1	6.2	7.8	6.97
12	Phosphate (as P)	%	0.09	0.03	0.08	0.065
13	Potassium (as K)	%	0.055	0.018	0.039	0.03
14	Sodium (as Na)	---	0.01	0.006	0.024	0.01
15	Electrical Conductivity@25°	µS/Cm	45	52	560	211.5
16	Water Content @110°C	%	1.2	0.2	5.9	3.00
17	Zinc (as Zn)	mg/Kg	100	20	67	48.00
18	Bulk density	g/cm ³	Sandy Clay	<0.1	<0.1	<0.1
19	Texture*	---	54.3	Sandy Clay Loam		
20	Sand	%	39.5	10.12	65.4	46.89
21	Clay	%	6.2	16.8	45.2	29.87
22	Silt	%	<0.1	8.2	49.8	23.25

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

3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the baseline quality of surface and ground water.

Table 3.5 Water Sampling Locations

S. No.	Sampling ID	Location	Distance	Direction	Coordinates
1	SW1	Mattur River	2.16	SSW	12°27'37.76"N, 78°21'17.14"E
2	SW2	Bargur River	3.36	E	12°29'7.16"N, 78°23'36.46"E
3	SW3	Kumaranganapalli Lake	4.42	NE	12°30'13.48"N, 78°23'45.11"E
4	BW1	Vedarkottai	3.50	W	12°28'27.41"N, 78°19'47.16"E
5	BW2	Nearby Core	0.32	S	12°28'33.84"N, 78°21'39.12"E
6	OW1	Verupanakuppam	4.80	NW	12°29'51.58"N, 78°19'15.87"E
7	OW2	Venkatapuram	4.52	N	12°31'15.93"N, 78°21'26.56"E
8	OW3	Thogarapalli	4.01	SSW	12°26'41.54"N, 78°20'54.90"E

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

3.2.1 Surface Water Resources and Quality

Mattur River, Bargur River and Kumaranganapalli Lakes are the three prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. Three surface water samples, known as SW1, SW2 and SW3 were collected from the three surface water bodies to assess the baseline water quality. Table 3.6a summarizes surface water quality data of the three samples.

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

3.2.2 Ground Water Resources and Quality

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

Five groundwater samples, known as BW1, BW2, OW1, OW2 and OW3 were collected from open well and bore well and analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.7. Table 3.6*b* summarizes ground water quality data of the five samples.

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

3.2.3 Hydrogeological Studies

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

3.2.3.1 Rainfall

Rainfall data for the study area were collected for the period of 1981-2021 ([POWER | Data Access Viewer \(nasa.gov\)](#)). Long term monthly average rainfall was estimated from the data of 1981-2022 and compared with the monthly rainfall for the year 2022, shown in Figure 3.13. The Figure 3.13 shows that monthly rainfall in 2022 is generally high in the months of May, August, September and October, when compared to the long term monthly average rainfall.

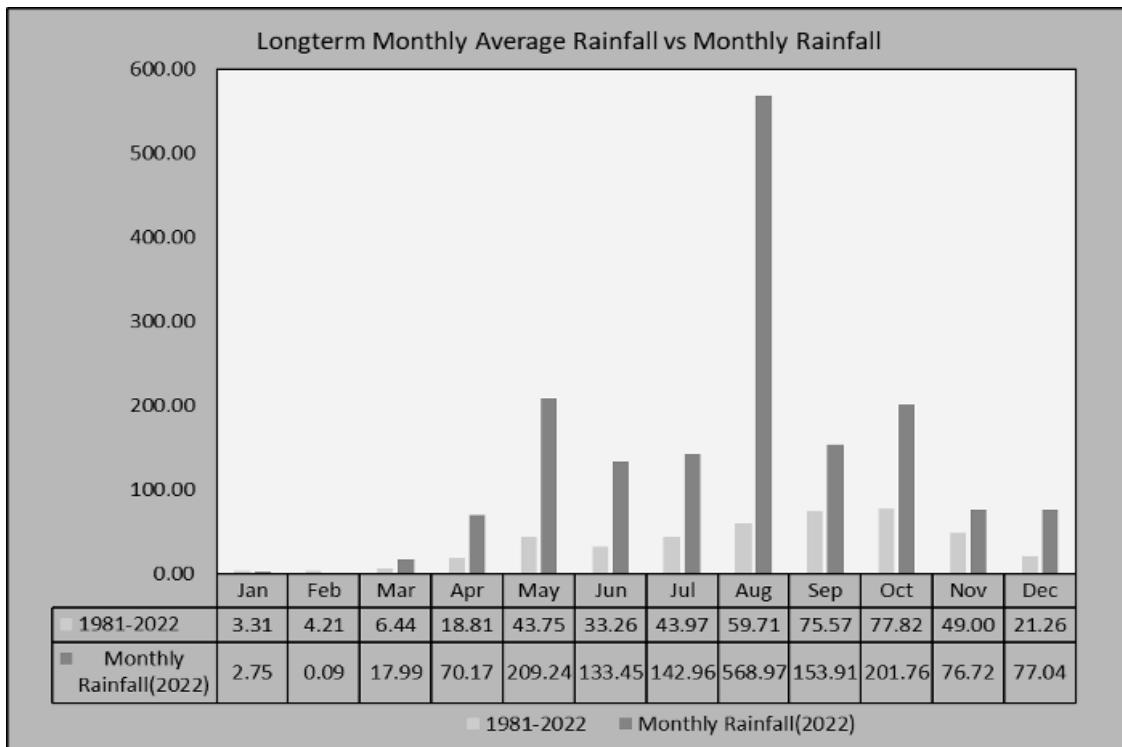


Figure 3.7 Long-term monthly average rainfall vs monthly rainfall

3.2.3.2 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, 2023 (Pre-Monsoon Season) and from October through December, 2023 (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.8 and 3.9. According to the data, average depths to the static water table in open wells range from 12.7 to 14.5 m BGL in pre monsoon and 11.4 to 13.5 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.10 and 3.11. The average depths to static potentiometric surface in bore wells for the period of October through December 2023 (Post-Monsoon Season) vary from 72.3 to 76.6 m and from 74.6 to 77.8 m for the period of March through May, 2023 (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines.

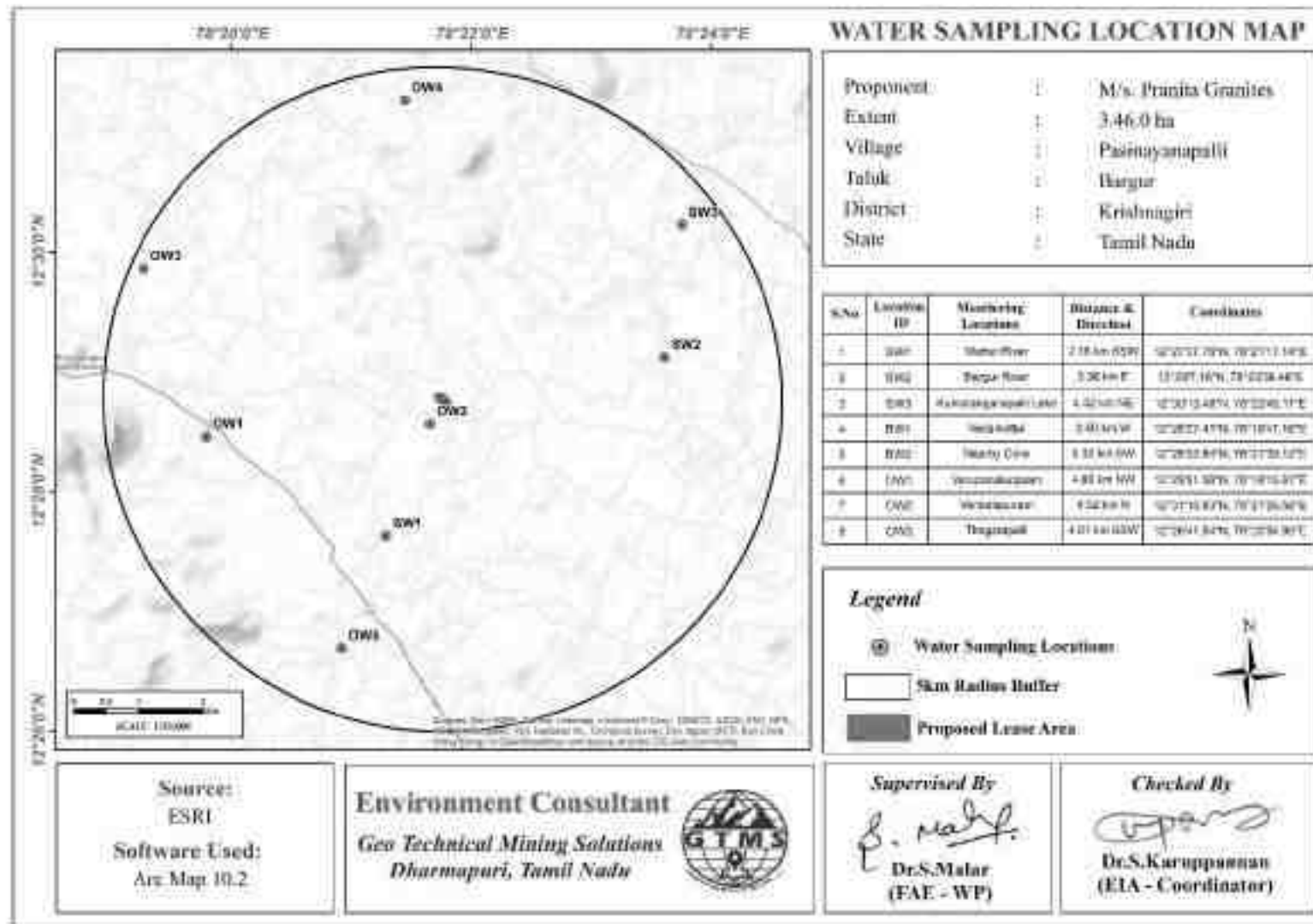


Figure 3.8 Toposheet showing water sampling locations within 5 km radius around the proposed project site

Table 3.6 Surface Water Quality Results

S.No.	Parameters	Units	Result			10500:2012 (Acceptable)	IS:2296-1982 Standards For Class A
			Minimum	Maximum	Average		
1	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	0.5	1
2	Boron (B)	mg /l	<0.1	<0.1	<0.1	0.5	-
3	Calcium (Ca)	mg /l	41	79	53.75	75	80.10
4	Chloride (Cl)	mg /l	63	134	94	250	250
5	Colour	CU	2	5	3.5	5	10
6	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	0.05	1.5
7	Fluoride (F)	mg/l	<0.1	<0.1	<0.1	1.0	1.5
8	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	0.2	-
9	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	0.3	0.3
10	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	0.01	0.1
11	Magnesium (Mg)	mg/l	19	33	24.8	30	24.28
12	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	0.001	0.001
13	Nitrate (NO ₃)	mg/l	1.8	4.5	3.04	45	20
14	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Unobjectionable
15	pH value @ 25°C	--	6.9	7.1	7	6.5-8.5	6.5-8.5
16	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	0.001	0.002
17	EC @ 25°C	µS/Cm	789	981	882.2	-	-
18	Sulphates (SO ₄)	mg/l	29	39	34.2	200	400
19	Total Alkalinity	mg/l	143	193	169.6	200	
20	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	0.01	0.05
21	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	0.05	0.05
22	TDS	mg/l	571	1215	836.6	500	500
23	TH (CaCO ₃)	mg/l	513	638	573.6	200	300
24	Turbidity	NTU	211	250	233.4	1	5
25	Zinc (Zn)	mg/l	8.3	19	14.32	5	15
26	Total Silica (SiO ₂)	mg/l	0.5	1	0.8	0.1	0.5
27	<i>Coliforms Bacteria</i>	MPN	Present	Present	Present	Shall not be detectable in any 100 ml sample	50
28	<i>E.Coli</i>	MPN	Present	Present	Present	Shall not be detectable in any 100 ml sample	-

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

Table 3.6a Ground Water Quality Results

S.No.	Parameters	Units	Result			10500:2012 (Acceptable)	10500:2012 (Permissible)
			Minimum	Maximum	Average		
1	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	0.5	No relaxation
2	Boron (B)	mg /l	<0.1	<0.1	<0.1	0.5	1.0
3	Calcium (Ca)	mg /l	110	175	142.4	75	200
4	Chloride (Cl)	mg /l	95	202	153.4	250	1000
5	Colour	CU	<1.0	<1.0	<1.0	5	15
6	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	0.05	1.5
7	Fluoride (F)	mg/l	0.23	1.2	0.8	1.0	1.5
8	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	0.2	1.0
9	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	0.3	No relaxation
10	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	0.01	No relaxation
11	Magnesium (Mg)	mg/l	5.8	49	24.51	30	100
12	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	0.001	No relaxation
13	Nitrate (NO ₃)	mg/l	4	6.8	5.53	45	No relaxation
14	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
15	pH value @ 25°C	--	7.1	7.8	7.34	6.5-8.5	No relaxation
16	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	0.001	0.002
17	EC @ 25°C	µS/Cm	987	1756	1295.71	-	-
18	Sulphates (SO ₄)	mg/l	38	92	66.57	200	400
19	Total Alkalinity	mg/l	215	318	272.57	200	600
20	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	0.01	0.05
21	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	0.05	No relaxation
22	TDS	mg/l	642	1144	882	500	2000
23	TH (CaCO ₃)	mg/l	326	533	429.14	200	600
24	Total Silica (SiO ₂)	mg/l	18	33	25.57	-	1
25	Turbidity	NTU	<0.1	<0.1	<0.1	5	15
26	Zinc (Zn)	mg/l	<0.01	<0.01	<0.01	0.1	0.3
27	<i>Coliforms Bacteria</i>	MPN	Present	Present	Present	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample
28	<i>E. Coli</i>	MPN	Absent	Absent	Absent	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample

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

Table 3.7 Weighted Arithmetic Water Quality Index (WAWQI) Method for ground water (Brown et al., 1972)

S. No.	Water Quality Index (WQI)					WQI Range	Classification	Grading
	BW1	BW2	OW1	OW2	OW3			
1		24.44		20.13	21.56	0 – 25	Excellent	A
2	29.56		37.10			25 – 50	Good	B
3						50 – 75	Poor	C
4						75 – 100	Very Poor	D
5						> 100	Unsuitable	E

Table 3.7a Weighted Arithmetic Water Quality Index as per WAWQI Method for surface water (Brown et al., 1972)

S. No.	Water Quality Index (WQI)			WQI Range	Classification	Grading
	SW1	SW2	SW3			
1	19.63	20.01	19.98	0 – 25	Excellent	A
2				25 – 50	Good	B
3				50 – 75	Poor	C
4				75 – 100	Very Poor	D
5				> 100	Unsuitable	E

The WQI is a unique digital rating expression that expresses overall water quality status viz: excellent, good, poor, very poor and unsuitable based on various water quality parameters. It is used as an important tool to compare the quality of groundwater and their management in a particular region. The WQI of the ground water, as shown Table 3.7 indicates that three groundwater samples is of excellent quality and two groundwater samples is of good quality. The WQI of ground water samples fall under excellent and good quality indicating their suitability for drinking, domestic and agriculture purpose. The WQI of the surface water, as shown in Table 3.7a shows that all the three surface water samples fall under excellent quality indicating their suitability for drinking, domestic and agriculture purpose.

From the maps of open well groundwater flow direction shown in Figures 3.9 -3.10, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 9 located in SE direction of the proposed project site. The groundwater flow maps in Figure 3.11-3.12 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 9. It is located in East direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

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

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
DW01	19	20	21	20.00	12°29'6.50"N	78°21'27.85"E
DW02	20	21	22	21.00	12°28'48.78"N	78°21'23.42"E
DW03	18	19	21	19.00	12°28'40.56"N	78°21'32.98"E
DW04	17	18	19	18.00	12°28'28.57"N	78°21'49.57"E
DW05	20	21	22	21.00	12°28'56.65"N	78°22'10.77"E
DW06	16	17	18	17.00	12°29'5.04"N	78°21'46.23"E
DW07	18	19	20	19.00	12°29'24.89"N	78°21'56.38"E
DW08	17	18	19	18.00	12°28'4.18"N	78°22'10.86"E
DW09	19	20	21	20.00	12°28'0.68"N	78°21'14.67"E

Source: Onsite monitoring data

Table 3.9 Post-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
DW01	15	16	17	20.00	12°29'6.50"N	78°21'27.85"E
DW02	13	14	15	21.00	12°28'48.78"N	78°21'23.42"E
DW03	16	17	18	19.00	12°28'40.56"N	78°21'32.98"E
DW04	13	14	15	18.00	12°28'28.57"N	78°21'49.57"E
DW05	12	13	14	21.00	12°28'56.65"N	78°22'10.77"E
DW06	14	15	16	17.00	12°29'5.04"N	78°21'46.23"E
DW07	13	14	15	19.00	12°29'24.89"N	78°21'56.38"E
DW08	12	13	14	18.00	12°28'4.18"N	78°22'10.86"E
DW09	11	12	13	20.00	12°28'0.68"N	78°21'14.67"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
BW01	57	58	60	58.00	12°28'49.18"N	78°22'3.63"E
BW02	58	60	61	59.00	12°28'23.99"N	78°22'12.07"E
BW03	59	60	61	60.00	12°27'58.57"N	78°21'51.96"E
BW04	58	59	60	59.00	12°27'52.78"N	78°21'20.19"E
BW05	56	59	61	58.00	12°28'36.29"N	78°21'5.43"E
BW06	56	57	59	57.00	12°29'8.57"N	78°21'9.02"E
BW07	57	59	61	59.00	12°29'25.81"N	78°22'16.41"E
BW08	59	60	61	60.00	12°28'47.04"N	78°22'31.94"E
BW09	56	57	58	57.00	12°28'26.94"N	78°21'35.36"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
BW01	47	49	50	48	12°28'49.18"N	78°22'3.63"E
BW02	48	50	51	49	12°28'23.99"N	78°22'12.07"E
BW03	50	51	53	51	12°27'58.57"N	78°21'51.96"E
BW04	52	53	54	53	12°27'52.78"N	78°21'20.19"E
BW05	51	52	53	52	12°28'36.29"N	78°21'5.43"E
BW06	49	51	52	51	12°29'8.57"N	78°21'9.02"E
BW07	48	49	51	49	12°29'25.81"N	78°22'16.41"E
BW08	50	51	51	50	12°28'47.04"N	78°22'31.94"E
BW09	45	47	48	47	12°28'26.94"N	78°21'35.36"E

Source: Onsite monitoring data

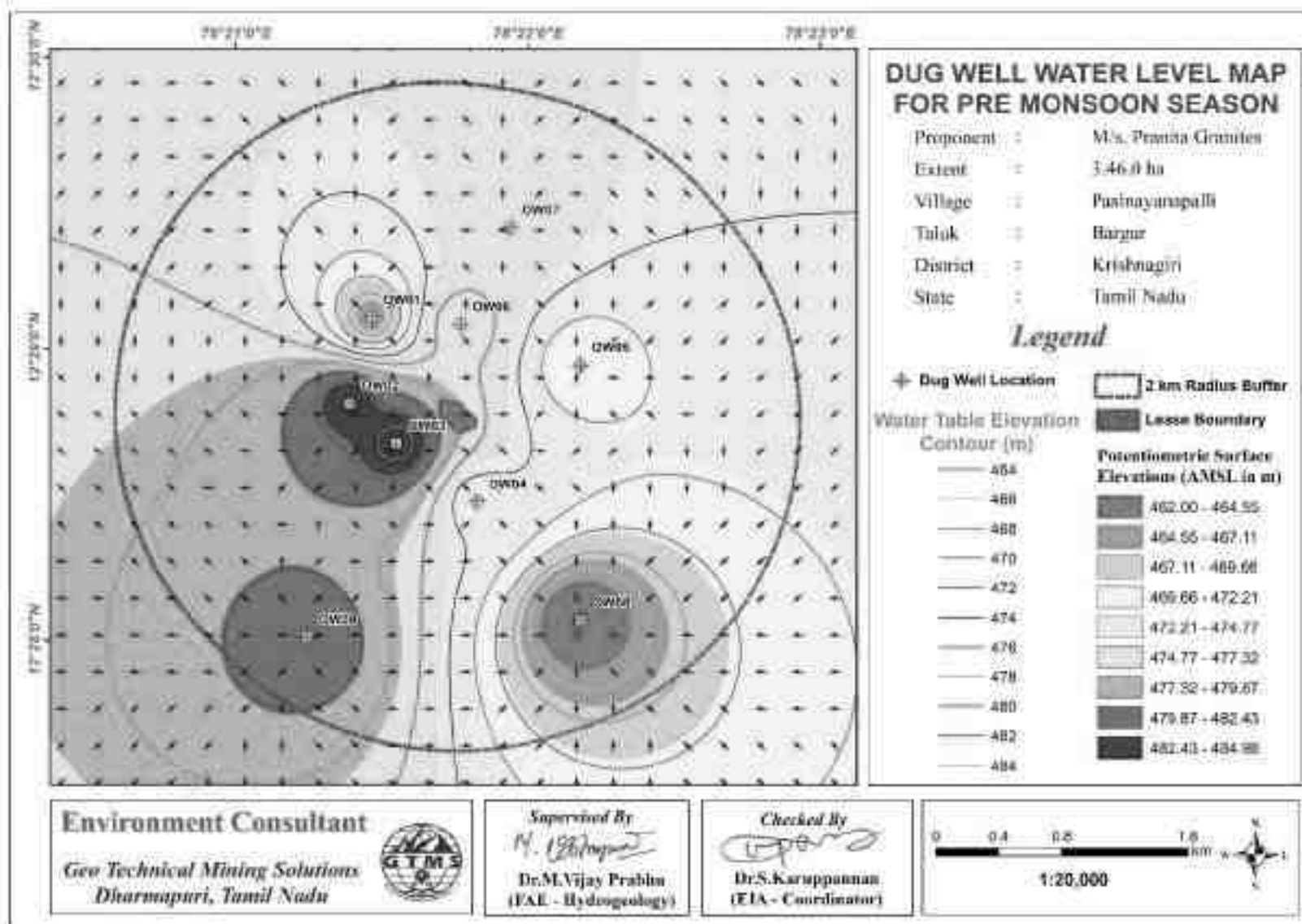


Figure 3.9 Open well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

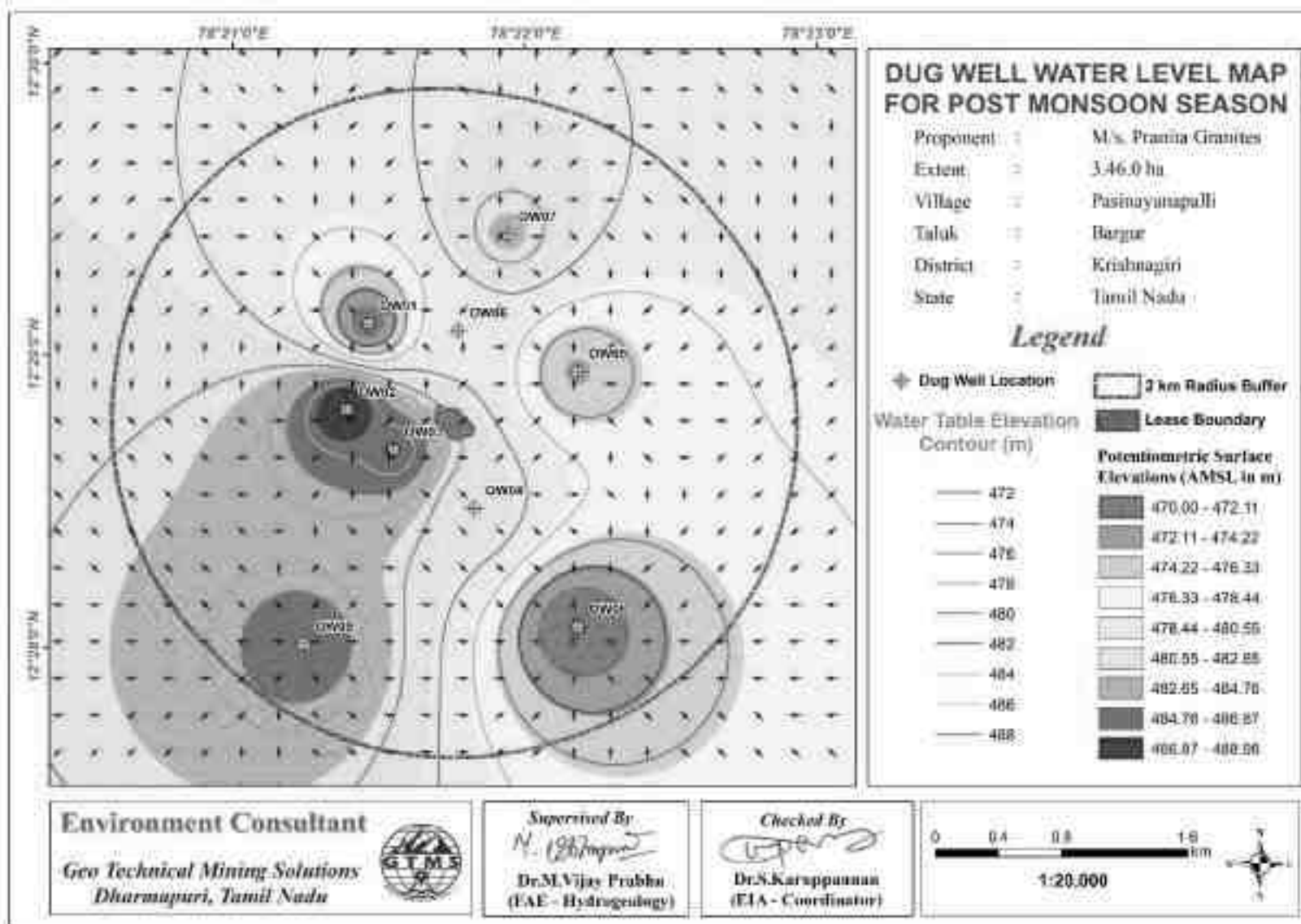


Figure 3.10 Open well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

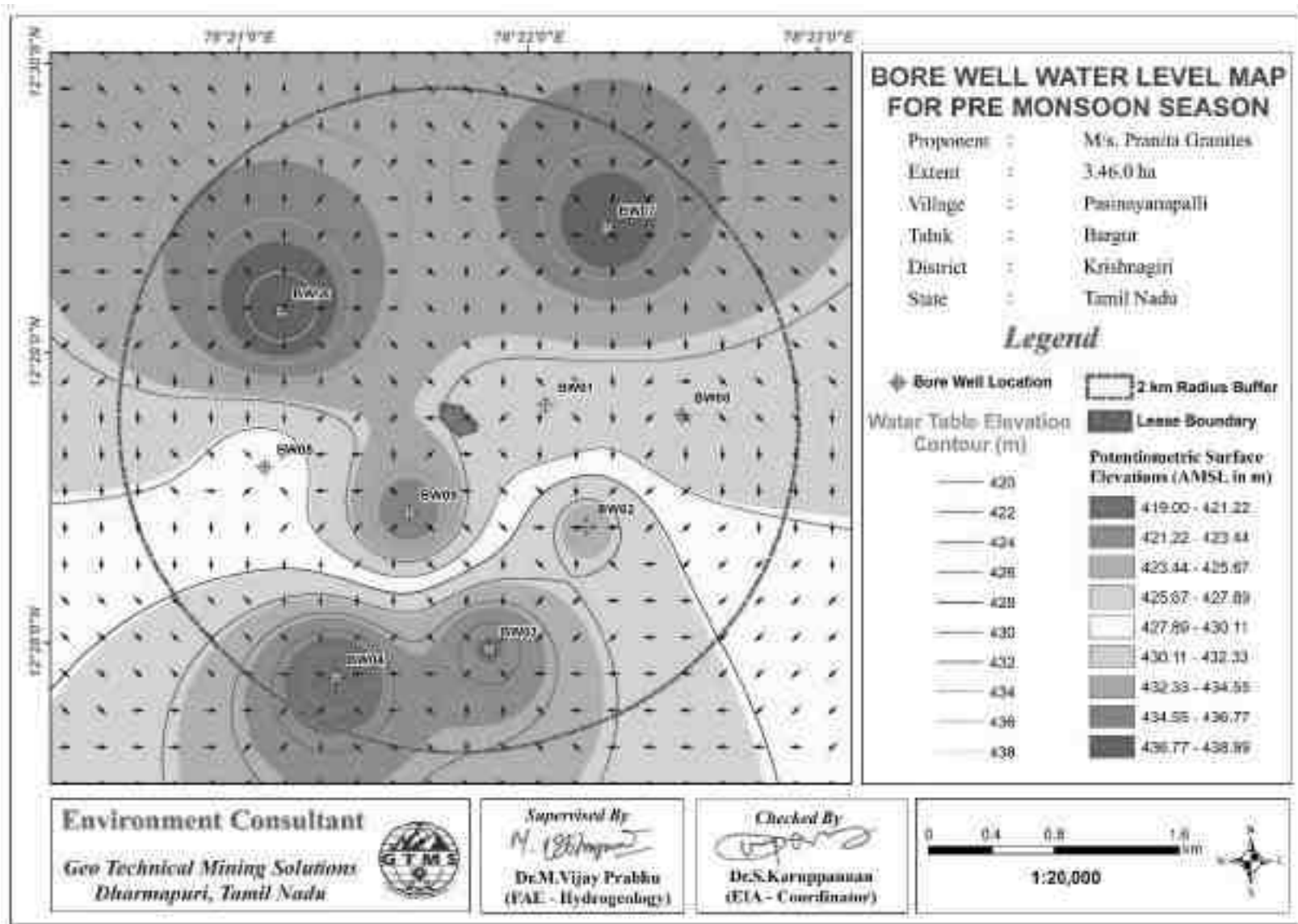


Figure 3.11 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

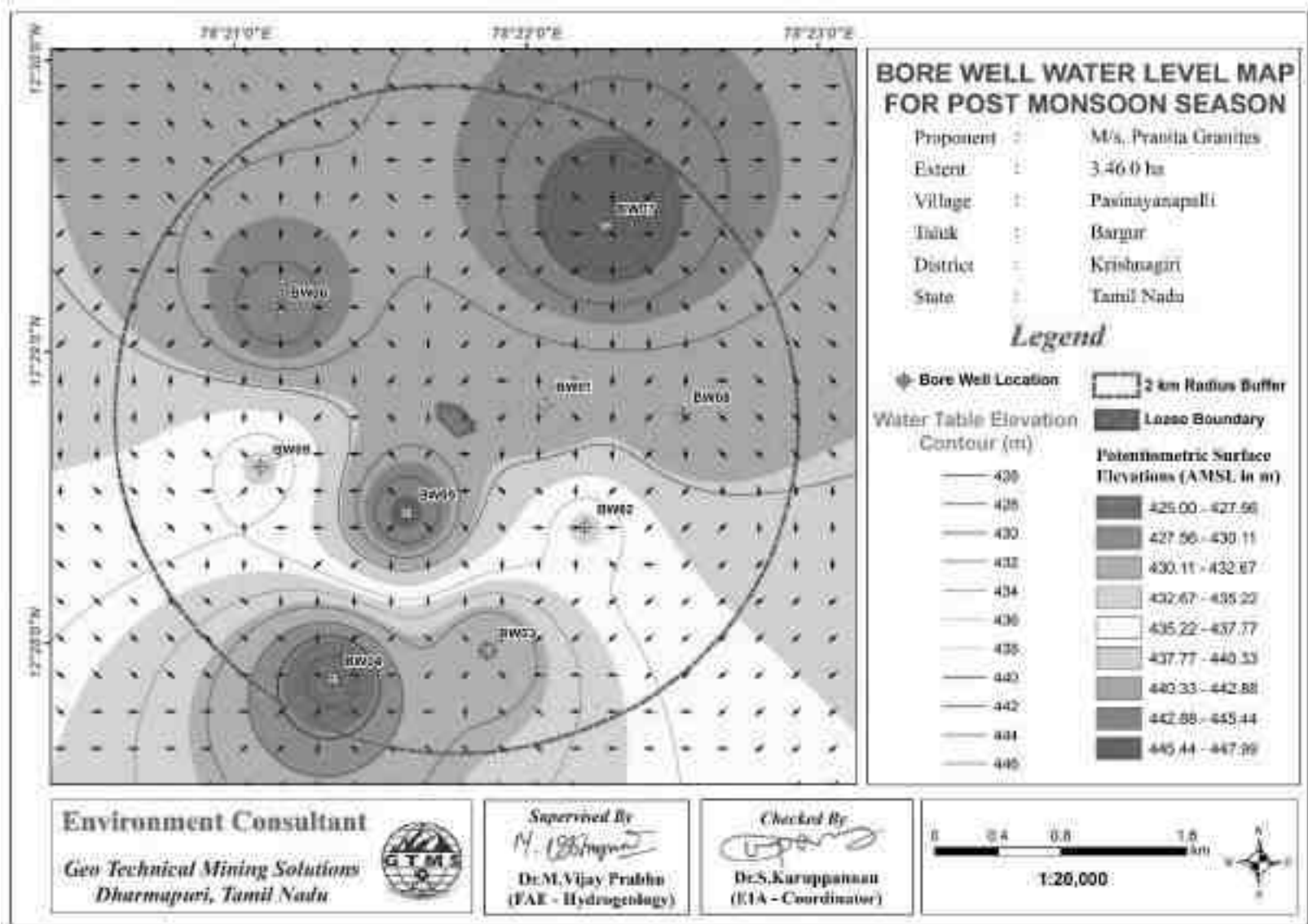


Figure 3.12 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

3.2.3.3 Electrical Resistivity Investigation

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

Result

The Geophysical VES data obtained from the project site have been shown in Table 3.12. The field data obtained from a detailed geophysical investigation were plotted using excel spreadsheet for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.13.

Table 3.12 Vertical Electrical Sounding Data

Location Coordinates - 12°28'43.23"N 78°21'42.42"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	5	2	16.5	8.016	132.26
2	10	2	75.43	2.578	194.48
3	15	5	62.86	4.699	295.38
4	20	5	117.86	3.345	394.22
5	25	5	188.58	2.683	505.96
6	25	10	82.5	6.061	500.05
7	30	10	125.72	4.288	539.12
8	35	10	176.79	4.117	727.76
9	40	10	235.73	3.722	877.48
10	45	10	302.51	3.583	1083.91
11	50	20	165.01	7.270	1199.65
12	60	20	251.44	3.167	796.42
13	70	20	353.59	3.535	1249.9
14	80	20	471.45	2.739	1291.12
15	90	20	605.03	2.573	1556.68
16	100	20	754.32	2.380	1795.32

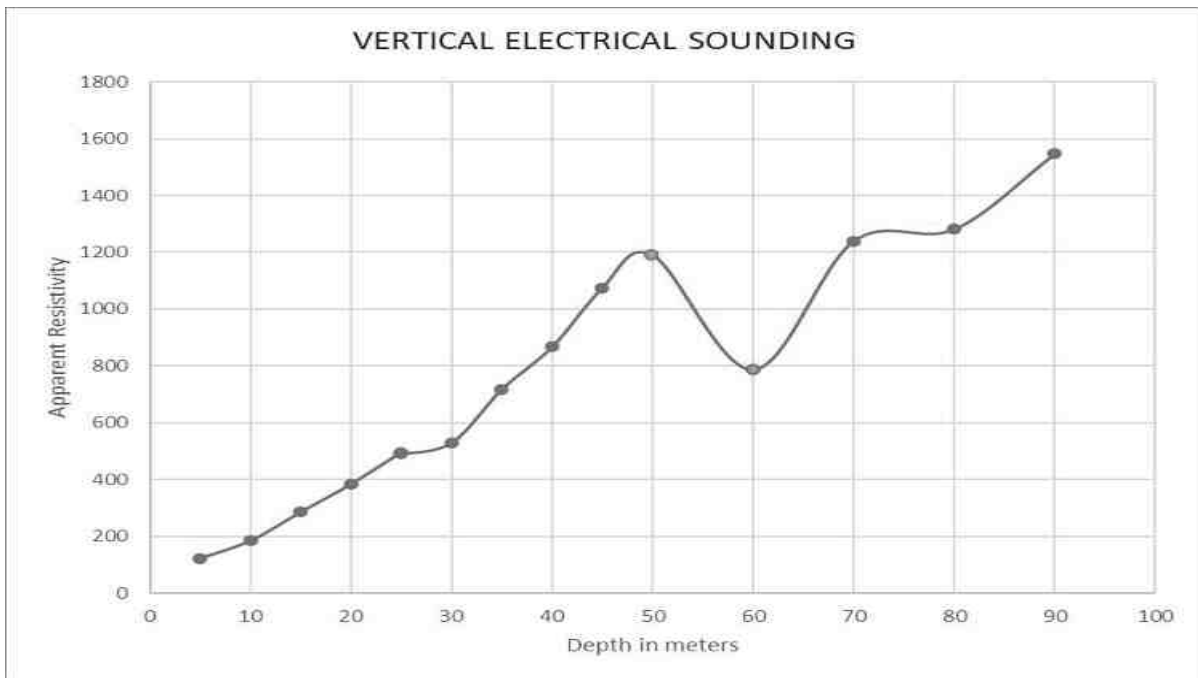


Figure 3.13 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 60 m Below Ground Level in the Proposed Project Area

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60 m below ground level. The maximum depth proposed for the proposed project is 10 m (7 m AGL and 3m BGL). Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

3.3 AIR ENVIRONMENT

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

3.3.1 Meteorology

3.3.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3 m above the ground level as there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.13.

According to the onsite data, the temperature in October, 2023 varied from 15.33 to 30.28⁰C with the average of 23.83⁰ C; in November, 2023 from 12.49 to 29.24⁰C with the average of 22.0⁰ C; and in December, 2023 from 14.02 to 27.78⁰C with the average of 21.06⁰C.

In October, 2023, relative humidity ranged from 40.81 to 100 % with the average of 81.67%; in November, 2023, from 49.19 to 100 % with the average of 88.20 %; and in December,2023, from 42.94 to 100 % with the average of 85.88%. The wind speed in October, 2023 varied from 0.52 to 7.68 m/s with the average of 2.56 m/s; in November, 2023 from 0.65 to 6.40 m/s with the average of 2.68 m/s; and in December, 2023 from 0.15 to 8.42 m/s with the average of 3.39 m/s. In October,2023, wind direction varied from 1.07 to 359.60 with the average of 125.55⁰; in November, 2023, from 0.22 to 359.81⁰ with the average of 90.53⁰; and in December, 2023, from 0.76 to 357.83⁰ with the average of 89.92⁰. In October,2023, surface pressure varied from 93.58 to 94.47kPa with the average of 94.08 kPa; in November, 2023, from 93.66 to 94.52kPa with the average of 94.09 kPa; and in December, 2023, from 92.96 to 94.80 kPa with the average of 94.05 kPa

Table 3.13 Onsite Meteorological Data

S. No.	Parameters		Oct, 2023	Nov,2023	Dec,2023
1	Temperature (°C)	Min	15.33	12.49	14.02
		Max	30.28	29.24	27.78
		Avg	23.83	22.00	21.06
2	Relative Humidity (%)	Min	40.81	49.19	42.94
		Max	100.00	100.00	100.00
		Avg	81.67	86.63	85.88
3	Wind Speed (m/s)	Min	0.52	0.65	0.15
		Max	7.68	6.40	8.42
		Avg	2.56	2.68	3.39
4	Wind Direction (degree)	Min	1.07	0.22	0.76
		Max	359.60	359.81	357.83
		Avg	125.55	90.53	89.92
5	Surface Pressure(kPa)	Min	93.58	93.66	92.96
		Max	94.47	94.52	94.80
		Avg	94.08	94.09	94.05

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

3.3.1.2 Wind Pattern

Wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction. Two types of wind rose were generated: historical seasonal wind rose for the period of October through December of the years from 2018 to 2022 and the seasonal wind rose for the study period of October through December 2022. The wind rose diagrams thus produced are shown in Figures 3.14-3.14a. Figure 3.15 reveals that:

- ❖ The measured average wind velocity during the study period is 2.88m/s.
- ❖ Predominant wind was dominant in the directions ranging from East to West.

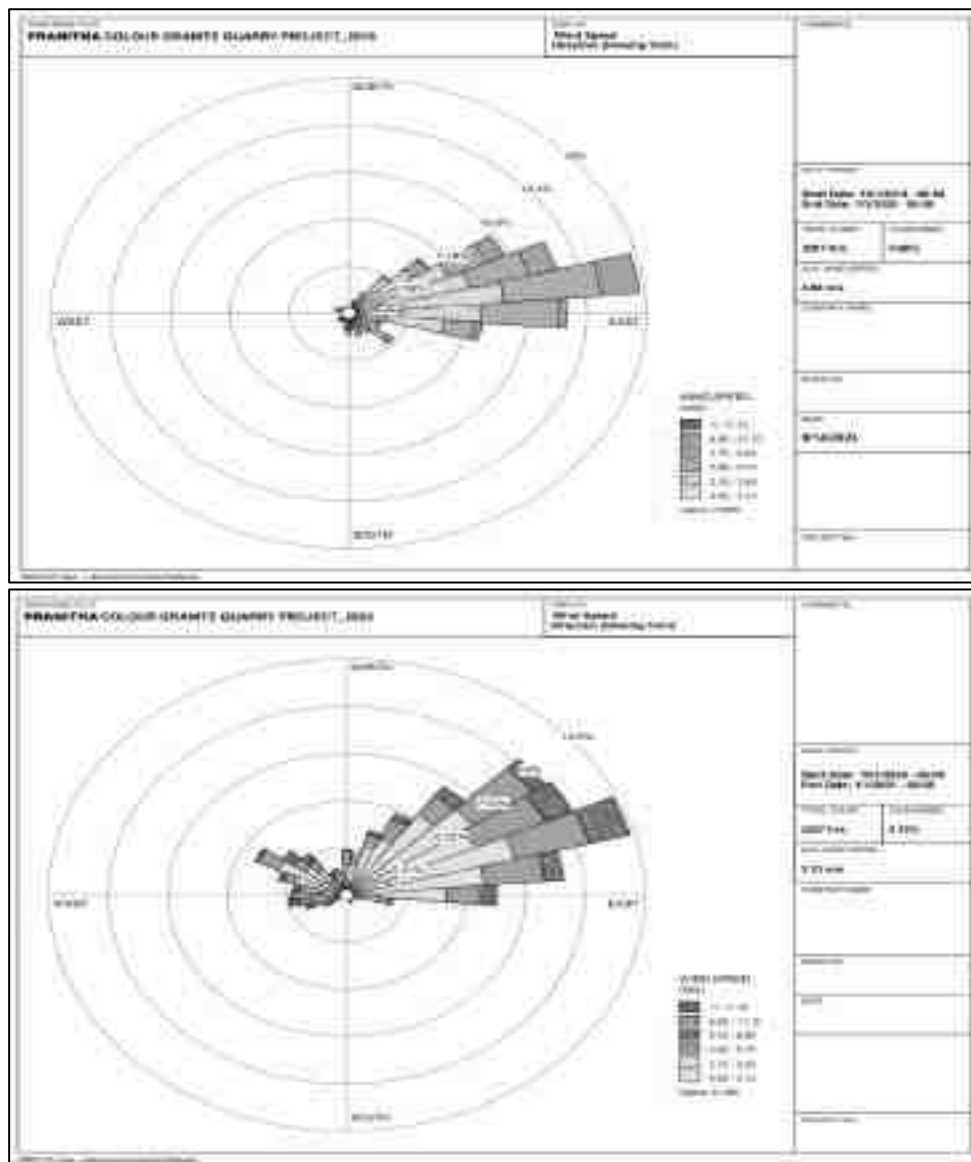


Figure 3.14 Windrose Diagram for 2019 and 2020 (October to December)

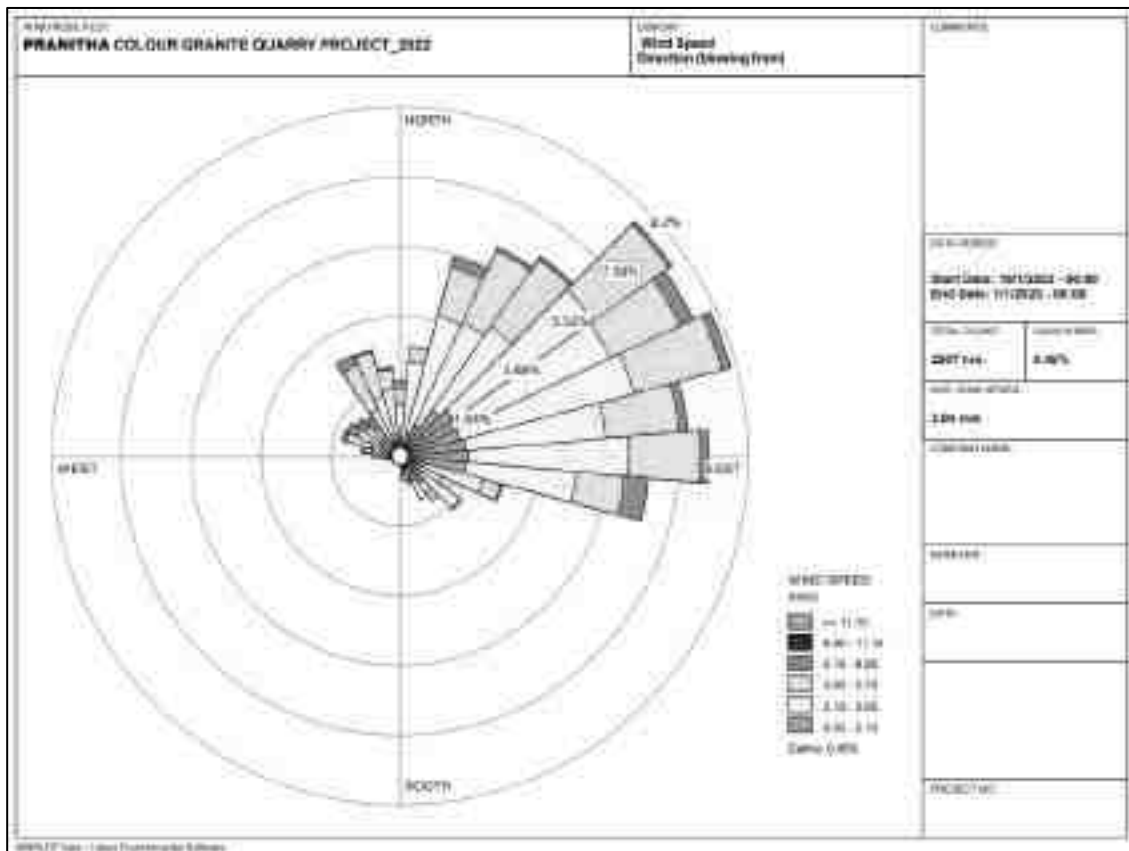
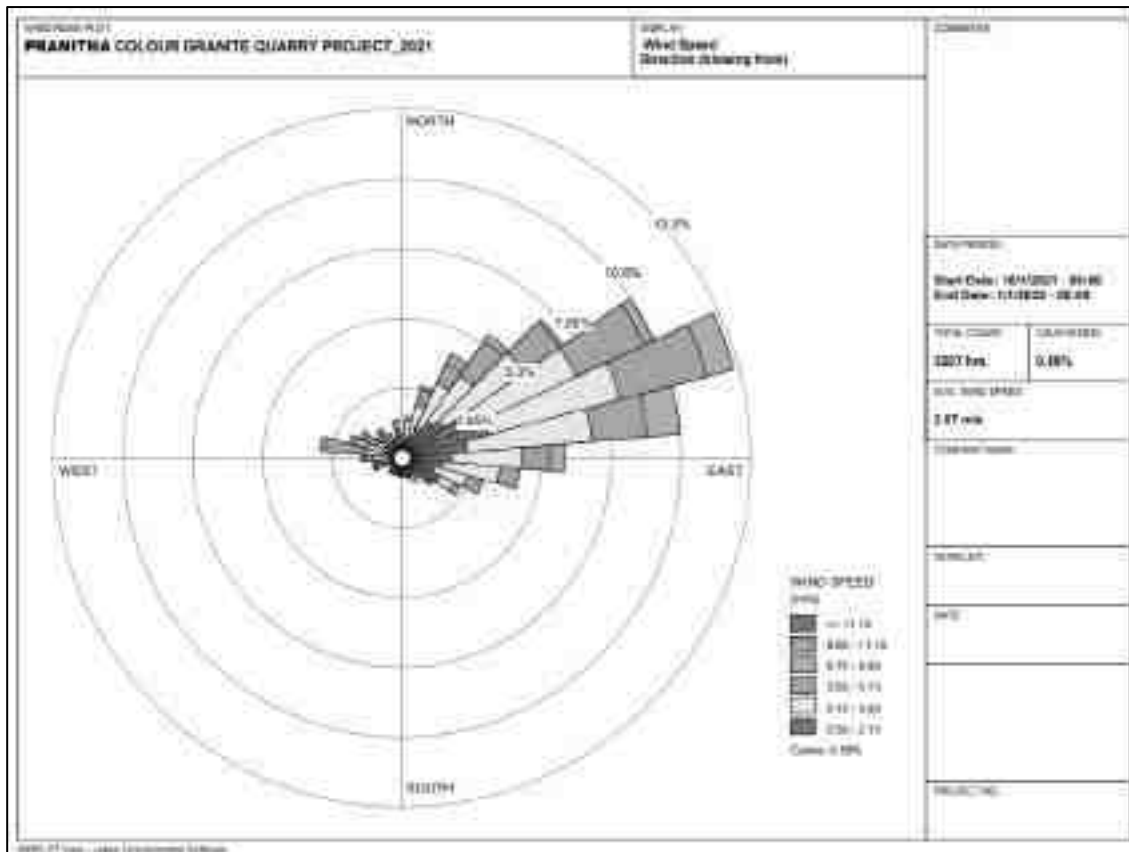


Figure 3.14(a) Windrose Diagram for 2020 and 2021 (October to December)

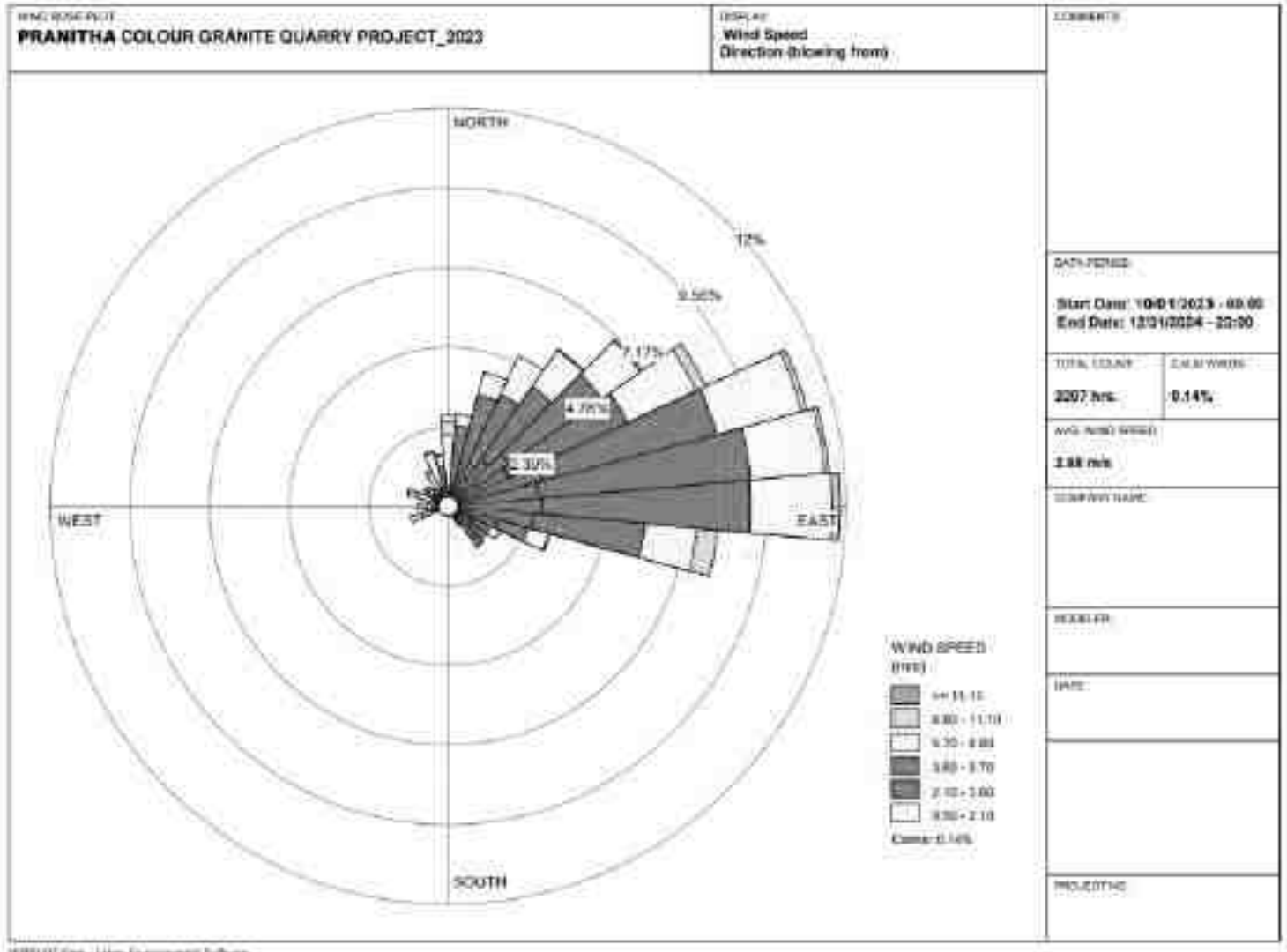


Figure 3.15 Onsite Windrose Diagram

3.3.2 Ambient Air Quality Study

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

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

Table 3.14 Methodology and Instrument Used for AAQ Analysis

Parameter	Method	Instrument
PM _{2.5}	Gravimetric method Beta attenuation method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO ₂	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hoch heiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based on *Excellence Laboratory (P) Limited* & CPCB Notification

Table 3.15 National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	SO ₂ (µg/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	NO ₂ (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 Six (6) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October-December, 2023 as per the CPCB, MoEF guidelines and notifications.

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

Table 3.16 Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
					Lat	Long
1	AAQ1	Core	--	--	12°28'47.86"N	78°21'41.71"E
2	AAQ2	Kondappanayakempalli	1.08	N	12°29'24.55"N	78°21'37.59"E
3	AAQ3	Jagadevi	2.84	SW	12°28'5.55"N	78°20'19.27"E
4	AAQ4	Jagadevi	4.54	NW	12°29'16.08"N	78°19'13.86"E
5	AAQ5	Billakottai	3.70	SSW	12°26'42.99"N	78°21'29.60"E
6	AAQ6	Sakilnatham	3.61	NE	12°29'49.26"N	78°23'29.08"E

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

Results

As per the monitoring data, PM_{2.5} ranges from 15.5 µg/m³ to 21.5 µg/m³; PM₁₀ from 35.7 µg/m³ to 43.5 µg/m³; SO₂ from 11.9 µg/m³ to 16.2 µg/m³; NO₂ from 15.9 µg/m³ to 22.3 µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

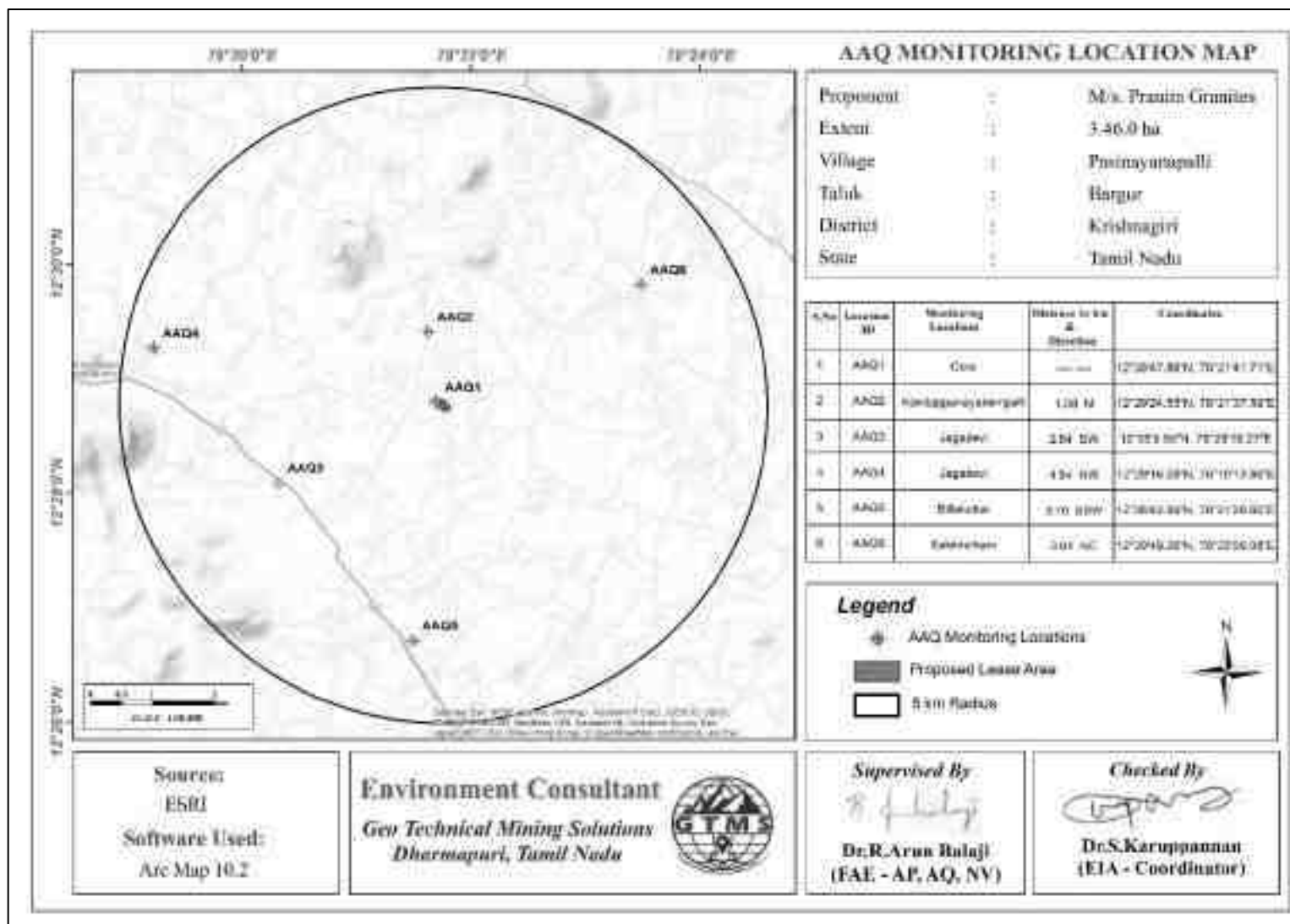


Figure 3.16 Toposheet Showing Ambient Air Quality Monitoring Station Locations around 5 km Radius from the Proposed Project Site

Table 3.17 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	20.0	14.1	17.2	19.8	44.2	33.2	38.5	44.1
AAQ2	17.8	11.9	15.0	17.6	42.8	33.6	39.1	42.8
AAQ3	23.1	17.5	19.8	21.5	43.8	38.6	41.3	43.8
AAQ4	23.2	18.9	21.3	23.0	44.7	39.4	41.8	44.6
AAQ5	23.4	16.6	20.3	23.4	47.4	39.6	42.5	46.6
AAQ6	21.6	14.2	17.4	21.5	37.9	29.7	34.1	37.9
SO ₂					NO ₂			
AAQ1	14.5	8.6	11.7	14.3	20.1	14.2	17.3	19.9
AAQ2	13.8	9.4	11.0	13.4	21.3	14.7	17.0	20.8
AAQ3	19.4	15.0	16.9	18.1	24.5	20.1	22.0	24.3
AAQ4	18.5	15.4	17.0	18.5	24.3	17.8	21.3	24.0
AAQ5	19.0	15.9	17.5	19.0	24.2	17.1	20.3	24.2
AAQ6	12.2	7.3	9.4	11.8	19.4	11.6	15.8	19.3

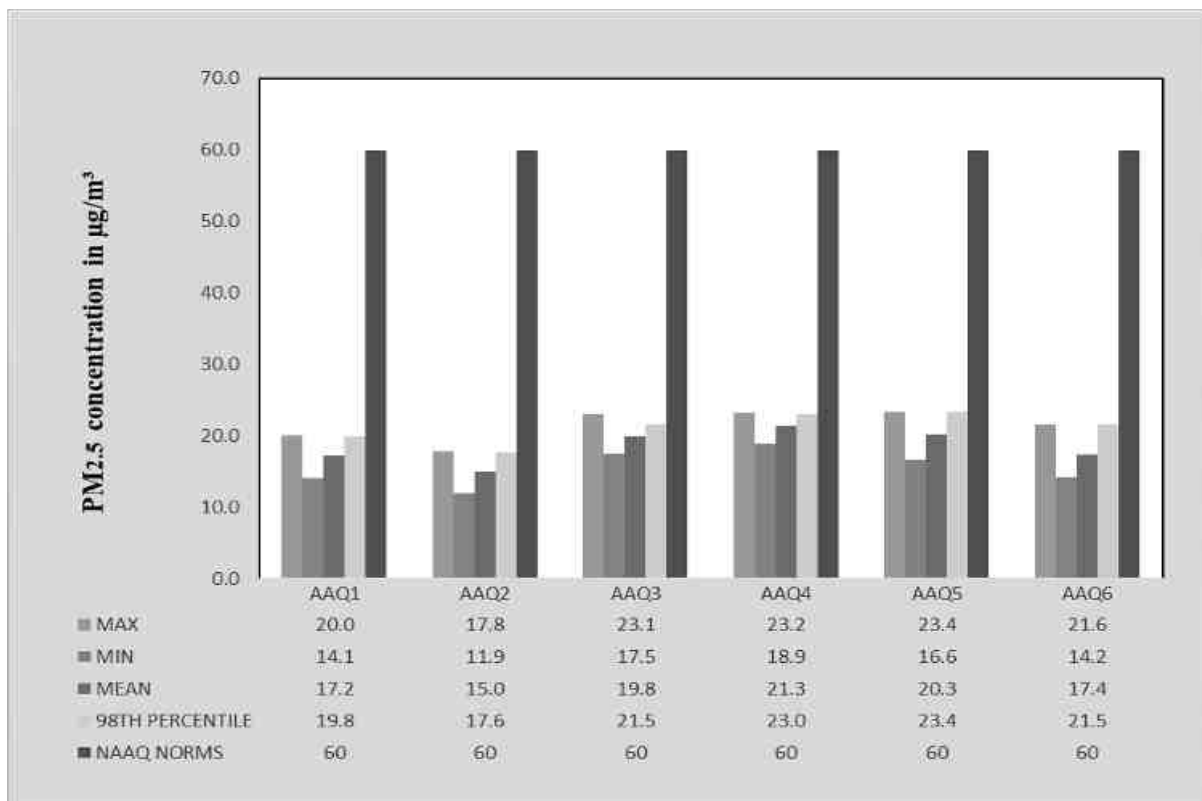


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 6 Air Quality Monitoring Stations within 5 km Radius

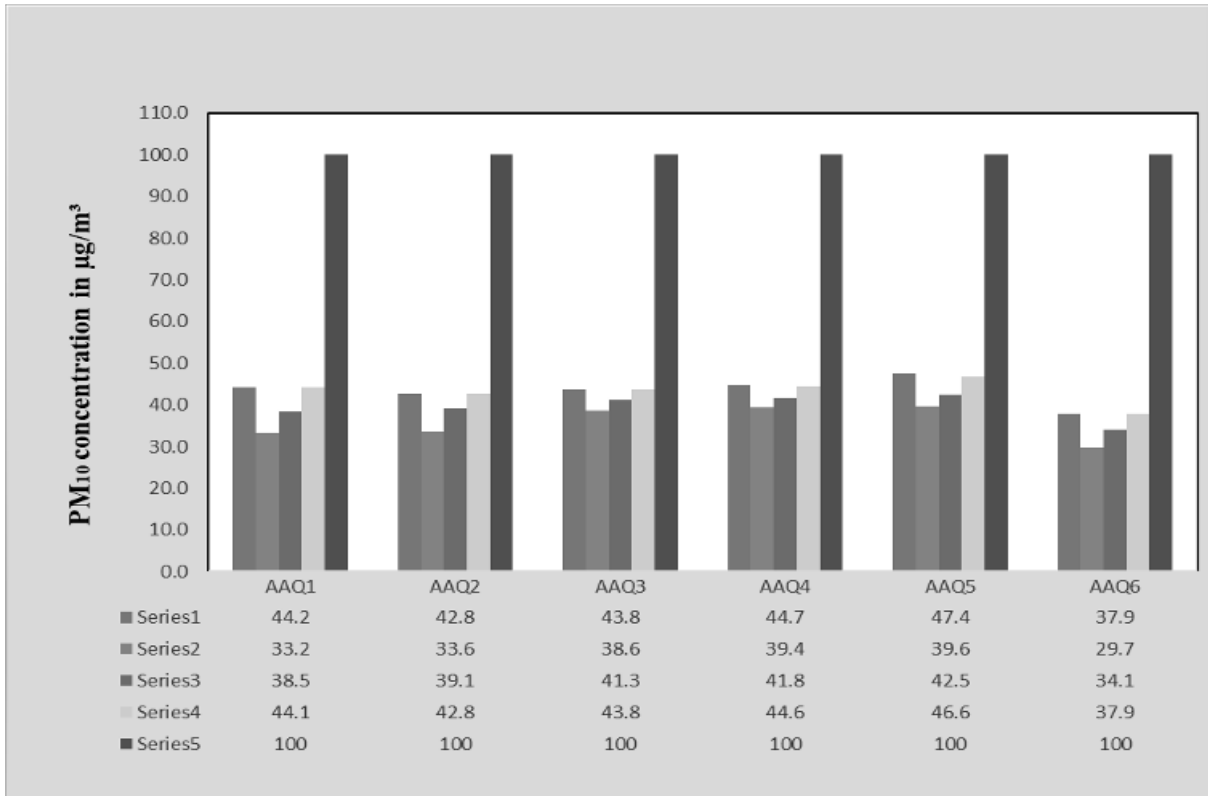


Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 6 Air Quality Monitoring Stations within 5 km Radius

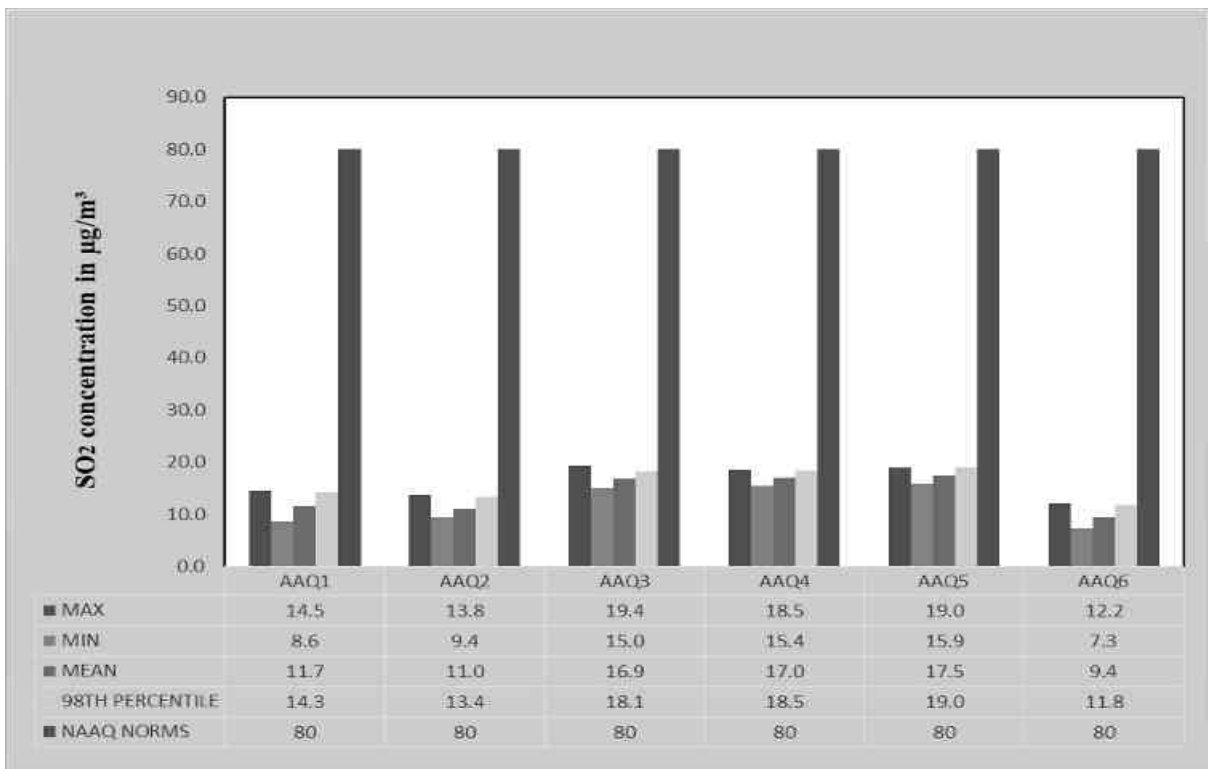


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 6 Air Quality Monitoring Stations within 5 km Radius

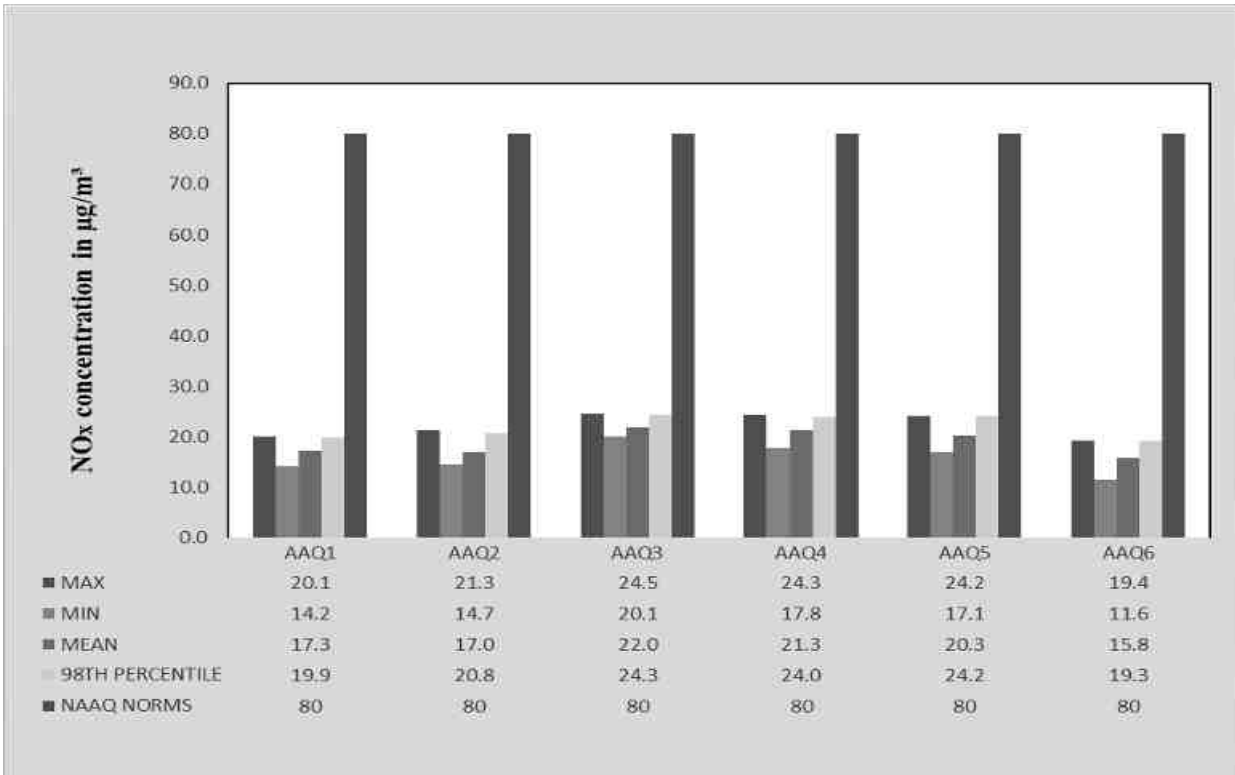


Figure 3.20 Bar Chart Showing Maximum, Minimum, And Average Concentrations of NOx Measured from 6 Air Quality Monitoring Stations within 5 km Radius

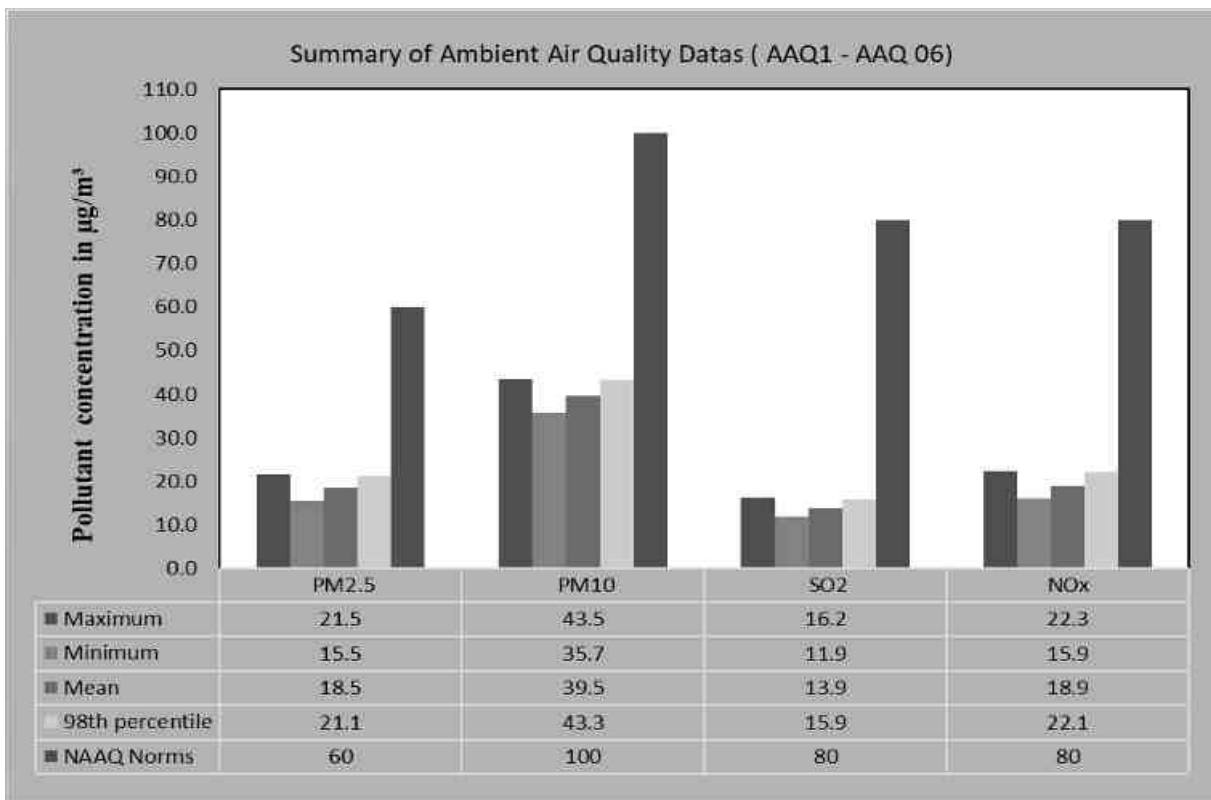


Figure 3.21 Bar Chart Showing Maximum, Minimum, and Average Concentrations of Pollutants in the Atmosphere within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at six (6) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.18 and spatial occurrence of the locations are shown in Figure 3.24.

Table 3.18 Noise Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates	
					Lat	Long
1	N1	Near Core	0.07	W	12°28'49.12"N	78°21'41.94"E
2	N2	Kondappanayakempalli	0.42	NW	12°28'59.10"N	78°21'32.05"E
3	N3	Jagadevi	2.80	SW	12°28'6.44"N	78°20'20.15"E
4	N4	Jagadevi	4.58	NW	12°29'13.02"N	78°19'12.19"E
5	N5	Billakottai	3.80	SSW	12°26'39.66"N	78°21'26.82"E
6	N6	Sakilnatham	3.62	NE	12°29'46.12"N	78°23'31.06"E

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

Table 3.19 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	Near Core	Industrial area	37.3	35.8	75	70
N2	Kondappanayakempalli	Residential area	43.2	39.9	55	45
N3	Jagadevi		45.6	42.2	55	45
N4	Jagadevi		45.8	43.3	55	45
N5	Billakottai		45.4	41.4	55	45
N6	Sakilnatham		39.5	35.9	55	45

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

The Table 3.19 shows that noise level in core zone was 37.3dB (A) Leq during day time and 35.8 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.5 to 45.8 dB (A) Leq and during night time from 35.9 to 43.3 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.22 and 3.23.

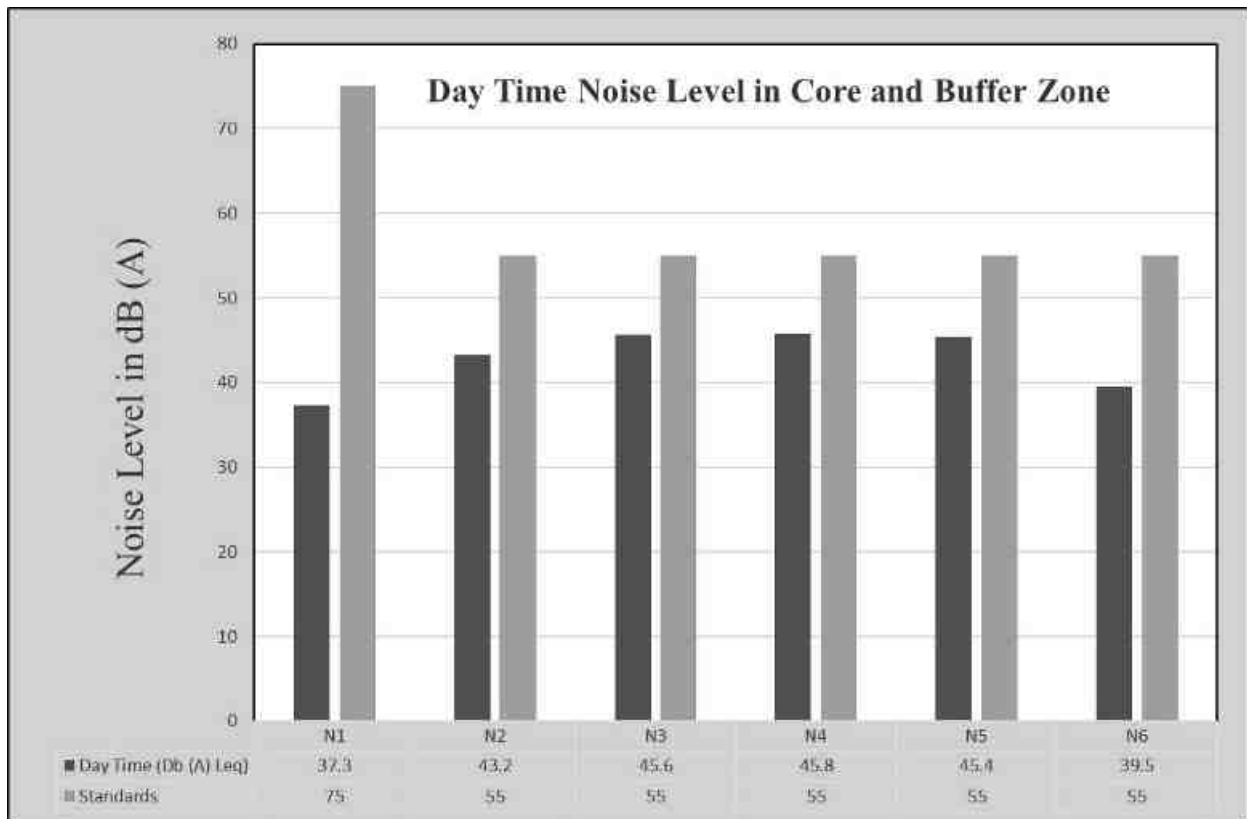


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

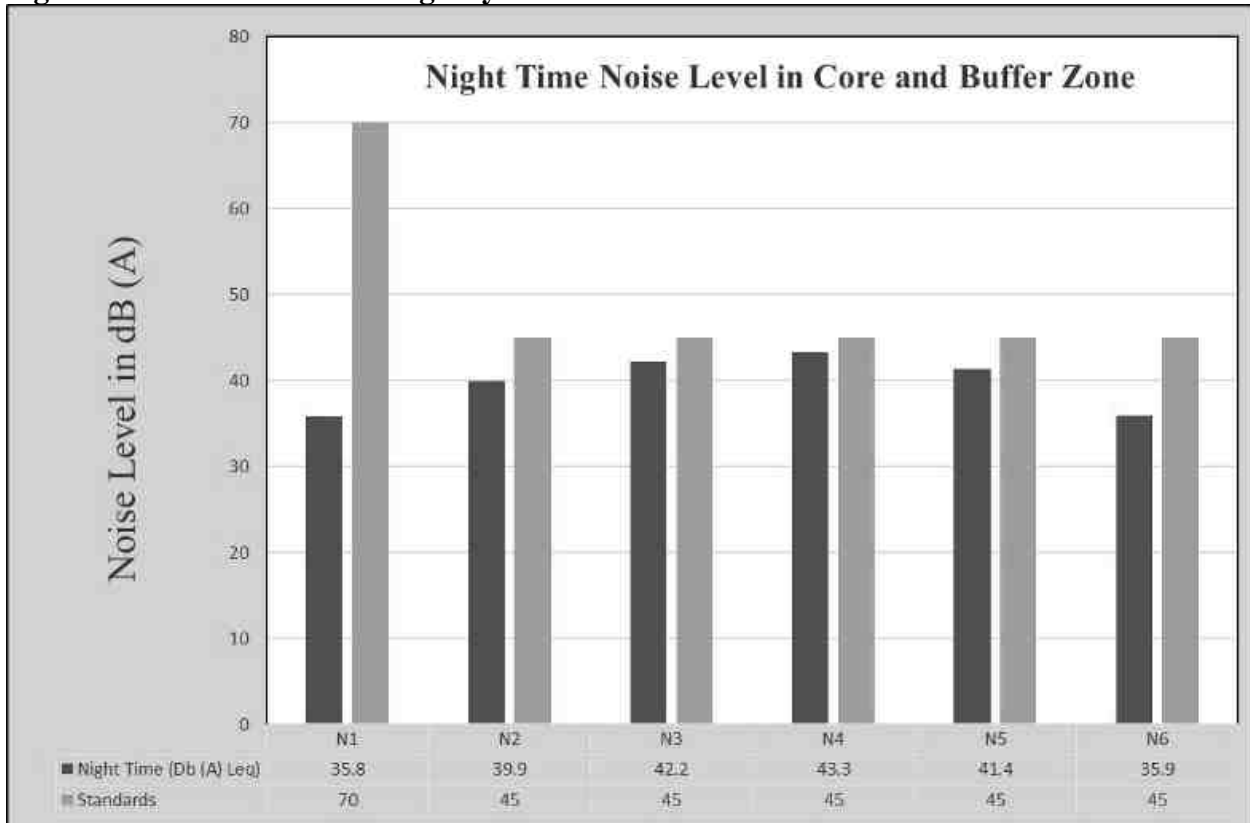


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

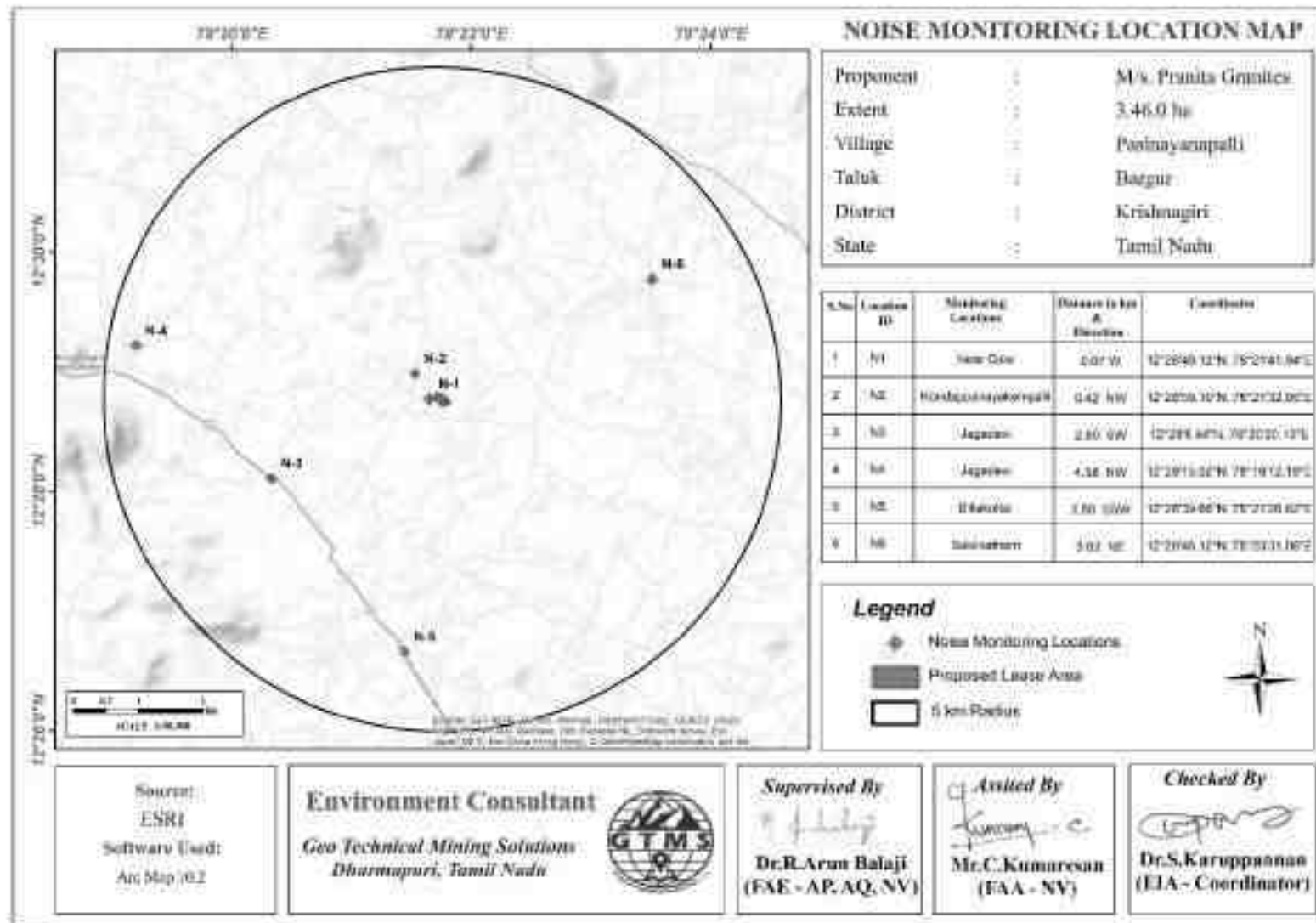


Figure 3.24 Toposheet Showing Noise Level Monitoring Station Locations around 5 km Radius from the Proposed Project Site

3.5 BIOLOGICAL ENVIRONMENT

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

Methodology

Sampling locations were selected with reference to topography, land use, vegetation pattern, etc. In this study, quadrats of 25 m × 25 m were laid down to assess trees and quadrats of 10 m × 10 m were laid down for shrubs, as shown in Figure 3.25.



Figure 3.25 Quadrates Sampling Methods of Flora

Phyto-Sociological Studies

Phyto sociological parameters, such as *Density, Frequency, Abundance and Importance Value Index* of individual species were determined in randomly placed quadrat of different sizes in the study area, as shown in Table 3.20. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, *Density, Frequency, Relative Density & Relative Frequency were found*. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the study area of 10 km radius. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

Table 3.20 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

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

Shannon – Wiener Index, Evenness and Richness

Biodiversity index is a quantitative measure that reflects how many different types of species, there are in a dataset, and simultaneously takes into account how evenly the basic entities (such as individuals) are distributed among those types of species. The value of biodiversity index increases both when the number of types increases and when evenness increases. For a given number of type of species, the value of a biodiversity index is maximized when all type of species is equally abundant. The corresponding formulas are given in Table 3.21.

Table 3.21 Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness

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

3.5.1 Flora

Flora study was conducted using the above said methodology to inventory the existing terrestrial plants in both core and buffer zones. Details of plants have been described in the succeeding sections. Photographs showing various species are provided in Figure 3.28.

Flora in mine lease area (core zone)

The mine lease area contains total of 17 species belonging to 12 families have been recorded from the mine lease area. 2 trees 6 shrubs, 9 herbs were identified. It is a grassy land. There are no endangered species in mine lease area. Details of vegetation with scientific name indicated in Table 3.22.

Table 3.22 Flora in mine lease area

S.no	Local name	Scientific name	Family name	No of plants
Tree				
1	Wetpalai maram	<i>Wrightia tinctoria</i>	Fabaceae	4
2	Unjai maram	<i>Albizia amara</i>	Apocynaceae	5
Shrubs				
1	Avaram chadi	<i>Senna auriculata</i>	Fabaceae	7
2	Earuku	<i>Calotropis gigantea</i>	Apocynaceae	8
3	communist pacha	<i>Chromolaena odorata</i>	Asteraceae	17
4	Unnichadi	<i>Lantana camara</i>	Verbenaceae	9
5	Thuthi	<i>Abutilon indicum</i>	Meliaceae	10
6	Sithapalam	<i>Annona squamosa</i>	Annonaceae	2
Herbs /Climber				
1	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	3
2	Thathapondu	<i>Tridax procumbens</i>	Asteraceae	14
3	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae	11
4	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	7
5	Nearunji mull	<i>Tribulus zeyheri</i> Sond	Zygophyllaceae	10
6	Pill	<i>Cenchrus ciliaris</i>	Poaceae	18
7	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	7
8	American mint	<i>Hyptis suaveolens</i>	Lamiaceae	12
9	Tumbai	<i>Leucas aspera</i>	Lamiaceae	17

Flora within 300 m radius buffer zone

The buffer zone area contains contains a total of 38 species belonging to 26 families have been recorded from the buffer zone. 10 Trees, 7 Shrubs and 21 Herbs and Climbers were identified. Details of flora with the scientific name details and of diversity species Richness index were mentioned in Table 3.23-3.25 and Figure 3.26. There is no threat to the Flora species in 300 m radius.

Flora within 10 km radius buffer zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area. It contains a total of species belonging to 39 families have been recorded from the buffer zone. The floral (80) varieties among them 31 Trees, 11 Shrubs, Herbs and Climbers, Creeper, Grass & Cactus, 38 were identified. Details of flora with the scientific name details of diversity species rich ness index were mentioned in Table 3.26-3.28 and Figure 3.27.

Table 3.23 Flora in 300-meter radius

S. No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Tree													
1	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	7	6	8	0.9	75.0	1.2	10.6	10.7	21.3	Not Listed
2	Pongam oiltree	<i>Pongamia pin nata</i>	Fabaceae	6	5	8	0.8	62.5	1.2	9.1	8.9	18.0	Not Listed
3	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	8	7	8	1.0	87.5	1.1	12.1	12.5	24.6	Not Listed
4	Nochi	<i>Vitex negundo</i>	Lamiaceae	6	5	8	0.8	62.5	1.2	9.1	8.9	18.0	Not Listed
5	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	5	4	8	0.6	50.0	1.3	7.6	7.1	14.7	Not Listed
6	Vembu	<i>Azadirachta indica</i>	Meliaceae	7	6	8	0.9	75.0	1.2	10.6	10.7	21.3	Not Listed
7	Manga maram	<i>Mangifera indica</i>	Anacardiaceae	8	7	8	1.0	87.5	1.1	12.1	12.5	24.6	Not Listed
8	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	5	4	8	0.6	50.0	1.3	7.6	7.1	14.7	Not Listed
9	Wetpalai maram	<i>Wrightia tinctoria</i>	Apocynaceae	6	5	8	0.8	62.5	1.2	9.1	8.9	18.0	Not Listed
10	Unjai maram	<i>Albizia amara</i>	Fabaceae	8	7	8	1.0	87.5	1.1	12.1	12.5	24.6	Not Listed
Shrubs													
1	Unichedi	<i>Lantana camara</i>	Verbenaceae	7	6	8	0.9	75.0	1.2	14.9	15.0	29.9	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	8	7	8	1.0	87.5	1.1	17.0	17.5	34.5	Not Listed
3	Erukku	<i>Calotropis gigantea</i>	apocynaceae	6	5	8	0.8	62.5	1.2	12.8	12.5	25.3	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	7	6	8	0.9	75.0	1.2	14.9	15.0	29.9	Not Listed
5	Sappathikalli	<i>Cereus pterogonus</i>	Cactus	8	7	8	1.0	87.5	1.1	17.0	17.5	34.5	Not Listed
6	Kattamanaku	<i>Jatropha gossypifolia L</i>	Euphorbiaceae	5	4	8	0.6	50.0	1.3	10.6	10.0	20.6	Not Listed

7	Karunochi	<i>Vitex negundo</i>	Lamiaceae	6	5	8	0.8	62.5	1.2	12.8	12.5	25.3	Not Listed
Herbs, Climbers & Grass													
1	Thumbai	<i>Leucas aspera</i>	Lamiaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
2	Kantang kathrikai	<i>Solanum virginianum</i>	Solanaceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed
3	Arugampul	<i>Cynodon dactylon</i>	Poaceae	8	7	8	1.0	87.5	1.1	5.7	5.9	11.6	Not Listed
4	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
5	Korai	<i>Cyperus rotundus</i>	Cyperaceae	5	4	8	0.6	50.0	1.3	3.6	3.4	6.9	Not Listed
6	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales	8	7	8	1.0	87.5	1.1	5.7	5.9	11.6	Not Listed
7	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
8	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed
9	Anachundaikai	<i>Solanum violaceum</i> <i>Ortega</i>	Solanaceae	5	4	8	0.6	50.0	1.3	3.6	3.4	6.9	Not Listed
10	Kombumul	<i>Acanthospermum</i> <i>hispidum</i>	Asteraceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed
11	Ponnangani	<i>Alternanthera pungens</i>	Amaranthaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
12	wild thulasi	<i>Hyptis suaveolens (L.)</i>	Lamiaceae	8	7	8	1.0	87.5	1.1	5.7	5.9	11.6	Not Listed
13	Gopuram Tangi	<i>Andrographis echiioides</i>	Acanthaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
14	Amman Paccharisi	<i>Euphorbia hirta</i>	Euphorbiaceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed
15	Paca poondu	<i>Pavonia gallaensis</i>	Malvaceae	5	4	8	0.6	50.0	1.3	3.6	3.4	6.9	Not Listed
16	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	8	7	8	1.0	87.5	1.1	5.7	5.9	11.6	Not Listed
17	Vishnukrandai	<i>Evolvulus alsinoides</i>	Convolvulaceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
18	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed
19	Sirupunaikkali	<i>Passiflora foetida</i>	Passifloraceae	7	6	8	0.9	75.0	1.2	5.0	5.0	10.0	Not Listed
20	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	8	7	8	1.0	87.5	1.1	5.7	5.9	11.6	Not Listed
21	Agave	<i>Agave sisalana</i>	Asparagaceae	6	5	8	0.8	62.5	1.2	4.3	4.2	8.5	Not Listed

Table 3.24 Calculation of Species Diversity in 300 m Radius

S. No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Tree						
1	Velikathan maram	<i>Prosopis juliflora</i>	7	0.11	-2.24	-0.24
2	Pongam oiltree	<i>Pongamia pin nata</i>	6	0.09	-2.40	-0.22
3	Panai maram	<i>Borassus flabellifer</i>	8	0.12	-2.11	-0.26
4	Nochi	<i>Vitex negundo</i>	6	0.09	-2.40	-0.22
5	Nuna maram	<i>Morinda citrifolia</i>	5	0.08	-2.58	-0.20
6	Vembu	<i>Azadirachta indica</i>	7	0.11	-2.24	-0.24
7	Manga maram	<i>Mangifera indica</i>	8	0.12	-2.11	-0.26
8	Thennai maram	<i>Cocos nucifera</i>	5	0.08	-2.58	-0.20
9	Wetpalai maram	<i>Wrightia tinctoria</i>	6	0.09	-2.40	-0.22
10	Unjai maram	<i>Albizia amara</i>	8	0.12	-2.11	-0.26
H (Shannon Diversity Index) =2.29						
Shrubs						
1	Unichedi	<i>Lantana camara</i>	7	0.15	-1.90	-0.28
2	Sundaika	<i>Solanum torvum</i>	8	0.17	-1.77	-0.30
3	Erukku	<i>Calotropis gigantea</i>	6	0.13	-2.06	-0.26
4	Avarai	<i>Senna auriculata</i>	7	0.15	-1.90	-0.28
5	Sappathikalli	<i>Cereus pterogonus</i>	8	0.17	-1.77	-0.30
6	Kattamanaku	<i>Jatropha gossypifolia L</i>	5	0.11	-2.24	-0.24
7	Karunochi	<i>Vitex negundo</i>	6	0.13	-2.06	-0.26
H (Shannon Diversity Index) =1.93						
HERBS						
1	Thumbai	<i>Leucas aspera</i>	7	0.05	-3.00	-0.15
2	Katang kathrikai	<i>Solanum virginianum</i>	6	0.04	-3.15	-0.13
3	Arugampul	<i>Cynodon dactylon</i>	8	0.06	-2.86	-0.16
4	Poolai poondu	<i>Aerva lanata</i>	7	0.05	-3.00	-0.15
5	Korai	<i>Cyperus rotundus</i>	5	0.04	-3.33	-0.12
6	Nerunji	<i>Tribulus terrestris</i>	8	0.06	-2.86	-0.16
7	Nayuruvi	<i>Achyranthes aspera</i>	7	0.05	-3.00	-0.15
8	Thottalchinungi	<i>Mimosa pudica</i>	6	0.04	-3.15	-0.13
9	Anachundaikai	<i>Solanum violaceum Ortega</i>	5	0.04	-3.33	-0.12

10	Kombumul	<i>Acanthospermum hispidum</i>	6	0.04	-3.15	-0.13
11	Ponnangani	<i>Alternanthera pungens</i>	7	0.05	-3.00	-0.15
12	wild thulasi	<i>Hyptis suaveolens (L.)</i>	8	0.06	-2.86	-0.16
13	Gopuram Tangi	<i>Andrographis echiioides</i>	7	0.05	-3.00	-0.15
14	Amman Paccharisi	<i>Euphorbia hirta</i>	6	0.04	-3.15	-0.13
15	Paca poondu	<i>Pavonia gallaensis</i>	5	0.04	-3.33	-0.12
16	Perandai	<i>Cissus quadrangularis</i>	8	0.06	-2.86	-0.16
17	Vishnukrandai	<i>Evolvulus alsinoides</i>	7	0.05	-3.00	-0.15
18	Musumusukkai	<i>Mukia maderaspatana</i>	6	0.04	-3.15	-0.13
19	Sirupunaikkali	<i>Passiflora foetida</i>	7	0.05	-3.00	-0.15
20	Nagathali	<i>Opuntia dillenii</i>	8	0.06	-2.86	-0.16
21	Agave	<i>Agave sisalana</i>	6	0.04	-3.15	-0.13
H (Shannon Diversity Index) =3.03						

Table 3.25 Species Richness (Index) in 300 m Radius

Details	H	H max	Evenness	Species Richness
Tree	2.29	2.30	0.99	2.15
Shrubs	1.93	1.95	0.99	1.56
Herbs	3.03	3.04	1.00	4.05

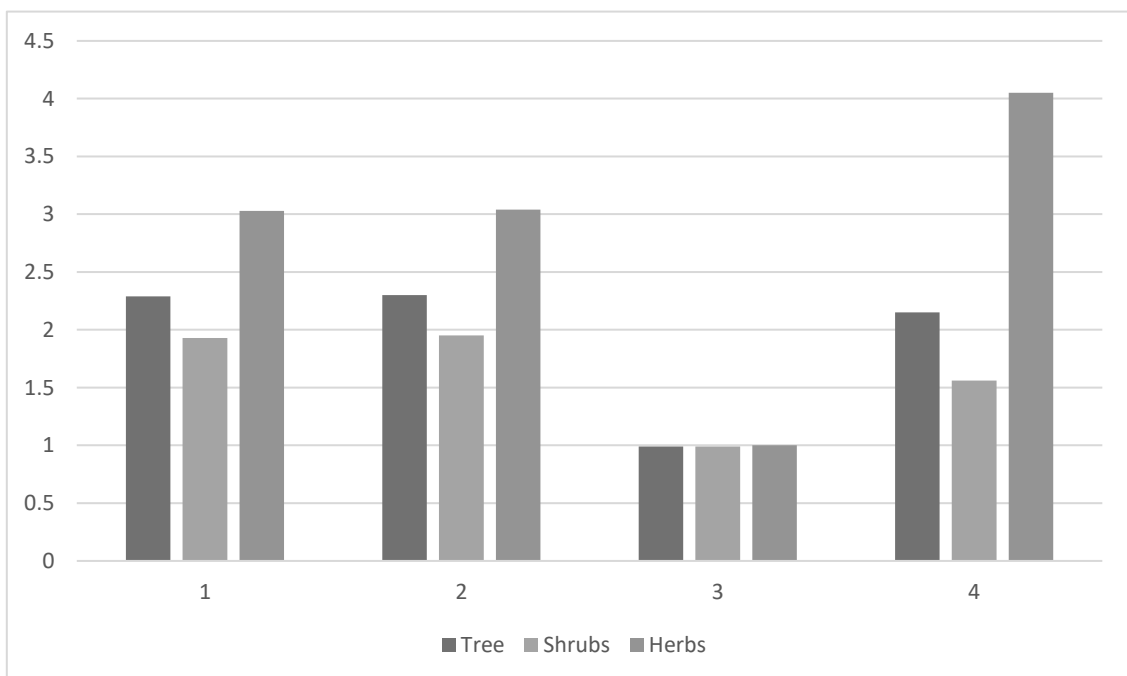


Figure. 3.26 Species Richness (Index) in 300-meter radius

Table 3.26 Flora in Buffer Zone

S. No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Tree													
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
2	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
3	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	5	4	10	0.5	40.0	1.3	2.3	2.1	4.4	Not Listed
5	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	4	3	10	0.4	30.0	1.3	1.8	1.6	3.4	Not Listed
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
7	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
8	Athi	<i>Ficus recemosa</i>	Moraceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
9	Vazhaimaram	<i>Musa</i>	Musaceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
10	Kadukka puli	<i>Terminalia chebula</i>	Combretaceae	5	4	10	0.5	40.0	1.3	2.3	2.1	4.4	Not Listed
11	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
12	Perumungil	<i>Bambusa bambos</i>	Poaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
13	Sapota	<i>Manilkara zapota</i>	Sapotaceae	9	8	10	0.9	80.0	1.1	4.1	4.3	8.4	Not Listed
14	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed

15	Navalmaram	<i>Sygygium cumini</i>	Myrtaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
16	Ezhumuchai maram	<i>Citrus lemon</i>	Rutaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
17	Alamaram	<i>Ficus benghalensis</i>	Moraceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
18	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	5	4	10	0.5	40.0	1.3	2.3	2.1	4.4	Not Listed
19	Manga	<i>Mangifera indica</i>	Anacardiaceae	9	8	10	0.9	80.0	1.1	4.1	4.3	8.4	Not Listed
20	Thekku	<i>Tectona grandis</i>	Verbenaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
21	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
22	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
23	Vellai Karuvelam	<i>Vachellia nilotica</i>	Fabaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
24	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
25	Vadanarayani	<i>Delonix elata</i>	Fabaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
26	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	9	8	10	0.9	80.0	1.1	4.1	4.3	8.4	Not Listed
27	Pappali maram	<i>Carica papaya L</i>	Caricaceae	8	7	10	0.8	70.0	1.1	3.7	3.7	7.4	Not Listed
28	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	6	5	10	0.6	50.0	1.2	2.8	2.7	5.4	Not Listed
29	Koyya	<i>Psidium guajava</i>	Myrtaceae	10	9	10	1.0	90.0	1.1	4.6	4.8	9.4	Not Listed
30	Seethapazham	<i>Annona reticulata</i>	Annonaceae	9	8	10	0.9	80.0	1.1	4.1	4.3	8.4	Not Listed
31	Moonghil	<i>Bambusa bambo</i>	Poaceae	7	6	10	0.7	60.0	1.2	3.2	3.2	6.4	Not Listed
Shrubs													
1	Avarai	<i>Senna auriculata</i>	Fabaceae	8	7	10	0.8	70.0	1.1	9.5	9.6	19.1	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	9	8	10	0.9	80.0	1.1	10.7	11.0	21.7	Not Listed
3	Arali	<i>Nerium indicum</i>	Apocynaceae	7	6	10	0.7	60.0	1.2	8.3	8.2	16.6	Not Listed
4	Idlipoo	<i>xoracoc cineo</i>	Rubiaceae	6	5	10	0.6	50.0	1.2	7.1	6.8	14.0	Not Listed
5	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	7	6	10	0.7	60.0	1.2	8.3	8.2	16.6	Not Listed
6	Icham	<i>Phoenix pusilla</i>	Arecaceae	8	7	10	0.8	70.0	1.1	9.5	9.6	19.1	Not Listed

7	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	9	8	10	0.9	80.0	1.1	10.7	11.0	21.7	Not Listed
8	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	6	5	10	0.6	50.0	1.2	7.1	6.8	14.0	Not Listed
9	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	10	0.7	60.0	1.2	8.3	8.2	16.6	Not Listed
10	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	9	8	10	0.9	80.0	1.1	10.7	11.0	21.7	Not Listed
11	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	10	0.8	70.0	1.1	9.5	9.6	19.1	Not Listed
Herbs, Climber, Creeper, Grass & Cactus													
1	Thumbai	<i>Leucas aspera</i>	Lamiaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
2	Parttiniyam	<i>Parthenium</i>	Asteraceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
3	Thoiya keerai	<i>Digeria muricata</i>	Amarantheceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
4	Pulliyari	<i>Oxalis corniculata</i>	Oxalidaceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed
5	Mukuratthai	<i>Boerhavia diffusa</i>	Nyctaginaceae	5	4	12	0.4	33.3	1.3	1.7	1.6	3.3	Not Listed
6	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	10	9	12	0.8	75.0	1.1	3.4	3.5	7.0	Not Listed
7	Arugampul	<i>Cynodon dactylon</i>	Poaceae	11	10	12	0.9	83.3	1.1	3.8	3.9	7.7	Not Listed
8	Manjal	<i>Curcuma longa</i>	Zingiberaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
9	Manathakkali	<i>Solanumnigrum</i>	Solanaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
10	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed
11	Koraikkilangu	<i>Cyperus articulates</i>	Cyperaceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
12	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
13	Korai	<i>Cyperus rotundus</i>	Cyperaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
14	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed
15	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
16	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
17	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	10	9	12	0.8	75.0	1.1	3.4	3.5	7.0	Not Listed
18	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed

19	Sangupoo	<i>Clitoriaternatia</i>	Fabaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
20	Malli	<i>Jasminum augustifolium</i>	Oleaceae	5	4	12	0.4	33.3	1.3	1.7	1.6	3.3	Not Listed
21	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
22	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
23	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
24	mookuthi poondu	<i>Wedelia trilobata</i>	Asteraceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
25	Pullu	<i>Eragrostis ferruginea</i>	Poaceae	11	10	12	0.9	83.3	1.1	3.8	3.9	7.7	Not Listed
26	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
27	Nagathali	<i>Opuntia dillenii</i>	Nagathali	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
28	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
29	Veetukaayapoondu	<i>Tridax procumbens</i>	Asteraceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed
30	Kaattu piral	<i>Hibiscus hispidissimus</i>	Malvaceae	5	4	12	0.4	33.3	1.3	1.7	1.6	3.3	Not Listed
31	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
32	Karisilanganni	<i>Eclipta prostata</i>	Asteraceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
33	Korai	<i>Cyperus rotundus</i>	Cyperaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
34	Kumattikkirai	<i>Allmania nodiflora</i>	Amaranthaceae	6	5	12	0.5	41.7	1.2	2.1	2.0	4.0	Not Listed
35	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed
36	Keelaneeli	<i>Phyllanthus niruri</i>	Phyllanthaceae	8	7	12	0.7	58.3	1.1	2.7	2.8	5.5	Not Listed
37	Kanamvazhalai	<i>Commelina benghalensis</i>	Commelinaceae	9	8	12	0.8	66.7	1.1	3.1	3.1	6.2	Not Listed
38	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	7	6	12	0.6	50.0	1.2	2.4	2.4	4.8	Not Listed

Table 3.27 Calculation of Species Diversity in Buffer Zone

S. No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Tree						
1	Vembu	<i>Azadirachta indica</i>	6	0.03	-3.59	-0.10
2	Pongam oiltree	<i>Pongamia pinnata</i>	7	0.03	-3.44	-0.11
3	Karuvelam	<i>Acacia nilotica</i>	8	0.04	-3.31	-0.12
4	Thennai maram	<i>Cocos nucifera</i>	5	0.02	-3.78	-0.09
5	Arasanmaram	<i>Ficus religiosa</i>	4	0.02	-4.00	-0.07
6	Puliyamaram	<i>Tamarindus indica</i>	7	0.03	-3.44	-0.11
7	Punnai	<i>Calophyllu inophyllum</i>	8	0.04	-3.31	-0.12
8	Athi	<i>Ficus recemosa</i>	7	0.03	-3.44	-0.11
9	Vazhaimaram	<i>Musa</i>	6	0.03	-3.59	-0.10
10	Kadukka puli	<i>Terminalia chebula</i>	5	0.02	-3.78	-0.09
11	Nettilinkam	<i>Polylathia longifolia</i>	7	0.03	-3.44	-0.11
12	Perumungil	<i>Bambusa bambos</i>	8	0.04	-3.31	-0.12
13	Sapota	<i>Manilkara zapota</i>	9	0.04	-3.19	-0.13
14	Eucalyptus	<i>Eucalyptus globules</i>	6	0.03	-3.59	-0.10
15	Navalmaram	<i>Sygygium cumini</i>	7	0.03	-3.44	-0.11
16	Ezhumuchai maram	<i>Citrus lemon</i>	8	0.04	-3.31	-0.12
17	Alamaram	<i>Ficus benghalensis</i>	6	0.03	-3.59	-0.10
18	Panai maram	<i>Borassus flabellifer</i>	5	0.02	-3.78	-0.09
19	Manga	<i>Mangifera indica</i>	9	0.04	-3.19	-0.13
20	Thekku	<i>Tectona grandis</i>	7	0.03	-3.44	-0.11
21	Nelli	<i>Emblica officinalis</i>	6	0.03	-3.59	-0.10
22	Nettilinkam	<i>Polylathia longifolia</i>	8	0.04	-3.31	-0.12
23	Vellai Karuvelam	<i>Vachellia nilotica</i>	7	0.03	-3.44	-0.11
24	Palamaram	<i>Artocarpus heterophyllus</i>	6	0.03	-3.59	-0.10
25	Vadanarayani	<i>Delonix elata</i>	7	0.03	-3.44	-0.11
26	Marudaani	<i>Lawsonia inermis</i>	9	0.04	-3.19	-0.13
27	Pappali maram	<i>Carica papaya L</i>	8	0.04	-3.31	-0.12
28	Nuna maram	<i>Morinda citrifolia</i>	6	0.03	-3.59	-0.10
29	Koyya	<i>Psidium guajava</i>	10	0.05	-3.08	-0.14
30	Seethapazham	<i>Annona reticulata</i>	9	0.04	-3.19	-0.13
31	Moonghil	<i>Bambusa bambo</i>	7	0.03	-3.44	-0.11
H (Shannon Diversity Index) =3.41						
Shrubs						
1	Avarai	<i>Senna auriculata</i>	8	0.10	-2.35	-0.22
2	Sundaika	<i>Solanum torvum</i>	9	0.11	-2.23	-0.24
3	Arali	<i>Nerium indicum</i>	7	0.08	-2.48	-0.21
4	Idlipoo	<i>xoracoc cinea</i>	6	0.07	-2.64	-0.19

5	Neermulli	<i>Hydrophila auriculata</i>	7	0.08	-2.48	-0.21
6	Icham	<i>Phoenix pusilla</i>	8	0.10	-2.35	-0.22
7	Chaturakalli	<i>Euphorbia antiquorum</i>	9	0.11	-2.23	-0.24
8	Kattamanakku	<i>Jatropha curcas</i>	6	0.07	-2.64	-0.19
9	Thuthi	<i>Abutilon indicum</i>	7	0.08	-2.48	-0.21
10	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	9	0.11	-2.23	-0.24
11	Erukku	<i>Calotropis gigantea</i>	8	0.10	-2.35	-0.22
H (Shannon Diversity Index) =2.39						
Herbs, Climber, Creeper, Grass & Cactus						
1	Thumbai	<i>Leucas aspera</i>	9	0.03	-3.48	-0.11
2	Parttiniyam	<i>Parthenium</i>	7	0.02	-3.73	-0.09
3	Thoiya keerai	<i>Digeria muricata</i>	8	0.03	-3.60	-0.10
4	Pulliyari	<i>Oxalis corniculata</i>	6	0.02	-3.88	-0.08
5	Mukuratthai	<i>Boerhavia diffusa</i>	5	0.02	-4.07	-0.07
6	Thulasi	<i>Ocimum tenuiflorum</i>	10	0.03	-3.37	-0.12
7	Arugampul	<i>Cynodon dactylon</i>	11	0.04	-3.28	-0.12
8	Manjal	<i>Curcuma longa</i>	9	0.03	-3.48	-0.11
9	Manathakkali	<i>Solanumnigrum</i>	7	0.02	-3.73	-0.09
10	Nai kadugu	<i>Celome viscosa</i>	6	0.02	-3.88	-0.08
11	Koraikkilangu	<i>Cyperus articulates</i>	8	0.03	-3.60	-0.10
12	Karisilanganni	<i>Eclipta prostata</i>	9	0.03	-3.48	-0.11
13	Korai	<i>Cyperus rotundus</i>	7	0.02	-3.73	-0.09
14	Kunnakora	<i>Cyperus compressus</i>	6	0.02	-3.88	-0.08
15	Mukurattai	<i>Boerhavia diffusa</i>	8	0.03	-3.60	-0.10
16	Kovai	<i>Coccinia grandis</i>	9	0.03	-3.48	-0.11
17	Perandai	<i>Cissus quadrangularis</i>	10	0.03	-3.37	-0.12
18	Mudakkotan	<i>Cardiospermum helicacabum</i>	6	0.02	-3.88	-0.08
19	Sangupoo	<i>Clitoriaternatia</i>	7	0.02	-3.73	-0.09
20	Malli	<i>Jasminum augustifolium</i>	5	0.02	-4.07	-0.07
21	Vallikeerai	<i>Ipomoea aquatica</i>	8	0.03	-3.60	-0.10
22	Siru puladi	<i>Desmodium triflorum</i>	9	0.03	-3.48	-0.11
23	Sithrapaalavi	<i>Euphorbia prostrata</i>	7	0.02	-3.73	-0.09
24	mookuthi poondu	<i>Wedelia trilobata</i>	8	0.03	-3.60	-0.10
25	Pullu	<i>Eragrostis ferruginea</i>	11	0.04	-3.28	-0.12
26	Chevvarakupul	<i>Chloris barbata</i>	9	0.03	-3.48	-0.11
27	Nagathali	<i>Opuntia dillenii</i>	8	0.03	-3.60	-0.10
28	Nayuruvi	<i>Achyranthes aspera</i>	7	0.02	-3.73	-0.09
29	Veetukaayapoondu	<i>Tridax procumbens</i>	6	0.02	-3.88	-0.08
30	Kaattu piral	<i>Hibiscus hispidissimus</i>	5	0.02	-4.07	-0.07
31	Kuppaimeni	<i>Acalypha indica</i>	9	0.03	-3.48	-0.11
32	Karisilanganni	<i>Eclipta prostata</i>	8	0.03	-3.60	-0.10

33	Korai	<i>Cyperus rotundus</i>	7	0.02	-3.73	-0.09
34	Kumattikkirai	<i>Allmania nodiflora</i>	6	0.02	-3.88	-0.08
35	Kunnakora	<i>Cyperus compressus</i>	7	0.02	-3.73	-0.09
36	Keelaneeli	<i>Phyllanthus niruri</i>	8	0.03	-3.60	-0.10
37	Kanamvazhalai	<i>Commelina benghalensis</i>	9	0.03	-3.48	-0.11
38	Thottalchinungi	<i>Mimosa pudica</i>	7	0.02	-3.73	-0.09
H (Shannon Diversity Index) =3.62						

Table 3.28 Species Richness (Index) in Buffer Zone

Details	H	H max	Evenness	Species Richness
Tree	3.41	3.43	0.99	5.57
Shrubs	2.39	2.40	1.00	2.26
Herbs	3.62	3.64	0.99	6.52

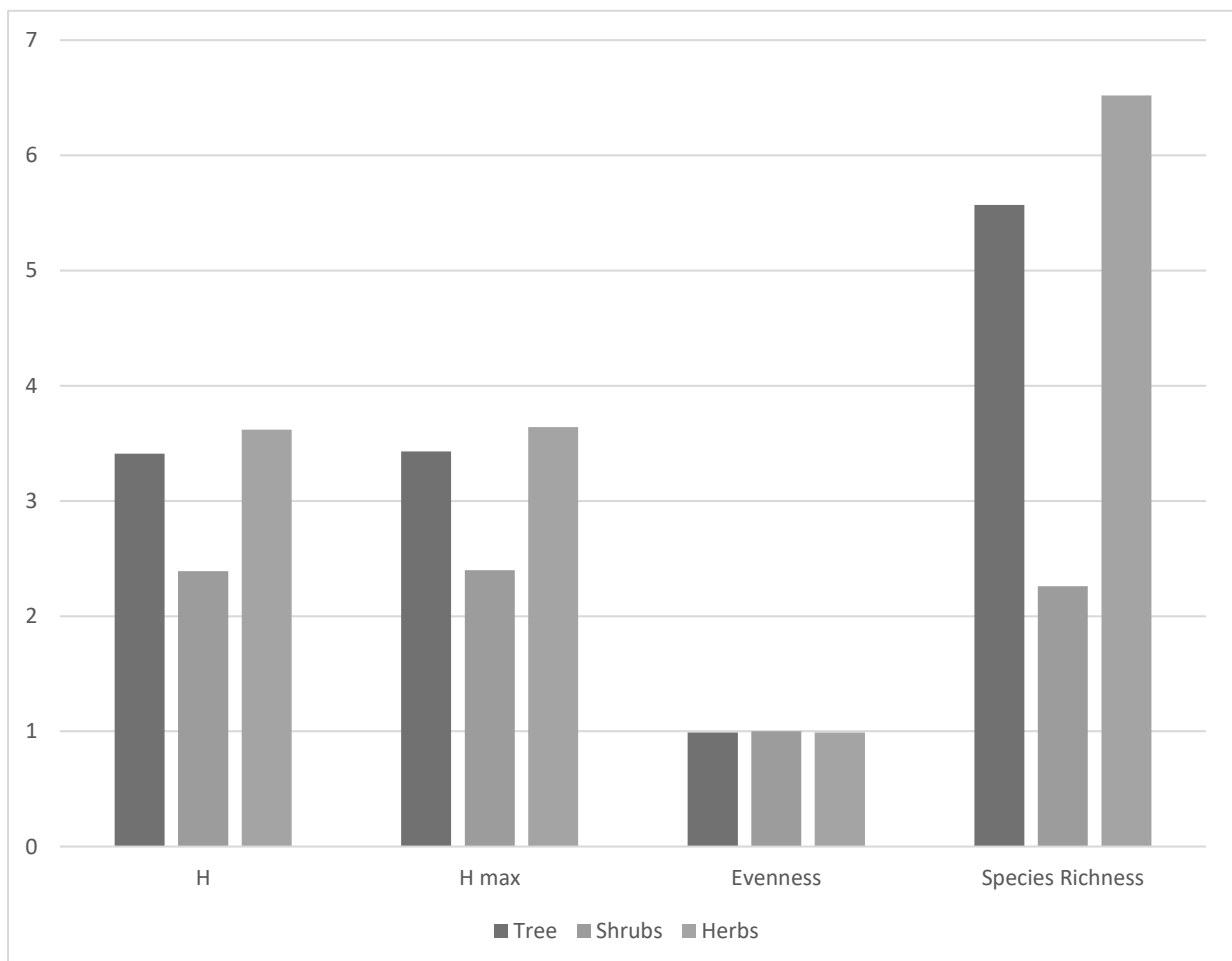


Figure. 3.27 Species Richness (Index) in 10km radius



Prosopis juliflora



Senna siamea



Croton bonplandianus



Wrightia tinctoria



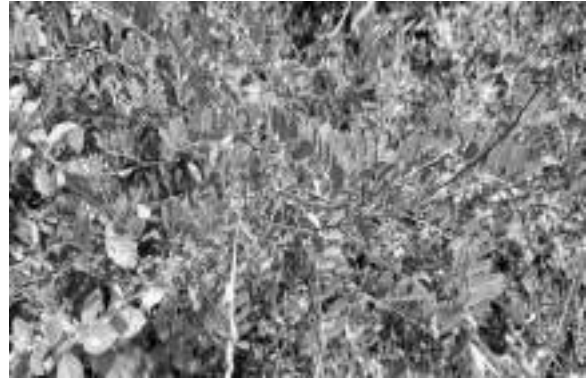
Cissus quadrangularis



Agave sisalana



Stachytarpheta jamaicensis



Tephrosia purpurea



Sida cordifolia L



Hyptis suaveolens



sida acuta



Lantana camara



Albizia amara



Leucas aspera



Azadirachta indica



Annona squamosa



Mangifera indica



Opuntia

Figure 3.28 Flora in Core and Buffer Area

Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. The list of aquatic plants observed in the study area is given in Table 3.29.

Table 3.29 Aquatic Vegetation

S.No.	Scientific name	Common Name	IUCN Red List Status
1	<i>Eichornia crassipes</i>	Water hyacinth	NA
2	<i>Aponogeton natans</i>	Floating lace plant	NA
3	<i>Carex cruciata</i>	Cross Grass	NA
4	<i>Cynodon dactylon</i>	Scutch grass	LC
Aquatic fauna			
5	<i>Oreochromis mossambicus</i>	Jalebi	VU
6	<i>Labeo catla</i>	Catla catla	LC
7	<i>Channa striata</i>	Korava meen	LC

*LC- Least Concern, NA-Not yet assessed

The food chain in aquatic ecosystems often begins with the algae or phytoplankton producers, and then the zooplankton that feed on them. Table 3.29 lists the aquatic plants and animals commonly found in rivers, ponds and lakes within a radius of 5 km from the quarry. Phytoplankton, zooplankton, fish and Artiola form this food chain.

Eg: Phytoplankton→zooplankton→small fish→large fish

Forest details

There are no or Biosphere Reserves or Wildlife Sanctuaries or National Parks or Bird Areas (IBAs) and faunal migration routes within 10 km radius. The area under study (mining lease area and 10 km buffer zone) is not ecologically sensitive. There is no reserve forest in 1km radius and reserve forest details mention in Table 3.43

Endangered and endemic species as per the IUCN Red List

There are no rare, endangered and endemic species found in the study area. There are no biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), ecologically sensitive zone in 10km radius.

3.5.2 Fauna

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

Fauna Methodology

Table 3.30 Methodology Applied during Survey of Fauna

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

Fauna in Core Zone

A total of 26 varieties of species observed in the Core zone of Pasinayanapalli Village, among them numbers of Insects 10, Reptiles 3, Mammals 4 and Avian 9. A total of 26 species belonging to 18 families have been recorded from the core Zone. There is no schedule I and II species. A total of 10 species of bird were sighted in the study area. Details of fauna in core zone with the scientific name were mentioned in Table. 3.31.

Fauna in Buffer Zone

Taxonomically a total of 82 species belonging to 49 families have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 50, followed by insects 13, reptiles 11, mammals 5 and amphibians 3. A total of 50 species of bird were sighted in the buffer zone. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in buffer zone with the scientific name were mentioned in Table. 3.32. data collation in secondary data.

Table 3.31 Fauna in Core Zone

S.no	Common Name/English Name	Scientific Name	Family name	IUCN Red List data
Insects				
1	Chocolate pansy	<i>Junonia iphita</i>	Nymphalidae	NA
2	Lime swallowtail	<i>Papilio demoleus</i>	Papilionidae	NA
3	Common Mormon	<i>Papilio polytes</i>	Papilionidae	NA
4	Crimson dropwing	<i>Trithemis aurora</i>	Libellulidae	LC
5	Lemon pansy	<i>Junonia lemonias</i>	Nymphalidae	NA
6	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae	NA
7	Slender skimmer	<i>Orthetrum sabina</i>	Libellulidae	LC
8	Plaina tiger butterfly	<i>Danaus chrysippus</i>	Nymphalidae	LC
9	Mottled emigrant	<i>Catopsilia pyranthe</i>	Pieridae	LC
10	Spotted locust	<i>Aularches miliaris</i>	Pyrgomorphidae	LC
Reptiles				
1	Oriental garden lizard	<i>Calotes uersicolor</i>	Agamidae	LC
2	Fan-Throated Lizard	<i>Sitanaponticeriana</i>	Agamidae	LC
3	Common skink	<i>Mabuya carinatus</i>	Scincidae	LC
Aves				
1	Baya weaver	<i>Ploceus philippinus</i>	Ploceidae	LC
2	White – browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	LC
3	Great cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	LC
4	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
5	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	LC
6	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
7	Common myna	<i>Acridotheres tristis</i>	Sturnidae	LC
8	European bee- eater	<i>Merops apiaster</i>	Meropidae	LC
9	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
Mammals				
1	House mouse	<i>Mus musculus</i>	Muridae	LC
2	Indian hare	<i>Lepus nigricollis</i>	Leporidae	LC
3	Cow	<i>Bos taurus</i>	Bovidae	NA
4	Goat	<i>Capra hircus</i>	Bovidae	NA

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

Table 3.32 Fauna in Buffer Zone

S. No	Common Name/English Name	Scientific Name	Family name	IUCN Red List data
Insects				
1	Chocolate pansy	<i>Junonia iphita</i>	Nymphalidae	NA
2	Lime swallowtail	<i>Papilio demoleus</i>	Papilionidae	NA
3	Common Mormon	<i>Papilio polytes</i>	Papilionidae	NA
4	Crimson dropwing	<i>Trithemis aurora</i>	Libellulidae	LC
5	Lemon pansy	<i>Junonia lemonias</i>	Libellulidae	NA
6	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae	NA
7	Slender skimmer	<i>Orthetrum sabina</i>	Libellulidae	LC
8	Plaina tiger butterfly	<i>Danaus chrysippus</i>	Nymphalidae	LC
9	Danaid eggfly	<i>Hypolimnas misippus</i>	Nymphalidae	LC
10	Bark blue tiger butterfly	<i>Tirumala septentrionis</i>	Nymphalidae	NA
11	Mottled emigrant	<i>Catopsilia pyranthe</i>	Pieridae	NA
12	Spotted locust	<i>Aularches miliaris</i>	Pyrgomorphidae	NA
13	Ditgh jewel	<i>Brachythemis contaminata</i>	Libellulidae	LC
Reptiles				
1	Oriental garden lizard	<i>Calotes uersicolor</i>	Agamidae	NA
2	Fan-Throated Lizard	<i>Sitanaponticeriana</i>	Agamidae	NA
3	Common skink	<i>Mabuya carinatus</i>	Scincidae	NA
4	Buff striped keelback	<i>Amphiesma stolatum</i>	Colubridae	LC
5	Common bronzeback tree snake	<i>Dendrelaphis tristis</i>	Colubridae	LC
6	Common krait	<i>Bungarus caeruleus</i>	Elapidae	LC
7	Russells wolf snake	<i>Lycodon fasilatus</i>	Colubridae	LC
8	Brahminy blindsnake	<i>Indotyphlope braminus</i>	Typhlopidae	LC
9	Rock dragon	<i>Psammophilus dorsalis</i>	Agamidae	LC
10	Indian vine snake	<i>Ahaetulla oxyrhynca</i>	Colubridae	NA
11	Blotched house gecko	<i>Hemidactylus triedrus</i>	Gekkonidae	LC
Aves				
1	Baya weaver	<i>Ploceus philippinus</i>	Ploceidae	LC
2	White – browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	LC
3	Great cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	LC
4	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
5	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	LC
6	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
7	Red junglefowl	<i>Gallus gallus</i>	Phasianidae	LC
8	Common myna	<i>Acridotheres tristis</i>	Sturnidae	LC

9	European bee- eater	<i>Merops apiaster</i>	Meropidae	LC
10	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
11	Black – winged stilt	<i>Himantopus Himantopus</i>	Recurvirostridae	LC
12	Crested serpent eagle	<i>Spilornis cheela</i>	Accipitridae	LC
13	Brahminy kite	<i>Haliastur indus</i>	Accipitridae	LC
14	Spotted owlet	<i>Athene brama</i>	Strigidae	LC
15	Black rumped flameback	<i>Dinopium benghalense</i>	Picidae	LC
16	White -browed bulbul	<i>Pycnonotus luteolus</i>	Pycnonotidae	LC
17	House sparrow	<i>Passer domesticus</i>	Passeridae	LC
18	Grey heron	<i>Ardea cinerea</i>	Ardeidae	LC
19	Indian peafowl	<i>Pavo cristatus</i>	Phasianidae	LC
20	Rose -ringed parakeet	<i>Psittacula krameri</i>	Psittaculidae	LC
21	Scaly – breasted munia	<i>Lonchura punctulata</i>	Estrildidae	LC
22	White -throated kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae	LC
23	House crow	<i>Corvus splendens</i>	Corvidae	LC
24	Asian koel	<i>Eudynamis scolopaceus</i>	Cuculidae	LC
25	Asian green bee- Eater	<i>Merops orientails</i>	Meropidae	LC
26	Little cormorant	<i>Microcarbo niger</i>	Microcarbo	LC
27	Painted stork	<i>Mycteria leucocephala</i>	Ciconiidae	NT
28	Shikra	<i>Accipiter badius</i>	Accipitridae	LC
29	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
30	Indian roller	<i>Coracias benghalensis</i>	Coraciidae	LC
31	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
32	Yellow – billed babbler	<i>Argya affinis</i>	Leiotherichidae	LC
33	Ashy – crowned sparrow lark	<i>Eremopterix griseus</i>	Alaudidae	LC
34	Small pratincole	<i>Glareola lactea</i>	Glareolidae	LC
35	Great egret	<i>Ardea alba</i>	Ardeidae	LC
36	Rock pigeon	<i>Columba livia</i>	Columbidae	LC
37	Eurasian collared – dove	<i>Streptopelia decaocto</i>	Columbidae	LC
38	Eurasian coot	<i>Fulica atra</i>	Rallidae	LC
39	Northern shoveler	<i>Spatula clypeata</i>	Anatidae	LC
40	Black kite	<i>Milvus migrans</i>	Accipitridae	LC
41	Red junglefowl	<i>Gallus gallus</i>	Phasianidae	LC
42	Common kingfisher	<i>Alcedo atthis</i>	Alcedo atthis	LC
43	Commen sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	LC
44	Striated heron	<i>Butorides striata</i>	Ardeidae	LC
45	Laughine dove	<i>Spilopelia senegalensis</i>	Columbidae	LC
46	Red vented bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	LC

47	Black winked kite	<i>Elanus caeruleus</i>	Accipitridae	LC
48	Common tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae	LC
49	Indian pond -heron	<i>Ardeola grayii</i>	Ardeidae	LC
50	Greater racket tailed drongo	<i>Dicrurus paradiseus</i>	Dicruridae	LC
Mammals				
1	House mouse	<i>Mus musculus</i>	Muridae	LC
2	Indian hare	<i>Lepus nigricollis</i>	Leporidae	LC
3	Jungle cat	<i>Felis chaus</i>	Felidae	LC
4	Cow	<i>Bos taurus</i>	Bovidae	NA
5	Goat	<i>Capra hircus</i>	Bovidae	NA
Amphibians				
1	Asian common toad	<i>Duttaphrynus melanostictus</i>	Bufoidea	LC
2	Chunam tree frog	<i>Polypedates maculatus</i>	Rhacophoridae	LC
3	Common skittering frog	<i>Euphlyctis cyanophlyctis</i>	Dicroglossidae	LC

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

3.5.3 Agriculture & Horticulture in Krishnagiri district

Krishnagiri district is one of the potential districts for cultivation of agricultural and horticultural crops. Total cultivated area of 224767 Hectares, out of which 180902 Ha Net cultivated area against the 5,14,325 Ha. of total geographical area. The total normal area cultivated under all crops is 224767 Hectares out of which 73046 Ha is under irrigated and 151720 ha area under rained crops. The major agricultural crops in the district are grown Paddy, Ragi, Redgram, Cowpea, Maize, Cumbu, Groundnut, Horsegram and minor millets. The major cultivated area of agricultural crops occupied by rained agriculture. The total number of 2,81,733 famers engaged in agriculture out of which 213023 are Marginal farmers (76%), 45970 are small farmers (16%), remaining 4615 farmers (8%) are medium and large farmers. Details of major field crops and horticulture within 1 km radius are given below.

Major Agricultural Crops

Major horticulture crops cultivated in this district are fruit crops like mango, banana, Sapota and guava, vegetables like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and horticulture in 1km radius is given in Table. 3.33 and Figure 3.31 Agricultural land in the study area.

Table 3.33 Major Crops in 1km radius

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

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 this district are fruit crops like mango, banana, Sapota and guava, vegetables like tomato, brinjal, Veandai, chillies, onion and tapioca, spices like turmeric. Details of major field crops and horticulture cultivation in 1km radius is given in Table 3.34.

Table 3.34 Major Field Crops & Horticulture cultivation in 1km radius.

Sl.NO	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Banana	<i>Musa</i>	Musaceae
2	Mango	<i>Mangifera indica</i>	Anacardiaceae
3	Guava	<i>Psidium guajava</i>	Myrtaceae
4	Sapota	<i>Manilkara zapota</i>	Sapotaceae
5	Lemon	<i>Citrus × limon</i>	Rutaceae
6	Papaya	<i>Carica papaya</i>	Caricaceae
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	Veandai kai	<i>Abelmoschus esculentus</i>	Mallows
13	Moringa	<i>Moringa oleifera</i>	Moringaceae
14	Mullangi	<i>Raphanus sativus</i>	Brassicaceae
Flowers			
15	Jasmine	<i>Jasminum</i>	Jasminaceae
16	Sambanthi poo	<i>Crysanthimum</i>	Asteraceae
17	Rose & Jathi	<i>Rosa</i>	Rosaceae
18	Tuberose	<i>Polianthes tuberosa</i>	Asparagus
Spices and Condiments			
19	Chillies	<i>Capsicum frutescens</i>	Solanaceae
20	Turmeric	<i>Curcuma longa</i>	Zingiberaceae
21	Tamarind	<i>Tamarindus indica</i>	Legumes
22	Curry leaf	<i>Murraya koenigii</i>	Rutaceae

Results

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

3.6 SOCIO ECONOMIC ENVIRONMENT

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

3.6.1 Objectives of the Study

The main objectives of the study are as follows:

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

3.6.2 Scope of Work

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

3.6.3 Socio-Economic Status of Study area

The study area covers 9 villages including Mallapadi, Achamangalam, Kondappanayakempalli, Jagadevipalayam, Batlapalli, Ikondamkothapalli, Guttur, Kannandahalli, Mahadevagollahalli. Pachapalayam is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 3.35 and for other 9 villages in Tables 3.36 - 3.38.

Table 3.35 Pasinayanapalli Village Population Facts

Pasinayanapalli	
Number of Households	631
Population	2441
Male Population	1224
Female Population	1217
Children Population	272
Sex-ratio	996
Literacy	64.27%
Male Literacy	68.80%
Female Literacy	59.78%
Scheduled Tribes (ST) %	32
Scheduled Caste (SC) %	444
Total Workers	1183
Main Worker	614
Marginal Worker	569

Table 3.36 Population and Literacy Data of Study Area

Village	No of Households	Total Population Person	Total Population Male	Total Population Female	Literates Population Person	Literates Population Male	Literates Population Female	Illiterate Persons	Illiterate Male	Illiterate Female
Mallapadi	1840	7707	3902	3805	5084	2846	2238	2623	1056	1567
Achamangalam	974	4179	2150	2029	2821	1634	1187	1358	516	842
Kondappanayakempalli	846	3653	1903	1750	2312	1331	981	1341	572	769
Jagadevipalayam	1607	6747	3398	3349	4474	2464	2010	2273	934	1339
Batlapalli	1199	5036	2625	2411	3156	1797	1359	1880	828	1052
Ikondamkothapalli.	977	3964	1982	1982	2484	1376	1108	1480	606	874
Guttur	1175	4996	2562	2434	3269	1808	1461	1727	754	973
Kannandahalli	2055	8562	4485	4077	5690	3273	2417	2872	1212	1660
Mahadevagollahalli	1395	5855	3015	2840	3477	2028	1449	2378	987	1391

Table 3.37 Details on Educational Facilities, Water, and Drainage & Health Facilities

Village	Private Primary School (Numbers)	Govt Vocational Training School/ITI (Numbers)	Primary Health Centre (Numbers)	Tap Water Untreated	River/Canal	Is the Area Covered under Total Sanitation Campaign (TSC)?	Telephone (landlines)	Public Bus Service	Gravel (kutchra) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Nutritional Centres-Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Mallapadi	2	0	0	1	2	2	1	2	1	2	1	2	1	2	1
Achamangalam	2	0	0	1	2	2	1	1	1	2	1	1	1	1	1
Kondeppanayanapalli	2	0	0	1	2	1	1	1	1	2	2	1	1	1	1
Jagadevipalayam	2	0	1	1	2	1	1	1	1	1	1	1	1	1	1
Batlapalli	2	0	0	1	2	2	2	1	1	2	2	2	1	1	1
Ikondamkothapalli	2	0	0	1	2	2	1	1	1	2	2	1	1	1	1
Guttur	2	0	0	1	2	2	1	1	1	2	2	1	1	1	1
Kannandahalli	2	0	1	1	2	1	1	1	1	1	1	1	1	1	1
Mahadevagollahalli	2	0	0	1	2	2	1	1	1	2	2	1	1	1	1

Table 3.38 Workers' Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Working Population Male	Main Working Population Female	Main Cultivator Population Person	Main Agricultural Labourers Population Person	Main Other Workers Population Person	Non-Working Population Person
Mallapadi	3208	2226	982	3015	2130	885	423	936	1604	4499
Achamangalam	2157	1310	847	1688	1140	548	403	637	634	2022
Kondappanayakempalli	1666	1121	545	1445	936	509	222	701	512	1987
Jagadevipalayam	2720	1911	809	2093	1566	527	253	755	1033	4027
Batlapalli	2311	1487	824	1893	1372	521	219	836	718	2725
Ikondamkothapalli.	1985	1179	806	1670	1008	662	283	879	499	1979
Guttur	2566	1531	1035	2011	1246	765	245	1366	376	2430
Kannandahalli	3877	2599	1278	2723	1935	788	391	936	1360	4685
Mahadevagollahalli	2899	1810	1089	2491	1642	849	512	1106	825	2956

3.6.4 Recommendation and Suggestion

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

3.6.5 Summary & Conclusion

The socio-economic study in the study area gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from a lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Colour Granite is proposed to be transported mainly through Village Rode and Uthangarai to Krishnagiri NH-66 road as shown in Table 3.39-3.42 and in Figure 3.30. and 500-meter radius residential map shown in Figure 3.29. Traffic density measurements were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station. During each shift one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Table 3.39 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Rode	0.24 Km W	Village Road
TS2	Uthangarai – Krishnagri NH66	4.7 km N	Uthangarai – Krishnagri NH66

Source: On-site monitoring by GTMS FAE & TM

Table 3.40 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	18	54	30	30	60	30	114
TS2	117	351	50	50	98	49	450

Source: On-site monitoring by GTMS FAE & TM

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

Table 3.41 Multi Colour Granite Transportation Requirement

Transportation of Colour Granite per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	3	9

Source: Approved Mining Plan

Table 3.42 Summary of Traffic Volume

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Village Rode	114	9	123	1200
Uthangarai – Krishnagri NH66	450	9	459	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.

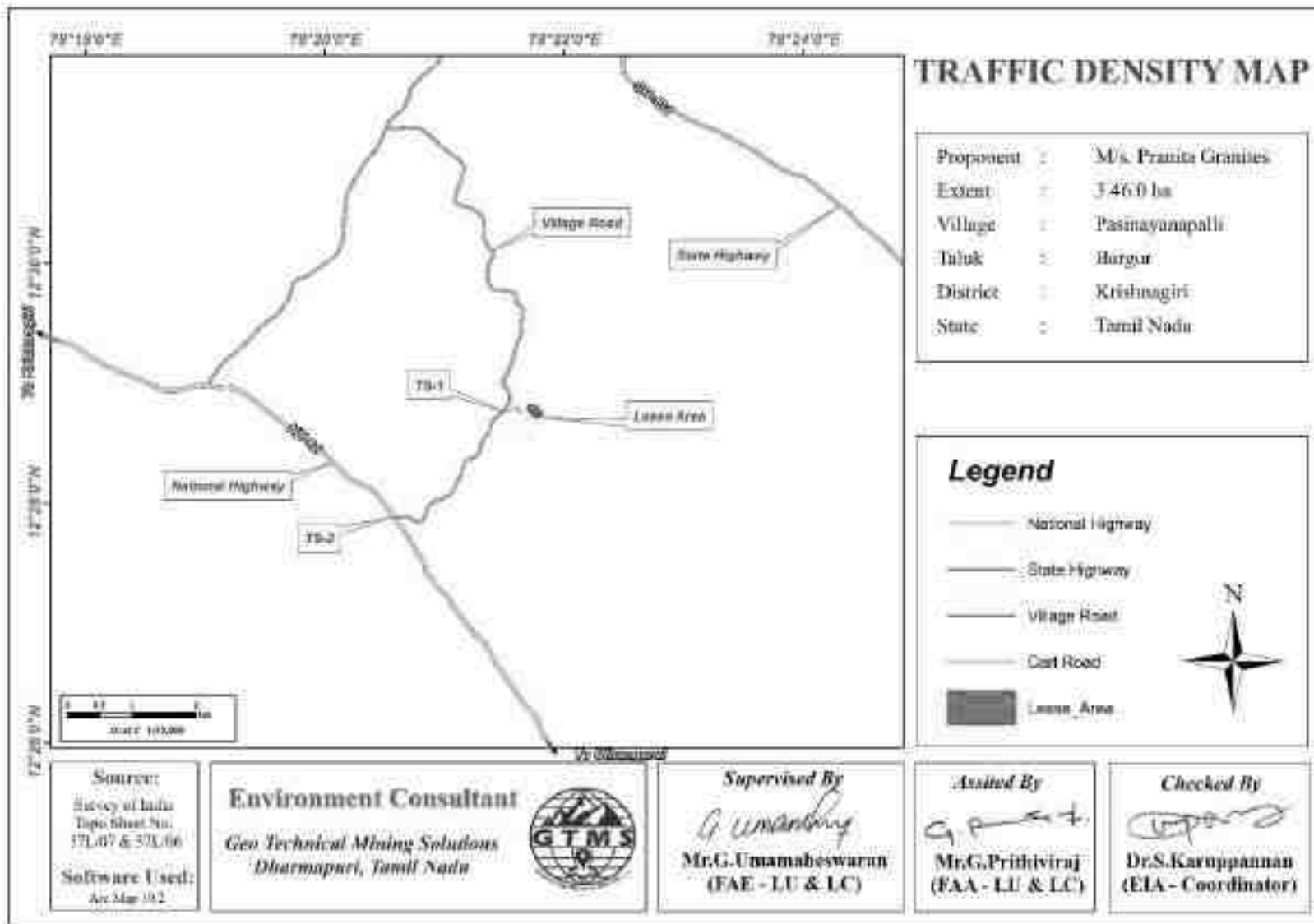


Figure 3.29 Traffic Density Map

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, National Park within the project area to 10km radius. There is no Protected Forest area within 10 km radius from the proposed project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.43. Field photographs of baseline data collection are shown in Figure 3.30.

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

S. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
2	Reserve Forest	Togarappalli R.F	2.35km -SW
		Bargur R.F	6.50km-North
		Nandhibanda R.F	7.59km-NE
		Varatanapalli R.F	8.26km-NW
		Baleguli II R.F	9.16km-SW
		Neralakotta R.F	10.32km-NW
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Lake	0.63km North
		Mattur River	1.68km SW
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Critically Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Notified Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10km radius

Source: Survey of India Toposheet





Figure 3.30 Field Photographs Showing Baseline Data Collection

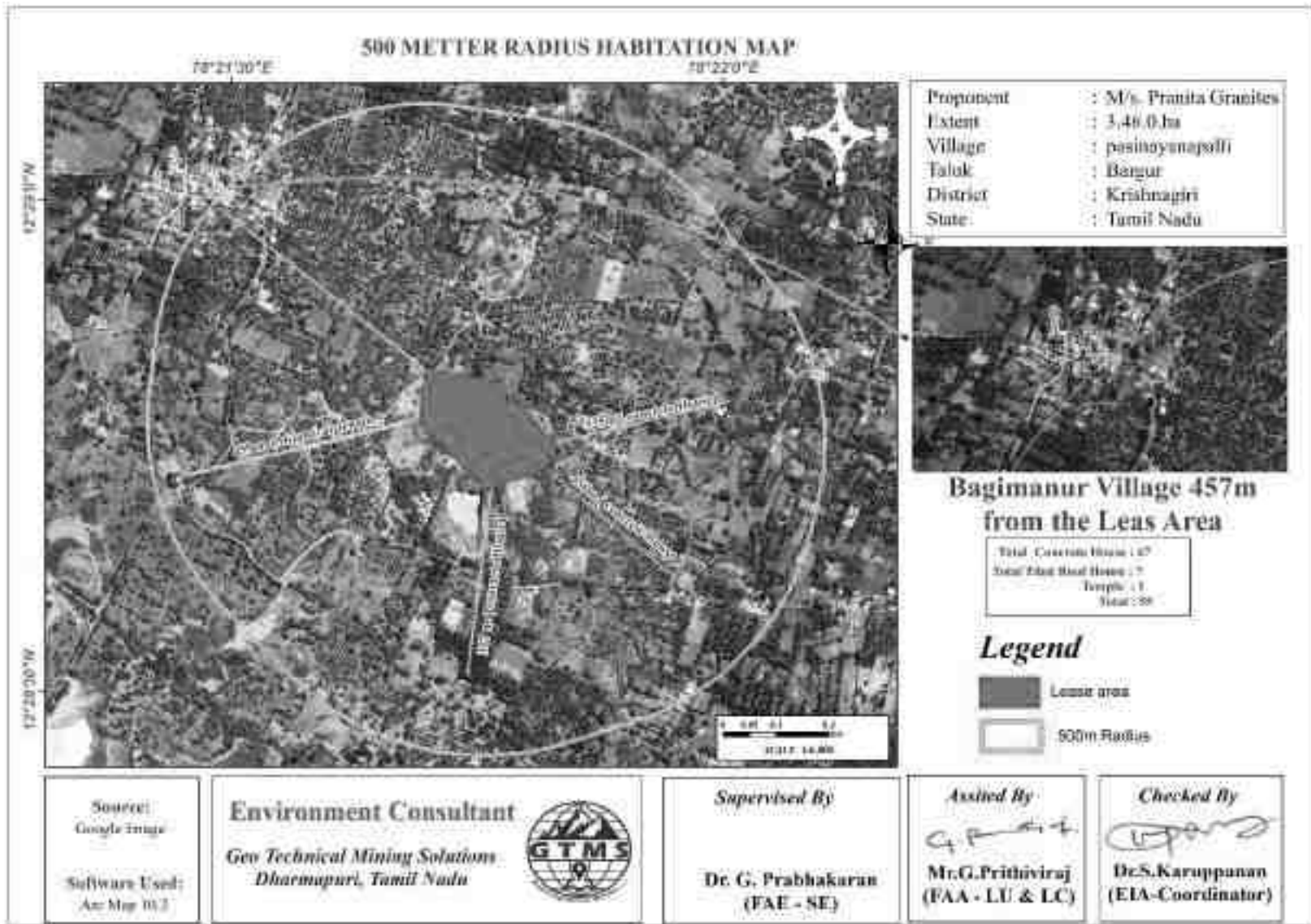


Figure 3.31 500 Metter Radius Habitation Map

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction. This chapter discusses the anticipated impacts on soil, land, water, air, noise, biological, and socioeconomic environments.

4.1 LAND ENVIRONMENT

4.1.1 Anticipated Impact

- ❖ Permanent change on land use and land cover.
- ❖ Change in topography of the mine lease area.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles.
- ❖ Degradation of the aesthetic environment of the core zone due to quarrying
- ❖ Soil erosion and sediment deposition in the nearby agricultural fields during the rainy season
- ❖ Increase in agricultural productivity of land when mine water is discharged to the surrounding lands for irrigation.

4.1.2 Common Mitigation Measures from Proposed Project

- ❖ Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- ❖ Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir.
- ❖ In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimize dust emissions.
- ❖ Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

4.2.1 Anticipated Impact on Soil Environment

- ❖ 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

4.2.2 Common Mitigation Measures from proposed project

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

4.3 WATER ENVIRONMENT

4.3.1 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 4.28 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

4.3.2 Common Mitigation Measures for the Proposed Project

- ❖ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ❖ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits
- ❖ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse

- ❖ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ❖ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ❖ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program

4.4 AIR ENVIRONMENT

4.4.1 Anticipated Impact from proposed project

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

4.4.1.1 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chauhya et al.,2001. The equations used for SPM, SO₂, and NO_x emission estimation have been given in Table 4.1

Table 4.1 Empirical Formula for Emission Rate from Overall Mine

Source	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).
Overall	SO ₂	Area	$E = a^{0.14} \{u/(1.83 + 0.93u)\}$	u = Wind speed(m/s); p =

Mine			$\left[\frac{p}{0.48+0.57p} \right] + \left[\frac{b}{14.37+1.15b} \right]$	Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).
Overall Mine	NO _x	Area	$E = a \cdot 0.25 \left\{ \frac{u}{4.3+32.5u} \right\} \left[1.5p + \left[\frac{b}{0.06+0.08b} \right] \right]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b= Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. 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 PM₁₀, SO₂ and NO_x emission results have been given in Table 4.2.

Table 4.2 Estimated Emission Rate

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m ²	Calculated Value (g/s/m ²)
Overall Mine	PM _{2.5}	0.196398109	34600	5.67625E-06
Overall Mine	PM ₁₀	1.309320728	34600	3.78416E-05
Overall Mine	SO ₂	0.01376666	34600	3.9788E-07
Overall Mine	NO _x	0.017320939	34600	5.00605E-07

4.4.1.2 Modelling of Incremental Concentration

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500 m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.6.

4.4.1.3 Model Results

The post project Resultant Concentrations of PM10, PM2.5, SO2 & NOX (GLC) is given in the table shown below:

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	Direction	PM _{2.5} concentrations(µg/m ³)			Comparison against air quality standard (60 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	17.2	9.8	27	Below standard	57.0	Not significant
AAQ2	1.08	N	15.0	0.5	15.5		3.3	
AAQ3	2.84	SW	19.8	0	19.8		0.0	
AAQ4	4.54	NW	21.3	0.5	21.8		2.3	
AAQ5	3.70	SSW	20.3	0	20.3		0.0	
AAQ6	3.61	NE	17.4	0	17.4		0.0	

Table 4.4 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area (km)	Direction	PM ₁₀ concentrations(µg/m ³)			Comparison against air quality standard (100 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	38.5	15.2	53.7	Below standard	39.5	Not significant
AAQ2	1.08	N	39.1	1	40.1		2.6	
AAQ3	2.84	SW	41.3	0	41.3		0.0	
AAQ4	4.54	NW	41.8	0.5	42.3		1.2	
AAQ5	3.70	SSW	42.5	0	42.5		0.0	
AAQ6	3.61	NE	34.1	0.5	34.6		1.5	

Table 4.5 Incremental & Resultant GLC of SO₂

Station ID	Distance to core area (km)	Direction	SO ₂ concentrations(µg/m ³)			Comparison against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	11.7	4.73	16.43	Below standard	39.5	Not significant
AAQ2	1.08	N	11.0	0.5	11.5		2.6	
AAQ3	2.84	SW	16.9	0	16.9		0.0	
AAQ4	4.54	NW	17.0	0.5	17.5		1.2	
AAQ5	3.70	SSW	17.5	0	17.5		0.0	
AAQ6	3.61	NE	9.4	0	9.4		1.5	

Table 4.6 Incremental & Resultant GLC of NO_x

Station ID	Distance to core area (km)	Direction	NO _x concentrations(µg/m ³)			Comparison Against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	17.3	4.74	22.04	Below standard	27.4	Not significant
AAQ2	1.08	N	17.0	0.5	17.5		2.9	
AAQ3	2.84	SW	22.0	0	22		0.0	
AAQ4	4.54	NW	21.3	0.5	21.8		2.3	
AAQ5	3.70	SSW	20.3	0	20.3		0.0	
AAQ6	3.61	NE	15.8	0	15.8		0.0	

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.

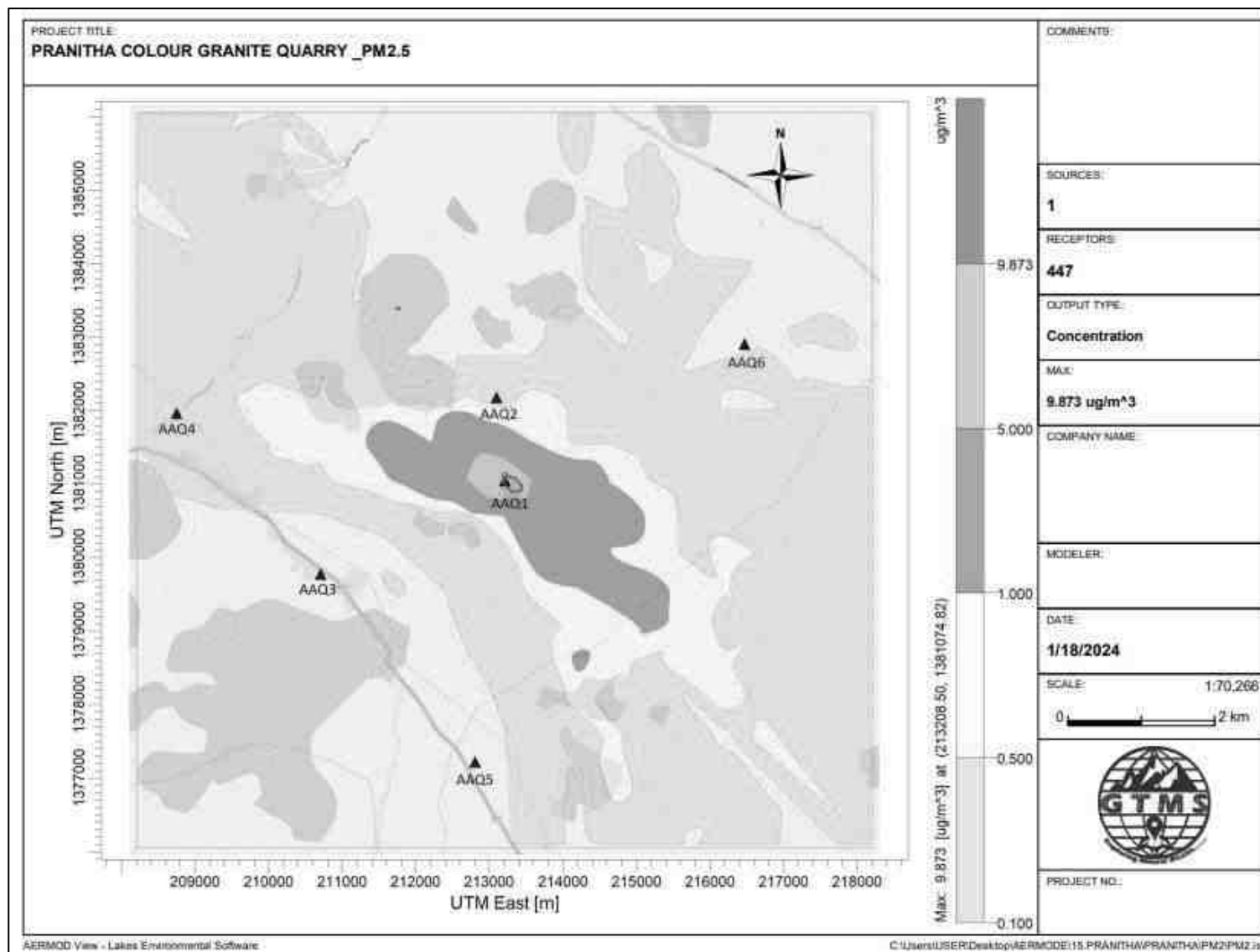


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

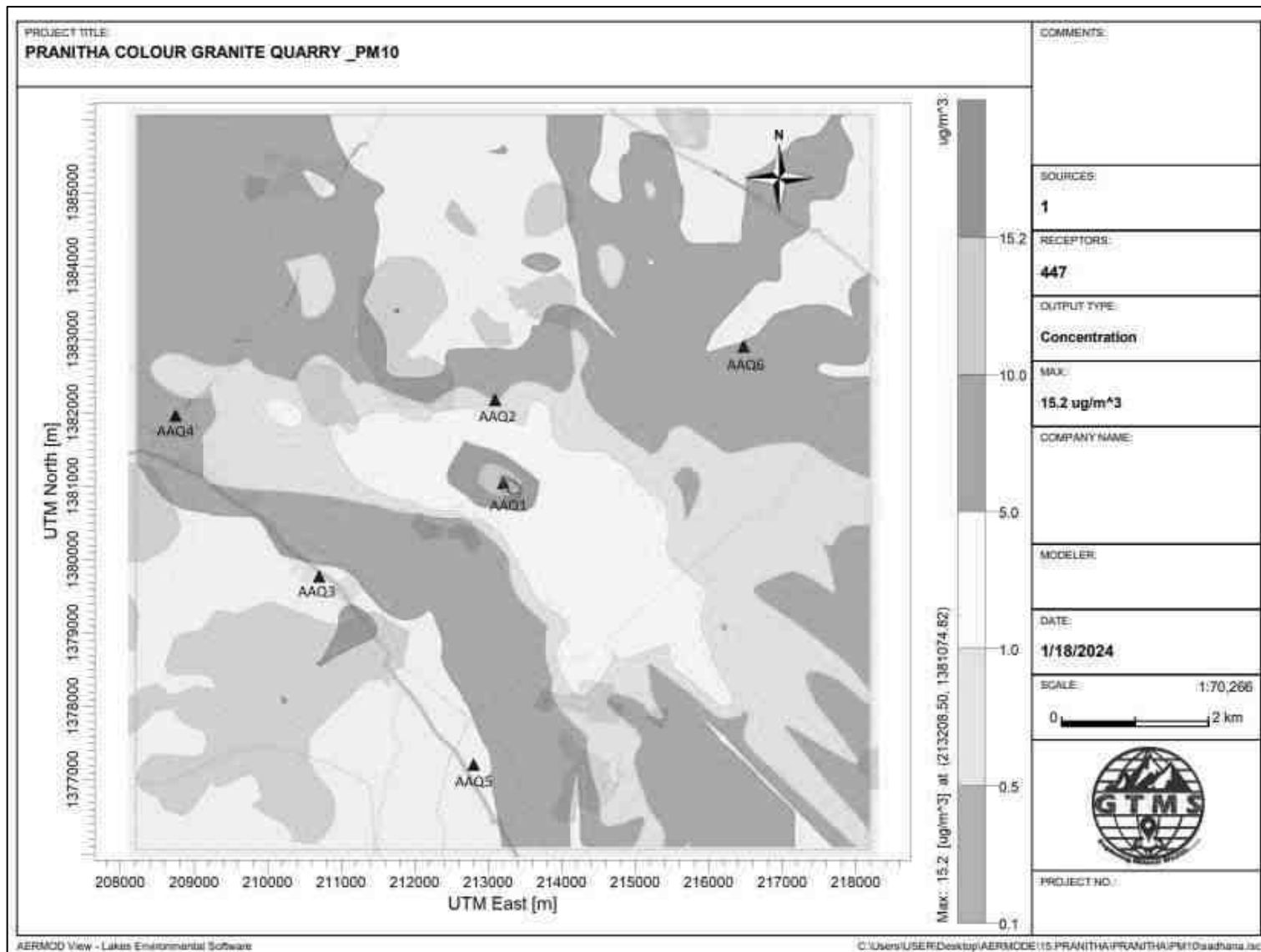


Figure 4.2 Predicted Incremental Concentration of PM₁₀

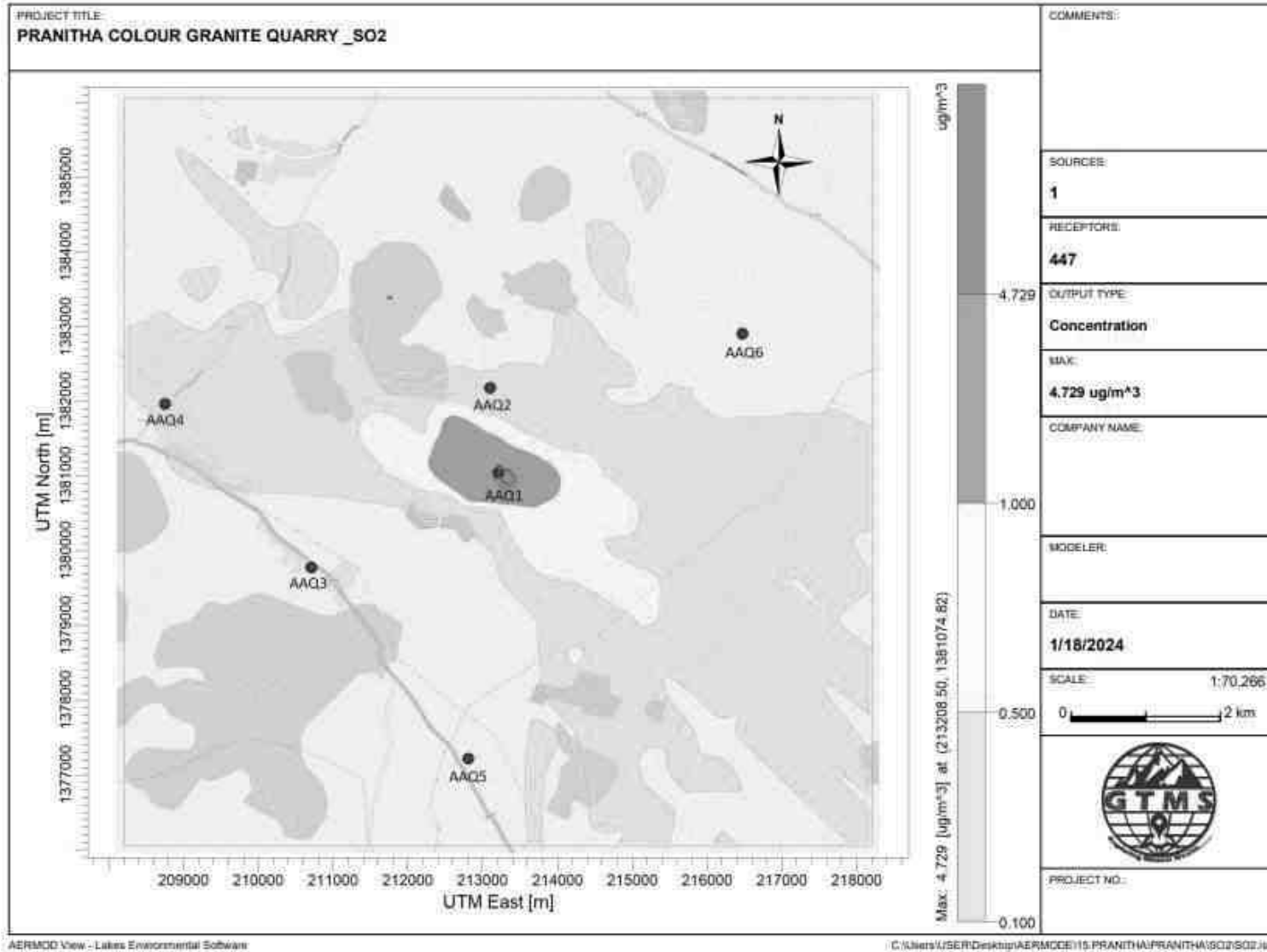


Figure 4.3 Predicted Incremental Concentration of SO₂

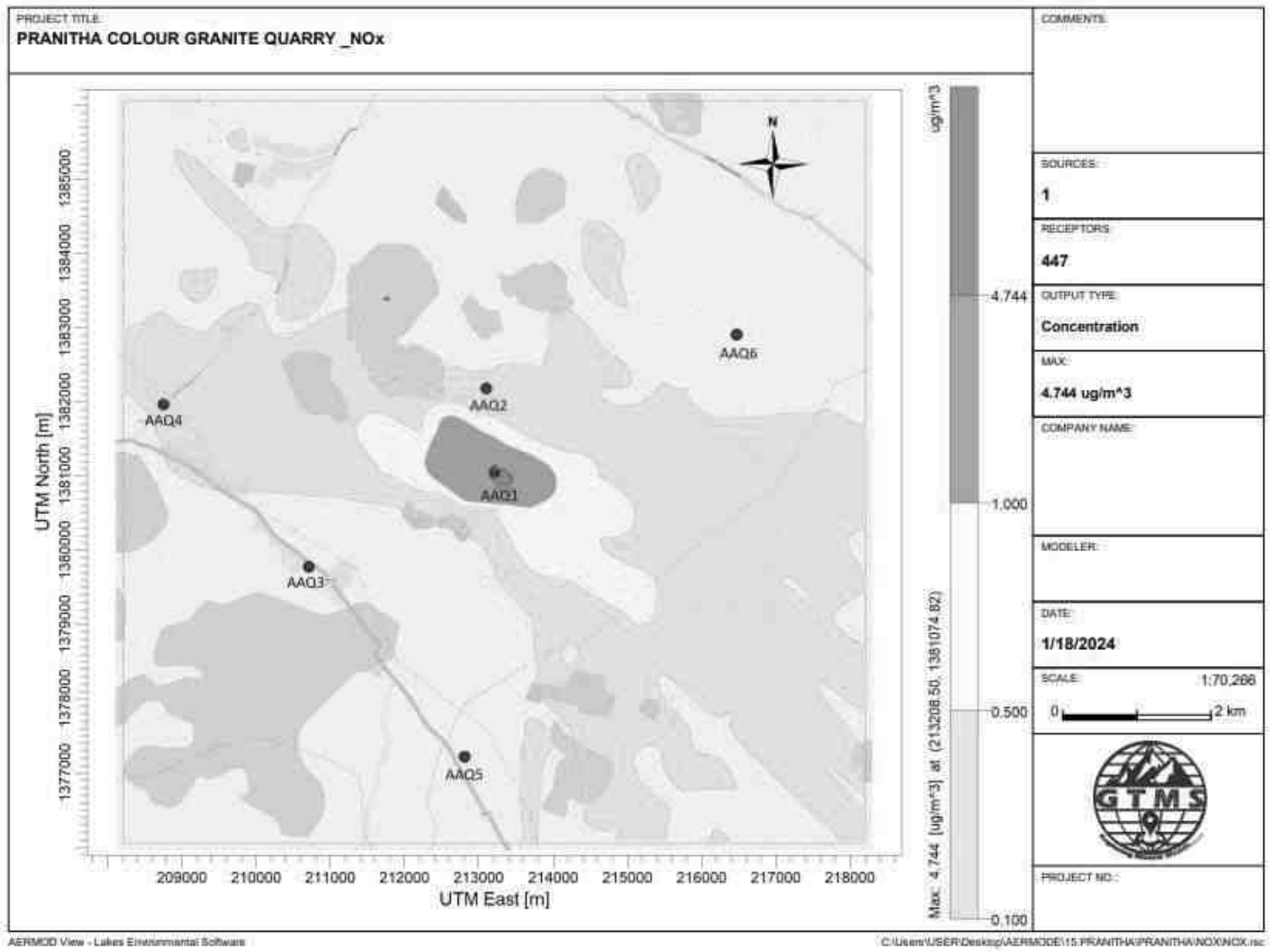


Figure 4.4 Predicted Incremental Concentration of NO_x

4.5 NOISE ENVIRONMENT

Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves which are propagated outwards from the source through the air at a speed of 1, 100 ft/sec with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A). For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using a mathematical model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where, Lp_1 & Lp_2 are sound levels at points located at distances r_1 and r_2 from the source; $Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots\}$$

4.5.1 Anticipated Impact

The attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are: source data, receptor data, and attenuation factor. Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.7.

Table 4.7 Activity and Noise Level Produced by Machinery

S.No.	Machinery / Activity	Impact on Environment	Noise Produced in dB(A) at 50 ft from source*
1	Jack Hammer	Yes	88
2	Compressor	No	81
3	Excavator	No	85
4	Tipper	No	84
Total Noise Produced			91.22

*50 feet from source = 15.24 meters

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

The total noise to be produced by mining activity is calculated to be 91.22 dB (A). Therefore, we have considered equipment and operation noise levels (max) to be approx. 91.22 dB (A) for noise prediction modelling. The results of noise prediction modelling are shown in Table 4.8.

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)
Near Core	70	37.3	42.48	43.63
Kondappanayakempalli	420	43.2	26.91	43.30
Jagadevi	2800	45.6	10.44	45.60
Jagadevi	4580	45.8	6.16	45.80
Billakottai	3800	45.4	7.78	45.40
Sakilnatham	3620	39.5	8.21	39.50
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000. Therefore, no impact is anticipated on the noise environment due to the project

4.5.2 Common Mitigation Measures

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

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

- ❖ Silencers / mufflers will be installed in all machineries
- ❖ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise
- ❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness
- ❖ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

4.5.3 Ground Vibrations

Major source of ground vibrations due to mining activities is blasting. In this mining project, no explosives are proposed to break the rocks. Instead, cracking powder has been proposed for cracking the solid rock along line of drilling. Therefore, it is not necessary to calculate peak particle velocity.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 Impact on Ecology and Biodiversity

- There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region.
- Carbon released from quarrying machineries and tippers during quarrying would be 1304 kg per day, 352033 kg per year and 1760166 kg over five years, as provided in Table 4.9.

Table 4.9 Carbon Released During Five Years of Colour Granite Production

	Per day	Per year	Per five years
Fuel consumption of excavator	94	25424	127118
Fuel consumption of compressor	0	0	0
Fuel consumption of tipper	392	105932	529660
Total fuel consumption in liters	487	131356	656778
CO ₂ emission in kg	1304	352033	1760166

4.6.2 Mitigation Measures on Flora

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.

Carbon Sequestration

- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 41478 kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.13), about 1730 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 12940 kg of the total carbon, as provided in Table 4.10.

Table 4.10 CO₂ Sequestration

CO ₂ sequestration in kg	154	41478	207392
Remaining CO ₂ not sequestered in kg	1150	310555	1552774
Trees required for environmental compensation	12940		
Area required for environmental compensation in hectares	26		

Greenbelt Development

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone. Greenbelt development plan and budget required for green belt development plan are given in Tables 4.11-4.13. For greenbelt development, species are recommended, as shown in Table 4.11 on the basis of:

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

Table 4.11 Recommended Species for Greenbelt Development Plan

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

Table 4.12 Greenbelt Development Plan

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m ²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	692	554	6228
	Number of plants outside the mine lease area		
	1038	830	9342
Total	1730	1384	15570

Table 4.13 Budget for Greenbelt Development Plan

Activity	Plantation in the construction phase(3Months)	Cost	Capital Cost (Rs.)	Recurring Cost-per annum
Plantation inside the mine lease area (in safety margins)	692	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))"	138400	20760
Plantation outside the area	1038	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	311400	31140
Total			449800	51900

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

Mitigation Measures on Fauna

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

4.6.4 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.
- ❖ It is a granite quarry, no explosives are used, there is no possibility of vibration and dust, thus there is no possibility of damage to the adjacent agricultural land.
- ❖ Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled.
- ❖ A green belt will be created in 7.5 safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ❖ Transportation of material will be carried out during day time and material will be covered with tarpaulin
- ❖ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust.

4.7 SOCIO ECONOMIC ENVIRONMENT

The socio-economic impacts of mining are many. Impacts of a mine project may be positive or Negative. The adverse impacts attribute to physical displacement due to land acquisition, which is followed by loss of livelihood, mental agony, changes in social structure, and risk to food security etc., People are also directly affected due to pollution. Social Impact Assessment (SIA) is a process of analysis, monitoring and managing the social consequences of a project. Study on Socio-economic status has already been carried out using primary socio-economic survey for generating the baseline data of Socio-economic status.

4.7.1 Anticipated Impact

From the primary Socio-economic survey & through secondary data available from established literature and census data 2011, it is found that there would be positive impact on Socio-economic condition of the nearby area. There is no habitation within 300 m of the proposed mining lease area. Therefore, no major impact is anticipated on the nearby habitation during the entire life of the mine.

4.7.2 Mitigation Measures

- ❖ Good maintenance practices will be adopted for plant 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 will occur during the operational phase of mining and primarily include the following:

- ❖ Respiratory hazards
- ❖ Noise

- ❖ Physical hazards
- ❖ Occupational Health Survey

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

- ❖ The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)
- ❖ No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- ❖ Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- ❖ Periodic medical hearing checks will be performed on workers exposed to high noise levels

4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards

- ❖ Specific personnel training on work-site safety management will be taken up;
- ❖ Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- ❖ 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 general physical tests, audiometric tests, full chest, X-ray, lung function tests, spiro metric tests, periodic medical examination – yearly, Lung function/ Silicosis 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 mineral mining projects. 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.

Objective of Mine closure

- ❖ To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- ❖ To protect public health and safety of the surrounding habitation
- ❖ To minimize environmental damage
- ❖ To conserve valuable attributes and aesthetics
- ❖ To overcome adverse socio-economic impacts.

4.10.1 Mine Closure criteria

The criteria involved in mine closure are discussed below:

4.10.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods

and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.

4.10.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharge likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc. could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

4.10.1.3 Biological Stability

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

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

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

CHAPTER V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

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

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

5.2 ANALYSIS OF ALTERNATIVE SITE

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

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

The proposed mining lease areas have following advantages:

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

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

CHAPTER VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

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

- ❖ Seeking expert's advice when needed.

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

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

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

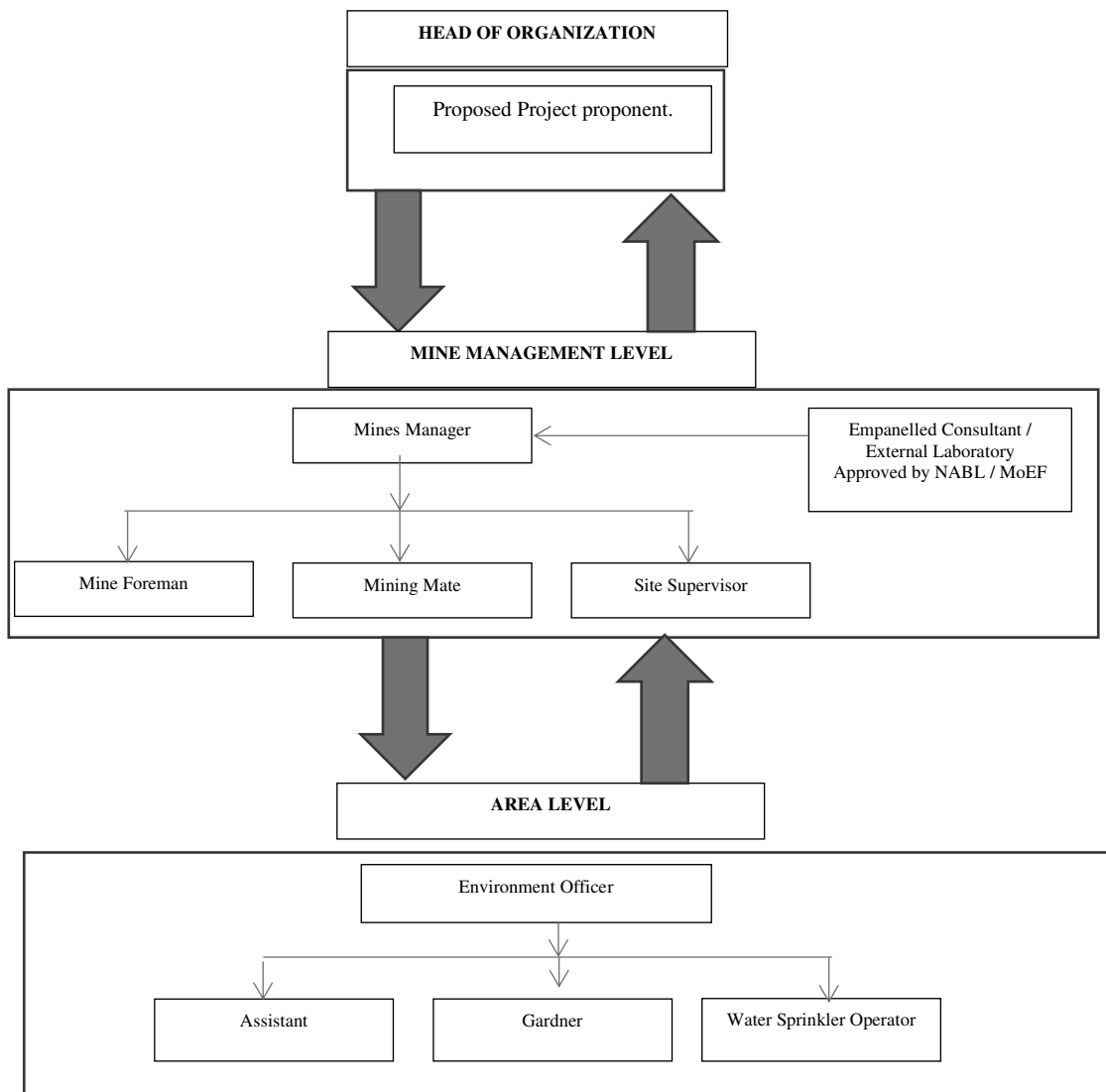


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

Table 6.1 Implementation Schedule for Proposed Project

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

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

- ❖ Soil quality and
- ❖ Greenbelt development

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

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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

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

6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

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

Table 6.3 Environment Monitoring Budget

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

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER - VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

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

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

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

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

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

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

Table 7.1 Risk Assessment & Control Measures for Proposed Project

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

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

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

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

- ❖ Rescue and medical treatment of casualties;
- ❖ Safeguard other people;

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

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

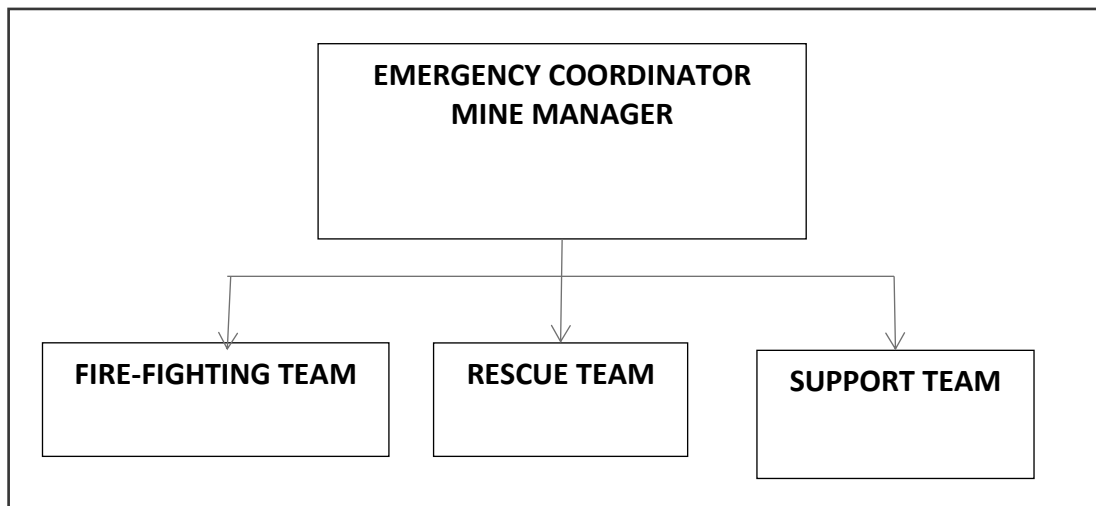


Figure 7.1 Disaster management team layout for proposed project

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 on air & noise environment is mainly anticipated due to drilling, excavation, movement of HEMM and transportation activities in all the quarries (proposed and existing) within the cluster. For this cumulative study, 2 proposed projects, known as P1&P2. are taken into consideration. The details of P1 have been given in Table 1.2 and the detail of P2 is given in the Table 7.2

Table 7.2 Salient Features of Proposed Project Site “P2”

Name of the Quarry	Tmt.M.Sadhana Colour granite		
S.F.No.	366 (Part)		
Land Type	Government land		
Extent	1.87.0 ha		
Existing Depth	30 m		
Toposheet No	57 L/07		
Latitude between	12°28'42.19792"N to 12°28'49.68820"N		
Longitude between	78°21'38.32342"E to 78°21'45.51566"E		
Highest Elevation	474 m ASML		
Topography	Elevated Topography		
Geological Reserves	Granite 20%	Granite 80%	Top Soil
	129823	519290	3145
Mineable Reserves	Granite 20%	Granite 80%	Top Soil
	45062	180246	1560
Proposed production for 5 years	Granite 20%	Granite 80%	Top Soil
	14031	56123	1560
Method of Mining	The quarrying operation is carried out by Open cast semi mechanized mining method with 5.0 m vertical bench with a bench width of 5.0 m.		

Machinery proposed	Jack Hammer	4
	Compressor	2
	Tippers	2
	Excavator	1
Proposed manpower deployment	22	
Project cost	Rs. 3,00,70,000/-	
CER cost	Rs 6,00,000/-	
Proposed Water Requirement	3.3 KLD	

7.4.1 Air Environment

Calculation of the cumulative production load of granite from the 2 proposed project within the cluster have been given in the Table.7.3

Table 7.3 Cumulative Production Load of Granite

Quarry	Colour Granite @20% recovery in m ³				Granite Waste @ 80% in m ³				Weathered Rock in m ³			
	5 years in m ³	Per Year in m ³	Per Day in m ³	Lorry Load Per day	5 years in m ³	Per Year in m ³	Per Day in m ³	Lorry Load Per day	5 years in m ³	Per Year in m ³	Per Day in m ³	Lorry Load Per day
P1	27729	5546	21	4	110916	22183	82	14	20253	4051	15	3
P2	14031	2806	10	2	56123	11225	41	7	36030	7206	27	4
Total	41760	8352	31	6	167039	33408	123	21	56283	11257	42	7

The overall production of 2 quarries is of about granite recovery of 20% is 31m³ per day with a capacity of 6 trips per day, about granite waste @80% is 123m³ per day with a capacity of 21 trips and weathered rock is of 42m³ per day with a capacity of 7 trips per day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact from the two proposed projects on air environment of the cluster have been provided in Table 7.4. The cumulative values resulting from the two projects for each pollutant do not exceed the permissible limits set by CPCB

Table 7.4 Incremental and Resultant Ground Level Concentration from the two Quarry

Pollutants	Baseline Data($\mu\text{g}/\text{m}^3$)	Incremental Values($\mu\text{g}/\text{m}^3$)		Cumulative Value ($\mu\text{g}/\text{m}^3$)
		P1	P2	
PM _{2.5}	18.5	9.8	8.3	36.6
PM ₁₀	39.5	15.2	12.7	67.4
SO ₂	13.9	4.73	3.93	22.56
NO ₂	18.9	4.74	3.94	27.58

Source: Emission Calculations

7.4.2 Noise Environment

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

Table 7.5 Predicted Noise Incremental Values from Cluster

Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	420	N	43.2	26.91	43.30	
Habitation Near P2	420	N	43.2	26.91	43.30	
Cumulative Noise (dB(A))					46.31	

Source: Lab Monitoring Data

The cumulative analysis of noise due to two proposed project shows that habitation near P1 will receive about 46.31dB (A), as shown in Table 7.5. The cumulative results for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time.

7.4.3 Socio Economic Environment

Socio Economic benefits of the 2 proposed projects were calculated and the results have been shown in Table 7.6 and the 2 projects together will contribute Rs.12,00,000 towards CER fund.

Table 7.6 Socio Economic Benefits from 2 Mines

Location ID	Project Cost	CER Cost
P1	Rs.3,80,41,500	Rs. 6,00,000
P2	Rs.33,50,000	Rs. 6,00,000
Grand Total	Rs.4,13,91,500	Rs. 12,00,000

Table 7.7 Employment Benefits from 2 Mines

Location ID	Employment
P1	27
P2	22
Grand Total	49

A total of 49 people will get direct employment due to 2 proposed mines in cluster

7.4.4 Ecological Environment

Table 7.8 Greenbelt Development Benefits

ID	No of Trees proposed to be planted	Area to be Covered(m ²)	Name of the Species	No. of Trees expected to be grown @ 80% survival rate
P1	1730	15570	Azadirachta indica, Albizia lebbeck, Delonix regia, Tectona grandis, etc.,	1384
P2	935	8415		748
Total	2665	23985		2132

Cumulative studies show that the two proposed projects will plant about 2665 native tree species like Neem, Teak, etc both inside and outside the lease area. It is expected that 80 % of trees, i.e., 2132 trees will survive in this green belt development program.

7.4.5 Traffic Density

The proposed project will add 69 truckloads per day, accounting for an increase of 207 PCUs to the nearby roads.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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

7.5.1 Objective

- ❖ To investigate the actual supply chain network of plastic waste.
- ❖ To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste

- ❖ Preparation of a system design layout, and necessary modalities for implementation and monitoring.

A detailed action plan to manage plastic waste has been provided in Table 7.9.

Table 7.9 Action Plan to Manage Plastic Waste

S. No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance.	Mines Manager
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste.	Mines Manager
3	Collection of plastic waste.	Mines Foreman
4	Setting up of Material Recovery Facilities.	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities.	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers.	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction.	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility.	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance.	Mine Owner

Source: Proposed by FAEs and EC

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Pasinayanapalli Village aims to produce 27729 m³ of multi-colour granite over a period of 5 years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits:

- ❖ Increase in Employment Potential
- ❖ Improvement in Socio-Economic Welfare
- ❖ Improvement in Physical Infrastructure
- ❖ Improvement in Social infrastructure

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 27 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 about 10 persons in the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

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

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily

temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

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

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

8.6 CORPORATE SOCIAL RESPONSIBILITY

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

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 10 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 Pasinayanapalli Village. CSR budget is allocated.

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III dated 01.05.2018. As per para 6 (II) of the office memorandum, being a green field project & capital investment is ≤ 100 crores, the proposed project shall contribute 2% of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund on the basis of the extent of the project. Therefore, **Rs. 600000** 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.6,00,000
	Total	Rs.600000

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

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs.14,01,21,237** to the state government through various ways, as provided in Table 8.2.

Table 8.2 Project Benefits to the State Government

Particulars	Budget (Rs.)	
	Granite Recovery @20%	Granite Waste @80%
CER	6,00,000	---
Seigniorage @ Rs.3133/m ³ of Granite Recovery & @ Rs.265/m ³ of Granite Waste	8,68,74,957	2,93,92,740
District Mineral Foundation Tax @ 10% of Seigniorage	86,87,496	2939274
Green Tax @ 10% of Seigniorage	86,87,496	2939274
Total	10,48,49,949	35271288

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.Pranita Granites** will:

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

10.1.1 Description of the Administration and Technical Setup

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

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

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

10.2 Budgetary Provision for Environmental Management

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

Table 10.1 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost (Rs.)	Recurring Cost/annum (Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	34600	34600
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed sprinkler installation and new water tanker cost for capital; and water sprinkling (thrice a day) cost for recurring	800000	50000
	Air quality will be regularly monitored as	Yearly compliance as per CPCB norms	0	50000

	per norms within ML area & ambient area			
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	100000	10000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the atmosphere	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of speed Governors @ Rs. 5000/- per tipper/dumper deployed	10000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of exhaust fumes	0	2500
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual)	0	69200
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			994600	256300

Noise Environment	Source of noise will be transportation vehicles, and HEMM. For this, proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done.	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implementations that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0

	Provision for portable blaster shed	Installation of portable blasting shelter	0	0
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 tons of blasted material	0	0
Total Noise Environment			0	0
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	34600	17300
Total Water Environment			34600	17300
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Total Waste Environment			30000	22000
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed display board at the quarry entrance as permanent structure	10000	1000
Total Implementation of EC, Mining Plan			10000	1000

Occupational Health and Safety	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	108000	27000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	27000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	13840
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	692000	34600
	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	173000	34600
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 /	0	780000

		34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate		
Total Occupational Health and Safety			1023000	925040
Development of Green Belt	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring))"	138400	20760
		Avenue plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	311400	31140
Total Development of Green Belt			449800	51900
Mine Closure Activity	Closure includes 10% of the amount allotted for Greenbelt development, wire fencing, and garland drainage (Rule 27 in MCDR 2017 for Cat B mines will pay 2 lakhs per hectare or minimum amount of financial assurance of 5 lakhs)		0	117640

Green fund	G.O.(Ms). No.23, Dated: 28.09.2021	Section IVA of TNMMCR 1959 (@10% of Seigniorage Fee) (Seigniorage Fee for granite waste = Rs.3133 and for granite recovery = Rs.265)	8687496	0
Total EMP Budget			11219496	1272540 (Exclude. Mine Closure Cost)

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

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year (Including Mine Closure Cost)	Total Recurring Cost	Total EMP Cost
1272540	1336167	1402975	1473124	1664420	7149227	18368722

In order to implement the environmental protection measures, an amount of Rs.11219496 as capital cost and Rs.1272540 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the total recurring cost over 5 years is Rs.7149227 and the overall EMP cost for 5 years will be Rs.18368722, as shown in Table 10.2.

10.3 CONCLUSION

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

CHAPTER XI SUMMARY AND CONCLUSION

11.1 INTRODUCTION

As the proposed colour mining project (P1) falls within the quarry cluster of 500 m radius with the total extent of 8.78.5 ha, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No.10(Part)over the extent of 3.46.0 ha is situated in the cluster falling in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District and Tamil Nadu. The quarries involved in the calculation of cluster extent are two proposed quarries and two Existing Quarries.

11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes from 12°28'42.3501"N to 12°28'49.6385"N and a longitude of 78°21'41.4649"E to 78°21'49.6891"E in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, and Tamil Nadu State. According to the approved mining plan, about 27729 m³ of colour granite will be mined up to the ultimate depth of 10 m in the five years. The quarrying operation is proposed to be carried out by opencast semi mechanized mining method involving drilling, blasting, and formation of benches of the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

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

11.3.1 Land Environment

Land use pattern of the area of 5 km radius was studied using Sentinel II imagery. LULC types and their extent are given in Table 11.1.

Table 11.1 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Barren Rockey / Stony waste	220.30	2.87
2	Crop Land	3385.26	44.18
3	Dense Forest	240.52	3.14
4	Land with or without scrub	1286.33	16.79
5	Mining / Industrial waste lands	12.83	0.17
6	Plantations	2505.91	32.70
7	Settlement	11.94	0.16
Total		7663.09	100.0

Source: Sentinel II Satellite Imagery

11.3.2 Soil Environment

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.2 to 7.8 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 45 to 560 $\mu\text{s}/\text{cm}$. Water Content ranges between 1.2 and 5.9%. Nitrogen ranges between 0.8 and 1.4 mg/kg. Phosphate ranges between 0.03 and 0.09%. Potassium ranges between 0.018 and 0.055%. Calcium ranges between <1.0 and <1.0 mg/kg. Organic matter content ranges between 3.1 and 9.4 %.

11.3.3 Water Environment

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

Five groundwater samples, known as BW1, BW2, OW1, OW2 and OW3 were collected from open well and bore well and analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. According to the data, average depths to the static water table in open wells range from 12.7 to 14.5 m BGL in pre monsoon and 11.4 to 13.5 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.9 and 3.10. The average depths to static potentiometric surface in bore wells for the period of October through December 2022 (Post-Monsoon Season) vary from 72.3 to 76.6 m and from 74.6 to 77.8 m for the period of March through May, 2022 (Pre-Monsoon Season).

11.3.4 Air Environment

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $15.5 \mu\text{g}/\text{m}^3$ to $21.5 \mu\text{g}/\text{m}^3$; PM_{10} from $35.7 \mu\text{g}/\text{m}^3$ to $43.5 \mu\text{g}/\text{m}^3$; SO_2 from $11.9 \mu\text{g}/\text{m}^3$ to $16.2 \mu\text{g}/\text{m}^3$; NO_2 from $15.9 \mu\text{g}/\text{m}^3$ to $22.3 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

11.3.5 Noise Environment

Noise level in core zone was 37.3dB (A) Leq during day time and 35.8 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.5 to 45.8 dB (A) Leq and during night time from 35.9 to 43.3 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.3.6 Biological Environment

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

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 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 4.28 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

Mitigation Measures

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

11.4.3 AIR ENVIRONMENT

Anticipated Impact

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

Mitigation Measures

- To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar
- Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone
- Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust
- The un-metalled haul roads will be compacted weekly before being put into use
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Haul roads and service roads will be graded to clear accumulation of loose materials
- Planting of trees all along main mine haul roads and around the project site will be practiced to prevent the generation of dust

11.4.4 Noise Environment

Anticipated Impact

Total noise level in all the sampling areas is well below the CPCB standards for industrial and residential areas.

Mitigation Measures

- The blasting operations in the cluster quarries will use shallow holes and delay detonators to reduce the ground vibrations
- Proper quantity of explosives, suitable stemming materials and appropriate delay system will be used during blasting
- Adequate safe distance from blasting will be maintained as per DGMS guidelines
- Blasting shelter will be provided as per DGMS guidelines
- Blasting operations will be carried out only during day time
- During blasting, other activities in the immediate vicinity will be temporarily stopped
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire

- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

11.4.5 Biological Environment

Anticipated Impact

- There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region.
- Carbon released from quarrying machineries and tippers during quarrying would be 1304 kg per day, 352064 kg per year and 1760318 kg over five years.

Mitigation Measures

- During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time
- Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled
- Existing roads will be used; new roads will not be constructed to reduce impact on flora
- To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 11988kg of carbon per year. Therefore, we recommend 1730 planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc
- About 1730 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 12941kg of the total carbon.

11.4.6 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

11.4.7 Occupational Health

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

11.5 Environment Monitoring Program

Table 11.2 Environment Monitoring Program

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

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

11.6 ADDITIONAL STUDIES

11.6.1 Risk Assessment

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

11.6.2 Disaster Management Plan

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

- Rescue and treat casualties;
- Safeguard other people;
- Minimize damage to property and the environment;

- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

11.6.3 Cumulative Impact Study

The results on the cumulative impact of the 2 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
- The proposed two projects will allocate Rs. 12,00,000/- towards CER as recommended by SEAC
- The proposed two projects will directly provide jobs to 49 local people, in addition to indirect jobs
- The proposed two projects will plant 2665 about trees in and around the lease area
- The proposed two projects will add 207 PCU per day to the nearby roads.

11.7 Project Benefits

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

- Direct employment to 27 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. 6,00,000 will be allocated for CER

11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of Rs.11219496 as capital cost and Rs.1272540 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the total recurring cost over 5 years is Rs.7149227 and the overall EMP cost for 5 years will be Rs.18368722.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **M/s.Pranita Granites** has engaged **Geo Technical Mining Solutions**, a NABET accredited consultancy for carrying out the EIA study as per the ToR issued.

Address of the consultancy:

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

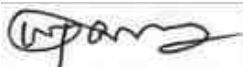
The accredited experts and associated members who were engaged in this EIA study are given below:

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

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

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

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

Signature : 

Date : 15.03.2024

Name : **Dr. S. Karuppannan**




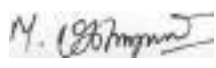


Designation : EIA Coordinator






Name of the EIA Consultant Organization : Geo Technical Mining Solutions

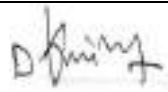

Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for M/s.Pranita Granites project with the extent of 3.46.0 ha situated in the cluster with the extent of 8.78.5 ha in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District and Tamil Nadu is true and correct to the best of our knowledge.



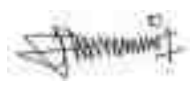


List of Functional Area Experts Engaged in this Project

S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	<ul style="list-style-type: none"> ○ Identification of different sources of air pollution due to the proposed mine activity 	J.N. Manikandan	
		<ul style="list-style-type: none"> ○ Prediction of air pollution and propose mitigation measures / control measures 	P.Venkatesh	
2	WP	<ul style="list-style-type: none"> ○ 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	<ul style="list-style-type: none"> ○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics 	Dr.M. Vijay Prabhu	
4	GEO	<ul style="list-style-type: none"> ○ Field Survey for assessing the regional and local geology of the area. ○ Preparation of mineral and geological maps. ○ Geology and Geo morphological analysis/description and Stratigraphy/Lithology. 	G.Gopala Krishnan	
5	SE	<ul style="list-style-type: none"> ○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive 	Dr. G. Prabhakaran	

		<p>Management Plan</p> <ul style="list-style-type: none"> o Corporate Environment Responsibility. 		
6	EB	<ul style="list-style-type: none"> o Collection of Baseline data of Flora and Fauna. o Identification of species labelled as Rare, Endangered and threatened as per IUCN list. o Impact of the project on flora and fauna. o Suggesting species for greenbelt development. 	<p>Dr.J. Rajarajeshwari</p>	
7	RH	<ul style="list-style-type: none"> o Identification of hazards and hazardous substances o Risks and consequences analysis o Vulnerability assessment o Preparation of Emergency Preparedness Plan o Management plan for safety. 	<p>J.N. Manikandan</p>	
8	LU	<ul style="list-style-type: none"> o Construction of Land use Map o Impact of project on surrounding land use o Suggesting post closure sustainable land use and mitigative measures. 	<p>G.Uma Maheswaran</p>	
9	NV	<ul style="list-style-type: none"> o Identify impacts due to noise and vibrations o Suggesting appropriate mitigation measures for EMP. 	<p>Dr.R. Arun Balaji</p>	
10	AQ	<ul style="list-style-type: none"> o Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. 	<p>Dr.R. Arun Balaji</p>	

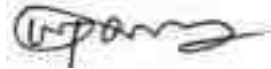
		<ul style="list-style-type: none"> Recommending mitigations measures for EMP 		
11	SC	<ul style="list-style-type: none"> Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr. D.Kalaimurugan	
12	SHW	<ul style="list-style-type: none"> Identify source of generation of non-hazardous solid waste and hazardous waste. Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	J.N. Manikandan	

List of Functional Area Associate Engaged in this Project

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

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT
ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for M/s.Pranita Granites quarry project with the extent of 3.46.0 ha located within the cluster of 8.78.5 ha in Pasinayanapalli Village, Bargur Taluk, Krishnagiri District and Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

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

Validity : Valid up to dec 31,2026



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

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

TERMS OF REFERENCE (ToR)

Lr.No. SEIAA-TN/E.No.10473/SEAC/1(a)ToR- 1633/2023 Dated: 12.12.2023

To

M/s. Pranita Granites,
No.62/33, Pulikuthi Street,
Gugai,
Salem – 636006.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Proposed Colour Granite quarry lease over an extent of 3.46.0 Ha at S.F.Nos. 10 (Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu by M/s. Pranita Granites - under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” – **ToR issued along with Public Hearing** - preparation of EIA report – Regarding.

Ref: 1. Online proposal No SIA/TN/MIN/448443/2023, Dated: 11.10.2023.
2. Your application submitted for Terms of Reference dated: 13.10.2023.
3. Minutes of the 423rd SEAC meeting held on 15.11.2023.
4. Minutes of the 678th SEIAA meeting held on 11.12.2023 & 12.12.2023.

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

The proponent, M/s. Pranita Granites has submitted an application for Terms of Reference (ToR) on 13.10.2023, for the Proposed Colour Granite quarry lease over an extent of 3.46.0 Ha at S.F.Nos. 10 (Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed for appraisal in the 423rd SEAC meeting held on 15.11.2023. The details of the project furnished by the proponent are given in the website (parivesh.nic.in)

The SEAC noted the following:

1. The project proponent, M/s. Pranita Granites has applied for Terms of Reference for the Proposed Colour Granite quarry lease over an extent of 3.46.0 Ha at S.F.Nos. 10 (Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.
2. The project/activity is covered under Schedule 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per mining plan, the lease period is for 20 years. The mining plan is for 5 years & production should not exceed RoM – 1,38,645 m³, Granite (Recovery @ 20%) – 27,729 m³ & Granite waste @ 80% – 1,10,916 m³. The annual peak production is 27,720m³ of RoM & 3,547 m³ of Granite. The ultimate depth of mining is 50m (7m – AGL+43m BGL).

Now, the proposal was placed in the 423rd SEAC meeting held on 15.11.2023. Based on the presentation made by the proponent SEAC recommended grant of Terms of Reference (TOR) with Public Hearing, subject to the following TORs as per the **Annexure I** of this minute, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The proponent shall obtain a letter from AD/Mines regarding the existing pit conditions within the proposed mine lease area.
2. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.
3. 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.
4. The Proponent shall carry out Bio diversity study through the reputed institutions such as Department of Ecology and Environmental Sciences, Pondicherry University, TN Agricultural University and the same shall be included in EIA Report.
5. 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.
6. The PP shall submit the 'Action Plan' on the issues raised during the Public Hearing with

budgetary provisions for the same.

7. The PP shall submit the action plan for the controlled blasting measures so as to reduce the impacts due to the blasting operation in the proposed quarries within 1 km of the proposed quarry.

ANNEXURE I

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.

Appendix - I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	விவம்
2	<i>Aloesanthus parviflora</i>	Manjadi	மனாஜி மனாஜிமர
3	<i>Albizia lebbek</i>	Vaagai	வாளை
4	<i>Albizia amara</i>	Udi	உதி
5	<i>Bauhinia purpurata</i>	Mantharai	மந்தரை
6	<i>Bauhinia racemosa</i>	Aathi	அதி
7	<i>Bauhinia thurifera</i>	Iravathi	இரவதி
8	<i>Euchamania axillaris</i>	Kathuna	கதூனா
9	<i>Borassus flabellifer</i>	Pavai	பவை
10	<i>Eutua nunoosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Borax caba</i>	Bavu, Sevvilavu	பவா
12	<i>Calophyllum inophyllum</i>	Funai	புனா
13	<i>Cassia fistula</i>	Sarakondrai	சரகண்டரை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கண்டரை
15	<i>Chloroxylon avicennia</i>	Purasamaram	புரசாமரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கொங்கு, மனாஜி பவா
17	<i>Cordia dichotoma</i>	Naruvadi	நரவாடி
18	<i>Crotola adamsoni</i>	Mavalingum	மாவுலிங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உவா
20	<i>Dillenia pentagyna</i>	SiruUva, Siruzha	சீருவா, சீருவா
21	<i>Diospyros sebennia</i>	Karingali	கரிங்கலி
22	<i>Diospyros schloroxylon</i>	Vaganai	வாளை
23	<i>Ficus amphissima</i>	Kalitchi	கலிச்சி
24	<i>Hibiscus tiliaceus</i>	Astrupoovarasu	அஸ்தூபூவாரசு
25	<i>Hardwickia binata</i>	Acha	அச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	அயிலி அயிலி மரம், அயிலி
27	<i>Lamnia coromandehica</i>	Odhiani	ஒடியனி
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மரூது
29	<i>Leginanthus tetraphylla</i>	Neikottamaram	நெிகொட்டாமரம்
30	<i>Linnemia acidissima</i>	Vila maram	வில்லாமரம்
31	<i>Litsea glutinosa</i>	Pinappattai	பின்பட்டை பின்பட்டை மரம்
32	<i>Madhuca longifolia</i>	Iluppai	இலுப்பை
33	<i>Mastikara hexandra</i>	UlaikaiPaalai	உலகைபாலை
34	<i>Mimusops olengi</i>	Magizhamaram	மாழிசாமரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nura	நூரா
37	<i>Morinda citrifolia</i>	Vellai Nura	வலைநூரா வலைநூரா மரம்
38	<i>Phoenix sylvestris</i>	Eechai	ஏச்சை
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

40	<i>Premna mollissima</i>	Minnai	முண்டை
41	<i>Premna serratifolia</i>	Narainmurai	நெடு முண்டை
42	<i>Premna tinctoria</i>	Malapocuram	முண்டை முண்டை
43	<i>Preocypis cinerea</i>	Vanni marum	முண்டை முண்டை
44	<i>Pterocarpus marsipium</i>	Vengai	முண்டை
45	<i>Pterospermum canalicata</i>	Venkatgiri, Tada	முண்டை
46	<i>Pterospermum sylvicarpum</i>	Polaru	முண்டை
47	<i>Putranjiva roxburghii</i>	Karpala	முண்டை
48	<i>Salvadora persica</i>	Ugga Marum	முண்டை முண்டை
49	<i>Sapindus emarginatus</i>	Marupungar, Soapuka	முண்டை முண்டை
50	<i>Sarcia speciosa</i>	Asoca	முண்டை
51	<i>Strabius asper</i>	Piray marum	முண்டை முண்டை
52	<i>Strychnos nuxvomica</i>	Yetti	முண்டை
53	<i>Strychnos potatorum</i>	Therthang Kottai	முண்டை முண்டை
54	<i>Strychnos cumini</i>	Naval	முண்டை
55	<i>Terminalia bellerica</i>	Tharidri	முண்டை
56	<i>Terminalia arjuna</i>	Vee marudhu	முண்டை முண்டை
57	<i>Terminalia ciliata</i>	Sandhana vembu	முண்டை முண்டை
58	<i>Thespenia populnea</i>	Pirararu	முண்டை
59	<i>Walsburatrifoliata</i>	vabura	முண்டை
60	<i>Wigelia tinctoria</i>	Veppalai	முண்டை
61	<i>Pithecolobium dulce</i>	Kodukkapali	முண்டை முண்டை

Discussion by SEIAA and the Remarks:-

The subject was placed in the 678th Authority meeting held on 11.12.2023 & 12.12.2023. The authority noted that the subject was appraised in 423rd SEAC meeting held on 15.11.2023.

Based on the presentation and documents furnished by the project proponent, SEAC after detailed deliberations, decided to recommend the proposal for the grant of Terms of Reference (ToR).

After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the following conditions and the conditions mentioned in 'Annexure B' of this minute:

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.

2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical and chemical features.
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.

- f) Hydrothermal/Geothermal effect due to destruction in the Environment.
- g) Bio-geochemical processes and its foot prints including environmental stress.
- h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

- 13. Impact on surrounding agricultural fields around the proposed mining Area.
- 14. Impact on soil flora & vegetation around the project site.
- 15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
- 16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
- 17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
- 18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

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

Water Environment

- 23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.

24. Erosion Control measures.
25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

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

Climate Change

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

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

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

Others

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

A. STANDARD TERMS OF REFERENCE

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

topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating 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(1) 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(1) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

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

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


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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-111013/41/2006-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.


MEMBER SECRETARY
SEIAA-TN

Copy to:

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

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

To
M/s. Pranita Granites,
No.62/33, pilikuthi street,
Gugai , Salem.

Roc.No.1043/2020 /Mines dated: 06.06.2023.

Sir,

Sub: Mines and Minerals - Krishnagiri District - Colour Granite - Bargur Taluk - Pasinayanapalli village - S.F.Nos. 10 (Part) over an extent of 3.46.00 hecets of Government land obtained approved mining plan - Tender Cum Auction conducted - M/s. Pranita Granites declared as highest tenderer - Details of quarries situated within 500 mts radial distance - Requested by the lessee - Details furnished - reg.

- Ref:**
1. The District Collector, Krishnagiri, Roc. No.1043/2020/Mines, dated: 03.12.2020.
 2. Mining plan approved by Commissioner of Geology and Mining letter Rc.No. 6939/MM4/2020 Dated: 18.05.2023.
 3. M/s. Pranita Granites, letter dated: 30.05.2023.

kind attention is invited to the reference cited.

2) Tender Cum Auction conducted for the grant of Granite leases in Krishnagiri District including for quarrying Colour Granite over an extent of 3.46.0 hecets of Government lands in S.F.No.10(Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri district for a period of 20 years under the provisions of Rule 8 (A) of Tamil Nadu Minor Mineral Concession Rule 1959. The highest tender quoted by M/s. Pranita Granites declared as successful tenderer and directed to submit approved mining plan and Environmental clearance vide the Govt. letter dated: 26.02.2021

3) Accordingly, the tenderer has obtained approved Mining Plan for the 1st five years from the Commissioner of Geology and Mining, vide letter dated: 18.05.2023.

4) In this connection, the details of quarries situated within 500 mts for the subject quarry requested by the tenderer vide letter dated: 30.05.2023 to furnish the same before SEIAA in orders to get Environmental Clearance.

5) As requested by the tenderer the details of quarries situated within 500m radius is furnished as follows:

I. Details of Existing quarries.

Sl No	Name of the lessee	GO.No. & Dated	Village & Taluk	S.F No.	Extent in Het	Lease period.	Last Permit Obtained
1.	Thiru. K. Sekaran, S/o. P.P.Kaverichetty, No. 25A, 3rd Hills road, Aishwaryam, Kolathur, Krishnagiri.	G.O.(3D)No. 16, Ind (MME.2) dept dated: 2.7.2012	Jagadevupalayam Village, Hargur	367/1N1, 362/2N2 (P) 367/201 (P)	1.10.50	13.07.2012 to 12.07.2032	12.09.2018
2.	Thiru. V.Venu, S/o. B.C. Venkatappan, No. 80, 1 st cross, 5 th main 373/3, Krishnagiri road, Krishnagiri.	G.O.(3D)No. 42, Ind (MME.2) dept dated: 27.11.2015	Jagadevupalayam Village, Hargur	5	2.35.0	16.12.2015 to 15.12.2035	14.08.2020

II. Details of abandoned/Old quarries.

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

III. Details of other Proposed/applied quarries

Sl. No.	Name of the lessee	GO.No. & Dated	Village & Taluk	S.F No.	Extent in Het	Lease period.
1.	M/s. Pranith Crables, Nu.62/33, pilkuthi street, Gugar, Salem.	Rnr.No. 1043/2020/Mines	Pasinuyyappalh. Hargur Taluk	10 (part)	3.46.0	Instant Proposal Mining Plan approved

2.	Tmt M Sadhana, No.2/A2, 3 rd Cross, Gopalakrishna Colony, Krishnagiri.	Rev.No. 1049/2020/Mines dated: 03.12.2020	Jagadevpalayam Village, Bargur	365 (Hect)	1.87.0	Mining plan approved
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[Handwritten Signature]
Deputy Director,
Dept. of Geology and Mining,
Krishnagiri.

Copy to :-

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

[Handwritten Signature]
07/06/2023

COMMISSIONERATE OF GEOLOGY AND MINING

From

Thiru J.Jayakanthan, I.A.S.,
Commissioner of Geology and Mining,
Industrial Estate,
Guindy,
Chennai - 600 032.

To

M/s.Pranita Granites,
No.62/33, Pulikuthi Street,
Gugai,
Salem - 636 006.

Re.No.6939/MM4/2020 Dated /8 .05.2023

Sir,

Sub: Mines and Minerals - Minor Mineral - Granite -
Krishnagiri District - Tender Cum Auction for Granite
quarries conducted under the provisions of rule 8-A of
TNMMCR 1959 on 07.11.2020 - Colour Granite quarry
area over an extent of 3.46.00 heccts of Government land
in S.F.Nos. 10 (Part) in Pasinayanapalli village, Bargur
Taluk, Krishnagiri District - Precise area communicated
to the highest bidder M/s. Pranita Granites, Salem -
Draft Mining Plan submitted for approval - forwarded
by the Deputy Director, Geology and Mining, Krishnagiri
for passing suitable orders - Approval accorded.

- Ref: 1. Krishnagiri District Gazette Extraordinary issue in
English No.20, 38 and Tamil No.35 & 53 dated:
09.10.2020 & 29.10.2020.
2. Application of the M/s. Pranita Granites, No.
62/33, Pulikuthi Street, Gugai, Salem - 636006
dated: 07.11.2020 and three others.
3. The District Collector, Krishnagiri, Roc.
No.1043/2020/Mines, dated: 03.12.2020.
4. The Principal Secretary to Government, Industries
(MME.2) Department, Secretariat, Chennai -
600009 Lr.No.900/ MME.2/2021-1, dated:
26.02.2021.
5. Draft Mining Plan Submitted by M/s. Pranita
Granites, No. 62/33, Pulikuthi Street, Gugai, Salem
- 636006 dated: 10.05.2021.
6. Writ Petition filed by Thiru A. Chellakumar before
Hon'ble High Court Madras in W.P.No. 16060/2020.

7. Writ Petition filed by Thiru R. Thamaraiselvan before Hon'ble High Court Madras in W.P.No. 13811/2020.
8. The Deputy Director, Geology and Mining, Krishnagiri Rc.No.1043/2020/Mines, Jated. 11.04.2023.

-oOo-

Kind attention invited to the above references cited.

2) In the reference 5th cited, the applicant firm Tvl. M/s. Pranita Granites, Salem has submitted the mining plan for approval on 14.05.2021 at district office for the quarry lease applied for quarrying Colour Granite over an extent of over an extent of 3.46.00 hect of Government land in S.F.No. 10 (Part) in Pasinayanapalli village, Bargur Taluk, Krishnagiri District for a period of 20 years under rule 8-A of Tamil Nadu Minor Mineral Concession Rules, 1959.

3) The Deputy Director (G&M), Krishnagiri district in the reference 8th cited has forwarded the mining plan for first five years period submitted by applicant firm Tvl. M/s. Pranita Granites, Salem for approval stating the following,

- i. Tender Cum Auction was conducted in Krishnagiri District on 07.11.2020 for Colour granite quarry area situated over an extent of 3.46.00 hect of Government land in S.F.Nos. 10 (Part) in Pasinayanapalli village, Bargur Taluk, Krishnagiri District. M/s. Pranita Granites, had offered a highest bid/tender amount of Rs. 3,04,00,000/ as one time lease amount. Hence necessary proposals had been forwarded by the District Collector, Krishnagiri to the Government through the Commissioner of Geology and Mining, Chennai for grant of Colour granite quarry lease infavour of the highest bidder M/s. Pranita Granites, Salem over the subject area for a period of 20 years vide letter dated: 03.12.2020.

- ii. The Government after detailed examination has issued precise area vide letter dated: 26.02.2021 for the proposed grant of Colour granite quarry lease infavour of the highest bidder over an extent of 3.46.00 hect in Government land in S.F.No. 10 (Part) in Pasinayanapalli villege, Bargur Taluk, Krishnagiri District and directed the highest bidder M/s. Pranita Granites, Salem to remit the balance amount of Rs. 2,79,00,000/- (Rupces Two Crore Seventy Nine lakhs only) within one month from the date of receipt of the communication after deducting the EMD of Rs. 25,00,000/- already remitted by the applicant firm and directed to submit the approved mining plan and Environment Clearance.
- iii. M/s. Pranita Granites, Salem have stated vide letter dated: 05.04.2021 that they received the communication letter from Government on 26.02.2021 and the balance amount for Rs. 2,79,00,000/- had been remitted to the Govt. account on 05.04.2021.
- iv. In response to the Government letter, the applicant firm had submitted 06 copies of draft mining plan duly prepared by the qualified person for approval on 14.05.2021 after carried out corrections with a request to grant additional time for the submission of mining plan due to covid-19 pandemic and lockdown in the entire country.
- v. Further, the Commissioner of Geology and Mining, Chennai vide letter dated 05.01.2023 has instructed to forward all the pending mining plans and scheme of mining plan to commissioner immediately for taking further action.
- vi. The draft mining plan submitted by the applicant firm have been verified by the Assistant Geologist (Mines), Krishnagiri and sub Inspector of Survey (Mines), Krishnagiri with reference to

field conditions. The draft Mining Plan has been prepared by the Qualified person. The details such as Geological Reserves, Mincable Reserves, Year wise production and Development programme have been incorporated in the draft Mining Plan. The Special conditions imposed in the precise area communication are also incorporated in the draft mining plan.

- vii. The year wise production quantity mention in the mining plan is given as detailed below.

Year	Rom (m ³)	Recovery @ 20 % (m ³)	Granite Waste @ 80 % (m ³)	Weathered Rock (m ³)
1 st Year	38040	5544	22176	10320
2 nd year	37653	5544	22176	9933
3 rd year	27735	5547	22188	0
4 th year	27735	5547	22188	0
5 th year	27735	5547	22188	0
Total	158898	27729	110916	20253

- viii. Further, other quarries situated within 500 mts radial distance are as follows.

Sl. No	Name of the Lessee and address	Mineral	GO No & Date	Taluk & Village	S.F.No. & Extent	Period of lease
1	M/s. Pranita Granites, No.62/33, pilikuthi street, Gungal, Salem	Colour Granite	Re.no. 1043/2020 / Mines	Bargur Pasiyana palli	10(P) 3.46.00 hecst	Instant Proposal (Precise area given)
2.	Tmt.M.Sadhana, No.2/A2, 3 rd Cross, Gopalakrishna Colony, Krishnagiri.		Jagadevi palayam Village, Bargur	366(Part)	1 87 0	Instant Proposal (precise area given)
3.	Thiru. K. Sekaran, S/o. P.P.Kaverichetty, No. 25A, Red Hills road, Aishwaryam, kolathur, Krishnagiri	G.O.(3D)N o. 16, 1nd (MME.2) dept dated: 2.7.2012	Jagadevi palayam Village, Bargur	367/1N1, 362/2N2(P) 367/201 (P)	1 10.50	13.07.2012 to 12.07.20232

4.	Thiru. V.Venu, S/o. B.C. Venkatappan, No 80, 1 st cross, 5 th main 373/3, Krishnagiri road, Krishnagiri.	G.O.(3D)No . 42, Inc (MME.2) dept date: 27.11.2015	Jagadevi palayam Village, Bargur	5	2.35.0	16.12.2015 to 15.12.2035
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- ix. The Mining Plan has been prepared by the Qualified Person. The details such as Geological Reserves, Mincable Reserves, Year wise production and Development programme have been incorporated in the Mining plan. The Special conditions imposed in the precise area communication are incorporated in the mining plan.
- x. There are no archeological monuments within 300mts radius and no Wildlife Sanctuaries within the 1.00 km radius.
- xi. Finally, the Deputy Director, Geology and Mining, Krishnagiri has forwarded the Mining Plan submitted by the applicant firm M/s. Pranta Granites, Salem in respect of S.F.No. 10 (Part) over an extent 3.46.00 heccts of Pasinayanapalli village, Bargur Taluk, Krishnagiri District for approval, subject to the condition that,
- a. A safety distance of 50meters to be maintained to the Electric line passing on the North side of the lease area.
 - b. A safety distance of 10 meters to be maintained to the Government land in S.F.no. 366 in south and west side of the lease area.
 - c. A safety distance of 7.5 meters to be maintained to the adjacent patts and should not cause any hindrance to them while quarrying and transportation.
- xii The Deputy Director, Geology and Mining, Krishnagiri has further stated that since the Commissioner of Geology and Mining, Chennai is the competent authority for approval of

mining plan in respect of Granite as contemplated under Rule 12 of Granite Conservation and Development Rules-1999, the mining plan submitted by the applicant firm is recommended and forwarded to the Commissioner of Geology and Mining for passing suitable orders by granting extension of time limit for the submission of approved mining plan.

4) The mining plan is in accordance with the precise area communicated for grant of lease to the subject area. Based on the report of the Deputy Director (G&M), Krishnagiri district, the Mining plan submitted by M/s. Pranita Granites, Salem is hereby approved subject to the following conditions in addition to the conditions stipulated in the precise area communication issued by the Government:

- i. A safety distance of 50meters to be maintained to the Electric line passing on the North side of the lease area.
- ii. A safety distance of 10 meters to be maintained to the Government land in S.F.no. 366 in south and west side of the lease area.
- iii. A safety distance of 7.5 meters to be maintained to the adjacent patta and should not cause any hindrance to them while quarrying and transportation.
- iv. The applicant firm should obtain prior environmental clearance from the competent authority and also subject to outcome of the Hon'ble High Court order in W.P.9304/2021 dated: 19.04.2021 the case is pending before the Hon'ble High Court of Madras.
- v. The applicant firm should obey the final orders if any to be passed by the Hon'ble High Court of Madras in connection with the pending Writ Petitions filed against the Tender Cum

Action conducted for the grant of quarry leases in Govt land in respect of Granite

- vi. This mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- vii. The approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980 Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- viii. This mining plan including Progressive mine closure plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- ix. Provisions of the Mines Act, 1952 and the Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required under Mines Act, 1952 shall be complied with.
- x. Provisions made under Mines and Minerals (Development & Regulation) Act, 1957, MMDR Amendment Act, 2015 and Granite conservation and Development Rules, 1999 made there under shall be complied with.

- xi. Granite waste materials should be dumped within the quarry lease area and should not be dumped outside the boundary of the lease area.
- xii. No hindrance should be caused to the adjacent pattadhars and public while quarrying and transportation of minerals from the subject area.
- xiii. Environmental Clearance should be obtained from the authority in respect of the subject area as per rule 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- xiv. The four boundaries of the applied area are fixed and the quarrying activity should be restricted within the area granted on lease.
- xv. The applicant firm 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 2mts with a distance between two pillars shall not be more than 3mts.
 - 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 the digitized map with DGPS readings should be submitted in the CD to the Deputy Director (G&M), Krishnagiri.
- xvi. Barbed wire fencing or Compound wall should be erected all along the boundary of the lease granted area.
- xvii. The applicant firm should use mild explosives during quarrying.
- xviii. The applicant firm should ensure that while starting the quarry work, all the quarry workers working under their

control are registered in the Labour Welfare Board and also enrolled in the ongoing insurance scheme.

- xix. The conditions mentioned in G.O. (Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
- xx. The applicant firm should comply with the conditions stipulated in the Government of India, Ministry of Mines order No.11/02/2020, dated 14.01.2020 issued as per the orders of the Hon'ble Supreme Court of India dated 08.01.2020 that, "the mining leaseholders shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to this mining activities and restore the land to a condition which is fit for growth of fodders, flora and fauna etc."
- xxi. The applicant firm shall submit scheme of mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
- xxii. If any violation is found during quarrying operation, the penal provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.
- xxiii. As per rule 12 (v) of the Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expense, erect, maintain and keep in repair all boundary pillars.
- xxiv. Quarrying activity should be carried out from 07.00 AM to 05.00 PM only.
- xxv. A Green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity by

planting at least 500 seedlings of Neem and Pungan all around the area.

xxvi. The applicant firm may use mild explosives during quarrying, and storing of explosives if required, by obtaining valid licence under Explosive Act and Rules.


xxvii. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.

xxviii. Child labour should not be engaged in the quarry works and the quarry workers should be enrolled in the insurance scheme through the Labour Department.

xxix. The applicant firm should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOJ notification in Re.No.2921/MM4/2019 dated.01.02.2018 and subsequent corrigendum dated 13.08.2019 through the empanelled agencies.

xxx. The applicant firm should follow the mining method during the quarrying operation as mentioned in the mining plan.

Encl: Two copies of Approved Mining Plan


Commissioner of Geology and Mining
18/5/2022

Copy Submitted to:

The Additional Chief Secretary to Government,
Industries, Investment Promotion
and Commerce Department,
Secretariat, Chennai-600009.

Copy to

The District Collector,
Krishnagiri District.

MINING PLAN

FOR

PASINAYANAPALLI VILLAGE COLOUR GRANITE MINE LEASE AND PROGRESSIVE QUARRY CLOSURE PLAN

Govt Poramboke land/Open cast Semi-Mechanized mining/Non-forest/
Noncaptive use - 'B2' Category

Lease period 20 Years from the date of lease execution
(Prepared under rule 12,13 & 15 of Granite Conservation and Development
Rules, 1999)

LOCATION OF THE LEASE AREA

STATE	☐	TAMILNADU
DISTRICT	☐	KRISHNAGIRI
TALUK	☐	BARGUR
VILLAGE	☐	PASINAYANAPALLI
S.F.NO	☐	10(Part)
EXTENT	☐	3.46.0 HECTARES

ADDRESS OF THE APPLICANT

M/s.Pranita Granites,

No.62/33, Pulikuthi Street,
Gugai, Salem.
Pin code - 636006.

PREPARED BY

Dr.S.KARUPPANNAN.MSc., Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS


(A NABET Accredited & ISO Certified Company)

No: 1/213 -B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office,
Dharmapuri-636705. Tamil Nadu.
Mob. : +91 9443937841, +917010076633,
E-mail: info.gtmsdp@gmail.com ,
Website: www.gtmind.com



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ANNEXURES


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1.	Copy of Tender Gazette notification	I
2.	Copy of Precise communication letter	II
3.	Copy of FMB (Field Measurement book)	III
4.	Copy of Village map	IV
5.	Copy of "A" register	V
6.	Photo copy of the Lease area	VI
7.	Copy of Company registration certificate	VII
8.	Copy of partnership deed	VIII
9.	Copy of ID Proof of the applicant	IX
10.	Copy of Blaster agreement, License and Blaster certificate	X
11.	Copy of RQP Certificate	XI

**LIST OF PLATES**

Sl. No.	Description	Plate No.	Scale
1	Route Map	I	Not to scale
2	Location Plan	I-A	Not to scale
3	Topo Map	I-B	1 : 1,00,000
4	Satellite Image for 1km radius	I-C	1: 10000
5	Environmental and land use plan for 1km Radius	I-D	1: 10000
6	Lease Plan	II	1:1000
7	Surface Plan	III	1:1000
8	Geological Plan	IV	1:1000
9	Geological Sections	IVA	Sections HOR 1:1000 VER 1:500
10	Year wise Development and Production Plan	V	1:1000
11	Year wise Development and Production Sections	VA	Sections HOR 1:1000 VER 1:500
12	Quarry Layout & Land use Pattern Plan	VI	1:1000
13	Progressive quarry closure plan	VII	1:1000
14	Progressive quarry closure sections	VIIA	Sections HOR 1:1000 VER 1:500
15	Conceptual Plan	VIII	1:1000
16	Conceptual Sections	VIIIA	Sections HOR 1:1000 VER 1:500



M/s.Pranita Granites
No. 62/33, Pulikuthi street,
Gugai, Salem, Tamilnadu, India.
Pin code - 636006.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of Colour granite quarry lease over an extent of 3.46.Hectares in S.F.No. 10 (Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, TamilNadu has been prepared by

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

We request **"The Commlssioner of Geology and Mining, Guindy, Chennai-600032** to make further correspondence regarding modifications of the Mining Plan with the said recognized qualified person on this following address,

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

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, 7010076633
E-mail: info.gtmsdpr@gmail.com,
Website: www.gtmsnd.com

We hereby undertake that all modifications so made in the mining plan by the recognized qualified person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Place: Dharmapuri, TN

Date: 10/5/21

Signature of the Applicant
(for **M/s.Pranita Granites**)

M/s.Pranita Granites
NO. 62/33, Pulikuthi street,
Gugai, Salem, Tamilnadu, India.
Pin code - 636006.



DECLARATION

The Mining Plan in respect of Colour granite quarry lease over an extent of 3.46.0Hectares in S.F.No. 10(Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu State have been prepared with my consultation and we have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Salem, TN

Date: 10/5/21

N. Lakshmi
Signature of the applicant
(for **M/s.Pranita Granites**)



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

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO Certified Company)

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

Oddapatti, Collectorate Post office, Dhatmapuri-636705

Ph: +91 9443937841, 7010076633

E mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com

CERTIFICATE

This is to certify that, the provisions of **8A(8)(a)(ii) of Tamil Nadu Minor Minerals Concession Rules, 1959 and 15 of Granite Conservation and Development Rules, 1999** have been observed in the Mining Plan for the grant of Colour granite quarry lease over an extent of 3.46.0Hectares in S.F.No. 10(Part) of Pasmayanapalli Village, Bargur Taluk, Krishnagiri District, TamilNadu State prepared to **M/s.Franita Granites, Salem-636006**.

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

Place: Dharmapuri, TN

Date:

Signature of the Recognized Qualified Person

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
1/213-B, Ground Floor, Natesan Complex,
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Website: www.gtmsind.com

CERTIFICATE

I certified under rule 13 of Granite Conservation And Development Rules, 1999 that the preparation of Mining Plan for Colour granito quarry lease over an extent of 3.46.0Hectares in S.F.No. 10(Part) of Pasinayanapalli Village, Bargur Taluk. Krishnagiri District, TamilNadu state prepared to **M/s.Pranita Granites, Salem-636006** covers all the provisions of Mines Act, Rules and Regulations etc., made there under and whenever specific permissions are required the applicant will approach **"The Director General of Mines Safety, Bangalore - 560 034.** The standards prescribed by DGMS in respect of mines health will be strictly implemented.

Place: Dharmapuri, TN

Date:

Signature of the Recognized Qualified Person

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

MINING PLAN

FOR

PASINAYANAPALLI VILLAGE COLOUR GRANITE MINE LEASE AND PROGRESSIVE QUARRY CLOSURE PLAN

Govt Poramboke land/open cast Semi- Mechanized mining/Non-forest/
Non-Captive Use - "B" Category

Lease period 20 Years from the date of lease execution

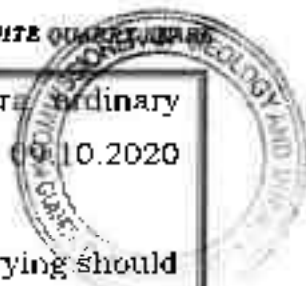
(Prepared under rule 12,13&15 of Granite Conservation and Development Rules, 1999)

INTRODUCTORY NOTES:

"The Principal Secretary to Government of TamilNadu", Chennai - 600009 issued a letter No. 900/MME.2/2021 - 1, Dated 26.02.2021 Regarding tender cum action colour granite quarry over an extent of 3.46.0 hectares in government poramboke land, S.F.No:10 (Part), Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, TamilNadu State to bidder **M/s.Pranita Granite**, has residing at No.62/33, Pulikuthi street, Gugai, Salem, -636006. To submit mining plan and progressive quarry closure plan as per rule 12,13&15 of Granite Conservation and Development Rules, 1999.

As per the communication letter No.900/MME.2/2021 - 1, Dated 26.02.2021, the mining plan is prepared subject to the following conditions.

- 1) A safety distance of 50 meters to be maintained to the Electric line passing on the north side of the lease area.
- 2) A safety distance of 10 meters to be maintained to the Government land in S.F. No.366 in South and West side of the lease area.
- 3) A safety distance of 7.5 meters to be maintained to the adjacent patta and should not cause any hindrance to them while quarrying and transportation.



- 4) All conditions stipulated in the District Gazette Extraordinary notification English No. 20 and Tamil No.35 dated. 09.10.2020 should be adhered by the auctioneer.
- 5) The waste materials generated during the course of quarrying should be dumped only within the lease hold area.
- 6) Environmental 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.
- 7) The applicant firm 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 2meters with a distance between two pillars shall not be more than 3meters.
 - 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 the digitalized map with DGPS readings should be submitted in the CD form to the Assistant Director (i/c), Krishnagiri.
- 8) The District Administration and Geology and Mining Department should ensure the conditions imposed in G.O.(Ms).No.79, Industries Department, dated 06.04.2015.
- 9) As per rule 12(V) of Minerals (other than Atomic & Hydrocarbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at their own expenses erect, maintain and keep in repair all the boundary pillars.
- 10) The applicant firm should use mild explosives during quarrying
- 11) Child labourers should not be engaged in quarry works.
- 12) If any violation is found during quarrying operation, the penal provisions of the Tamilnadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.
- 13) The applicant firm should ensure that while starting the quarry work, all the quarry workers working under their control are



registered in the labour welfare board and also enrolled in the ongoing insurance scheme.

- 14) The District Collector, Krishnagiri shall obtain a sworn-in affidavit from the applicant firm containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government letter No.12789/MMB2/ 2002 -7, Industries Department, Dated 9.1.2003 are complied with.
- 15) The grant of quarry lease to the applicant firm in the applied area will be based on the judgement of Hon'ble high court of Madras in W.P.No 18317 of 2020 and W.P.No. 16060/2020 and W.M.P.No. 19999 of 2020.

2. Preparation and Submission of Mining Plan:

The Mining Plan with progressive quarry closure plan had prepared under rule 12,13 &15 of Granite Conservation and Development Rules, 1999 and the conditions mentioned in the precise area communication letter No **No.900/MME.2/2021-1, Dated 26.02.2021.**

3. Geological Resources and Mineable Reserves:

Geological resource of colour granite is estimated as **320079m³**. The weathered rock is **34602m³** and Topsoil are **340m³** (Refer Plate No's.IVA). Mineable reserves of colour granite are estimated about **110805m³** and weathered rock is **443220m³** upto a depth of 50m from the elevated topography which have 07m above ground level (R.L.467-460m) and 43m below ground level (R.L.460-417m) (Refer Plate No's.VIII & VIIIA) after leaving necessary safety distance from the lease boundary.

4. Proposed Production Schedule:

Total Proposed production of colour granite is **27729m³** upto a depth of 10m from the elevated topography which is 7m above ground level (R.L.467-460m) and 03m below ground level (R.L.460-457m) (Refer Plate No's V & VA) for the first 5 years plan period. Average production shall be **5546Cbm** of color granite per year.

f) Environmental Sensitivity of the Proposed Lease Area: -

- i). **Interstate Boundary:** No interstate boundary within around 10Km radius periphery of proposed lease area



ii). **Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Kms from the project site area under the Wildlife (Protection) Act, 1972.

iii). **Indian Reserve Forest Act, 1980:** There is no reserve forest within the permissible limit. The nearest reserve forest is Thograpalli RF is situated about 2.4km away from the southwestern side and Bargur RF is situated about 6.5km away from northern side respectively.

iv). **CRZ Notification, 1991:** There is no Sea coastal zone found around 10km radius and this project site doesn't attract CRZ Notification, 1991.

g). Environmental measures to be adopted shall be during the ongoing activity period,

- i) Wet drilling method is to be adopted to control dust emissions.
- ii) Roads shall be graded to mitigate the dust emission
- iii) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- iv) Dust Control at source while drilling and blasting.
- v) Dust suppression at loading point and transport haul roads,
- vi) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
- vii) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

1.0 GENERAL:

a.	Name of the Applicant	: M/s.Pranita Granites
	Applicant address	: M/s.Pranita Granites No. 62/33, Pulikuthi street, Gugai, Salem, Tamilnadu, India. Pin code - 636006.
	District	: Salem
	State	: TamilNadu
	Pin code	: 636006
	Phone:	:
	Fax	: ---
	Gram	: ---
	Telex	: ---
	E-mail	: ---



b. Status of the Applicant	
Private individual	: ---
Cooperative Association	: ---
Private company	: Private company
Public Company	: ---
Public Sector Undertaking	: ---
Joint Sector Undertaking	: ---
Other (pl. specify)	: ---
c. Mineral(s) Which are occurring in the area and which the applicant intends to mine	: Colour granite
d. Period for which the mining lease granted /renewed/proposed to be applied	: Mining lease was granted for the period of twenty years from the date of lease execution
e. Name of the RQP preparing the Mining Plan	: Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,
Address	: Geo Technical Mining Solutions (ISO certified & A NABET Accredited Company) No: 1/213-B, Ground Floor, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Ph: +91 9443937841, E-mail: info.gtmsdpi@gmail.com, Website: www.gtmsind.com
Phone	: +91 9443937841, +91 7010076633
Fax	: Nil
e-mail	: info.gtmsdpi@gmail.com
Telex	: Nil
Registration Number	: RQP/MAS/263/2014/A
Date of grant/renewal	: 16.12.2014
Valid upto	: 15.12.2024
f. Name of the prospecting agency	: Commissioner, Dept of Geology and Mining
Address	: State Geological Department O/o The Commissioner of Geology and Mining, Guindy, Chennai - 600 032
Phone	: ---
g. Reference No. and date of consent letter from the state government	: The Principal secretary to government, Government of Tamilnadu - Letter. No.900/MME.2/2021-1, Dated 26.02.2021.



2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:	: Refer plate no: IA & IB
	District & State	: Krishnagiri, Tamil Nadu
	Taluk	: Bargur
	Village	: Pasinayanapalli
	Khasra No./ Plot No./ Block Range/Felling Series etc.	: 10 (Part)
	Lease area (hectares)	: 3.46.0 hect
	Whether the area is recorded to be in forest (please specify whether protected, reserved etc)	: The proposed lease area is recorded as Govt Paramboke land. Copy of 'A' register is enclosed. (Ref. Annexure No: V)
	Ownership / Occupancy	: Govt of Tamilnadu (Ref. Annexure No: V).
	Existence of Public Road / Railway line if any nearby and approximate distance	: <ul style="list-style-type: none"> ✓ Exploited materials shall be transported through the village approach road is situated on the Eastern side. ✓ There is no SH road situated around 5km radius. ✓ NH-77 road situated about 2.68km radius away from the west side which is connecting Krishnagiri - Uthangarai ✓ No Railway line is found around 5km radius.
	Toposheet No. with latitude and longitude	: Toposheet No. 57 L/07 Latitude: From 12°28'42.3501"N to 12°28'49.6385"N longitude: From 78°21'41.4649"E to 78°21'49.6991"E



DCPS Geo-Coordinates of the lease boundary:

PILLAR ID	LATITUDE	LONGITUDE
1	12°28'48.8832"N	78°21'46.6283"E
2	12°28'47.5252"N	78°21'46.9984"E
3	12°28'47.5413"N	78°21'47.5142"E
4	12°28'45.2132"N	78°21'49.6891"E
5	12°28'43.5213"N	78°21'49.2889"E
6	12°28'42.3501"N	78°21'45.5003"E
7	12°28'46.3863"N	78°21'41.4649"E
8	12°28'49.6385"N	78°21'41.8319"E

Land use pattern (Forest, Agricultural, Grazing, Barren etc.) : It is a dry, barren, waste land.

b). **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.** : Refer plate no-(A & B)

i) INFRASTRUCTURE AND COMMUNICATION:

a.	Nearest post office	:	Post office is available at Sigaralapalli about 4.0km away from the site towards northeastern side.
b.	Nearest police station	:	Police Station is available at bargur about 7.3km away from the site towards northern side.
c.	Nearest fire station	:	Fire Station is available at Bargur about 6.5kms away from the site towards northern side.
d.	Nearest Medical facility	:	Primary health center is available at Jagadevipalayam about 4.2km away from the



		site towards western side
e.	Nearest school	: Primary School Education is available at Bargur about 7.2km away from the site towards northern side.
f.	Nearest Taluk road	: Taluk road Madarahalli-Bargur road is situated about 3.2m away from the Eastern side connecting the Barghur-Thirupathur road.
g.	Nearest Rail Head	: The Nearest Railway station is available at Tirupattur about 21.3km away from Eastern side.
h.	Nearest port facility	: The Nearest Port is available at Chennai about 217.1kms away from eastern side.
i.	Nearest Airport	: The Nearest Airport is available at Salem about 82.2km away from Southern side
j.	Nearest DSP office	: The Nearest DSP office is available at Bargur about 7.12km away on the northern side.
j	Nearest Villages	: i. North - Kondappanayakempalli - 2.5km ii. South - Samalpatti - 2.3km iii. East - Kappalvadi - 2.5km iv. West - Kheel Srenivasapuram - 3.5km

(ii) BOUNDARY OF THE LEASE AREA:

i.	Boundary	: i. North -Patta land - S.F.No 365/2G & 6/1 ii. South - Patta land - S.F.No. 367/2O1 & Govt Poramboke land S.F.No:10 iii. East - Govt Poramboke land - S.F.No.10 & Patta land 9/10 . iv. West - Govt Poramboke land -S F.No.366 (Jagadevapalayam Village)
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**PART – A****3.0 GEOLOGY AND MINERAL RESERVES:**

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

(i) Topography:

The proposed lease area exhibits elevated topography with an elevation of about 07meters above MSL with an altitude of 467m maximum and 460m minimum above the MSL. The area is sloping towards eastern side covered with boulders falls in Toposheet no. **57 L/07.**

(ii) General Geology:**Geomorphology:**

The geological formations of the Krishnagiri 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, Mignatites complex, Sathyamangalam group of rocks. Krishnagiri district is underlain by crystalline metamorphic complex in the western parts of district and sedimentary tract in eastern side. The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of archaean age intruded by dolerite dykes and pegmatite veins. Minerals of Economic importance found in Krishnagiri district of Tamil Nadu are mainly Apatite, and Dimensional stones. Mining activities based on these minerals are very less in the district. Besides that, the district is endowed with sizeable reserves of Colour granite.

Soils:

Soils have been classified into Colour soil, mixed soil, red loamy soil, gravelly and sandy soils. Red loamy and sandy soils are predominant in hosur Taluk. Vast stretches of loam soils and colour soils occur in krishnagiri district.

Lineaments:

A lineament may be a fault, fracture, master joint, a long and linear geological formation, vegetation served may be the result of faulting and fracturing and hence it is inferred that they are the areas and zones of increased porosity and permeability in hard rock areas. The data have



been checked by field studies and Survey of India topographical maps at the 1:1,00,000 scale.

Age	Group	Rock Formation
Recent to Sub recent	----	Top Soil (1-2m Thick)
Archaean to Lower Proterozoic	Ultra basic complex	Gabbro/ proxenite, Younger Granite
Archaean	Charnockite Group	Pyroxene granulite, Charnockite.

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

a) Topography of the proposed lease area

1. The area exhibits well exposed boulders on the northern side of the and has a strike direction of NE-SW. with steep dip and traversed by trending NE-SW deviates upto N30°E-S30°W direction with steep dip.
2. The lease area is elevated in a height of 07mts from above ground level have cluster of boulders exposed on the surface and also in certain region boulders bonded with soil.
3. The colour granite is mainly composed of Primary quartz, Potassium feldspar, mica, amphiboles, and trace other minerals.
4. The colour granite shows the average length of 217m to a width of 126m after leaving the safety distance. The special team has estimated the inferred reserve of colour granite as 110805m³ for a depth persistence of 43m bgl with recovery of 20%.

b) Mode of origin:

Granite is the most common intrusive rock in Earth's continental crust. It is familiar as a mottled pink, white, gray, and black ornamental stone. It is coarse- to medium-grained. Its three main minerals are feldspar, quartz, and mica, which occur as silvery muscovite or dark biotite or both. Of these minerals, feldspar predominates, and quartz usually accounts for more than 10 percent. The alkali feldspars are often pink, resulting in the pink granite often used as a decorative stone. Granite crystallizes from silica-rich magmas that are miles deep in Earth's crust. Many mineral deposits form near crystallizing granite bodies from the



hydrothermal solutions that such bodies release and traversed by granite trending NE-SW deviates upto N30°E -S30°W direction

c) Physiography of the rocks:

The sampled Colour granite is principally composed of medium to coarse grained calcic plagioclase and clinopyroxene. The main accessories include biotite, amphibole, and uraltite. Rarer accessories include olivine, orthopyroxene, and anhedral quartz. Euhedral to subhedral opaque oxide minerals were noticed. The texture ranges from poikilitic, optitic, and rarely porphyritic or glomeroporphyritic. The plagioclase laths are randomly oriented and are sometimes zoned. The clinopyroxene of some samples contain exsolved augite in inverted pigeonite. Olivine is thinly rimmed by pyroxene. These features suggest disequilibrium conditions during crystallization. The clinopyroxene occasionally exhibits uraltite coronas. Biotite was observed to rim either amphibole or clinopyroxene suggesting some form of alteration.

d) Chemical composition of rocks:

The colour granite consists mostly of feldspar (Plagioclase), ferromagnesian minerals like pyroxene with small quantities of Magnetite and Pyrite. The presence of magnetite mineral imparts steel black color to the rock. The order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent to Sub recent	---	Topsoil (1-3m)
Archaean to Lower Proterozoic	Dharwar Super Group	Grey Granite/gneiss
Archaean	Charnockite Group	Pyroxene granulite, Charnockite.

(iv) Drainage Pattern:

There are no major water bodies like rivers, pond, etc., located within a radius of 50m. The drainage is dendritic in nature.

(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:

Topographic Plan of lease area - Plate IB prepared on a scale of 1 :1000
 Geological Plan of lease area - Plate No. IV

**(i) Present status:**

RQP along with planning and DGPS team of Geotechnical Mining Solutions, Dharmapuri analyzed the lease area for mining plan preparation. The lease area is a fresh one and the area exhibits outcrops well exposed.

(ii) Surface Plan:

Surface plan is prepared in 1: 1000 scale with reference to ground level. The grid pattern is adopted while considering various lithological factors of rocks. (Plate III)

(iii) Geological sections should be prepared at suitable intervals on a scale of 1: 1000 /1: 2000:

Geological plan is prepared in 1: 1000 scale (Plate No.IV) with reference to ground level considering the lithological factors of rock are considered in grid pattern. The sections are prepared along the boundary perpendicular to the strike of the rock in 1:1000 scale in horizontal axis and 1:500 in vertical axis. It is given in plate No-IVA.

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

Year	No. of boreholes	Total meterage	No. of Pits and Dimensions	No. of Trenches and Dimensions
First	1	40m	---	N.A
Second	1	40m	---	N.A
Third	N.A	---	---	N.A
Fourth	N.A	---	---	N.A
Fifth	N.A	---	---	N.A
Total	2	80m	---	---

However, we proposed to the project proponent to dig two bore hole for core drill about 80m, each bore hole 40m as show in Geological plan in plate no IV to assess the recovery and continuity of the granite sheet at depth.



(d) 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 cross sections on suitably chosen lines across the longitudinal and horizontal axis of deposit have been drawn. The proposed area is an elevated topography with elevation of about 07meters above the ground level 467m MSL. The depth of Geological resources has been computed upto a depth of 50m from the top of elevation which is 07m above ground level (R.L.467-460m) and 43m below ground level (R.L.460-417m) (Refer Plate No's. IV & IVA). The total Geological resources of weathered rock is **34602m³** and topsoil is **340m³**. The colour granite is **320079m³**.

GEOLOGICAL RESOURCE										
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Rem in (m ³)	Geological Resources in (m ³)	Colour Granite 20% Recovery in (m ³)	Granite Waste 80% in (m ³)	Weathered rock in (m ³)	Top Soil in (m ³)
XY-AB	Elevated slope	34	10	1	340	---	---	---	---	340
	I	237	146	1	34602	---	---	---	34602	---
	I	140	99	4	55440	55440	11088	44352	---	---
	II	225	143	5	160875	160875	32175	128700	---	---
	III	237	146	5	173010	173010	34602	138408	---	---
	IV	237	146	5	173010	173010	34602	138408	---	---
	V	237	146	5	173010	173010	34602	138408	---	---
	VI	237	146	5	173010	173010	34602	138408	---	---
	VII	237	146	5	173010	173010	34602	138408	---	---
	VIII	237	146	5	173010	173010	34602	138408	---	---
	IX	237	146	5	173010	173010	34602	138408	---	---
X	237	146	5	173010	173010	34602	138408	---	---	
TOTAL				50	1635337	1600395	320079	1280316	34602	340



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

The Mineable reserves of weathered rock is **20253m³** and colour granite is estimated as **110805m³** upto a depth of 50m from the Elevated topography which have 07m above ground level (R.L. 467-460m) and 43m below ground level (R.L.460-417m). Colour granite is estimated by deducting the reserves in rectangular slab with benches from the total Geological resources available in the lease area. The commercially viable colour granite has been prepared on 1: 1000 scale (Refer Plate no.VIII) and sections are prepared in horizontal axis as 1:1000 scale and 1:500 scale in vertical axis (Plate No.VIIIA).

MINEABLE RESERVES									
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m ³)	Mineable Reserves in (m ³)	Colour Granite 20% Recovery in (m ³)	Granite Waste 80% in (m ³)	Weathered rock in (m ³)
XY AB	I	157	129	1	20253	....	....	....	20253
	I	140	99	4	55440	55440	11088	44352	....
	II	157	129	5	101265	101265	20253	81012	....
	III	147	119	5	87465	87465	17493	69972	....
	IV	137	109	5	74665	74665	14933	59732	....
	V	127	99	5	62865	62865	12573	50292	....
	VI	117	89	5	52065	52065	10413	41652	....
	VII	107	79	5	42265	42265	8453	33812	....
	VIII	97	69	5	33465	33465	6693	26772	....
	IX	87	59	5	25665	25665	5133	20532	....
X	77	49	5	18865	18865	3773	15092	....
TOTAL				50	574278	554025	110805	443220	20253

4. 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)

It is a fresh lease Under the regulation 106 (2) (a) of the Metalliferous Mines Regulations, 1961 all open cost working methods of hard rock are used and it should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not be less than the bench height. The slope of the benches should not exceed 45° from horizontal



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

Total Proposed production of colour granite is **27729m³** upto a depth of 10m from top of the elevated topography which is 07m above ground level (R.L. 467-460m) and 3m below ground level (R.L.460-457m) (Refer Plate No's.V & VA) for the first 5 years plan period. Average production shall be **5546m³** of colour granite per year.

Year	Pit No.(s)	ROM (m ³)	Saleable colour granite (m ³) @ 20%	Granite Waste 80% in (m ³)	Weathered rock in (m ³)	Saleable Gravel (m ³)	Colour granite to Overburden ratio
First	I	38040	5544	22176	10320	---	1 : 0.17
Second	I	37653	5544	22176	9933	---	1 : 0.17
Third	I	27735	5547	22188	---	---	1 : 0.25
Fourth	I	27735	5547	22188	---	---	1 : 0.25
Fifth	I	27735	5547	22188	---	---	1 : 0.25
Total	---	158898	27729	110916	20253	---	1 : 0.21

(c) Composite plans and Year wise sections (In case of 'A' class mines):

Not applicable

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

YEARWISE PRODUCTION											
Section	Year	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m ³)	Saleable Production in (m ³)	Colour Granite 20% Recovery in (m ³)	Granite Waste 80% in (m ³)	Weathered rock in (m ³)	
XY-AH	I - YEAR	I	80	129	1	10320	---	---	---	10320	
		I	70	99	4	27720	27720	5544	22176	---	
	II - YEAR	I	77	129	1	9933	---	---	---	9933	
		I	70	94	4	27720	27720	5544	22176	---	
	III - YEAR	II	43	129	5	27735	27735	5547	22188	---	
	IV - YEAR	II	43	129	5	27735	27735	5547	22188	---	
	V - YEAR	II	43	129	5	27735	27735	5547	22188	---	
	TOTAL					10	158898	138645	27729	110916	20253



(d) Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc.

The proposed area is a fresh lease. (Refer Plate No: III)

(e) Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:

The proposed production is **462m³/month**. At this rate of production, the expected life of quarry is calculated for production details are given as below: -

Mineable reserves of Colour granite @ 20%	=	110805m³
First five years production @ 20%	=	27729m³
Yearly production	=	5546m³
Estimated life of mine(110805m ³ /5546m ³)	=	20 years

The regular working of the quarry and its production depends upon the demand from the market. The market is always fluctuating and flexible one. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated the life of quarry etc., are only a tentative figure.

(f) Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:

(i) Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:

Consider the indefinite depth the colour granite deposit is proved beyond the workable limits about a depth of 50m from top of the elevated topography which is 07m above ground level (R L.467-460m) and 43m below ground level (R L.460-417m) and two exploration bore hole for core drilling is proposed in this area.

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

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



ULTIMATE PIT - SECTION XY-AB

Bench	Years	Bench R.L	length in (m)	Width in (m)	Depth in (m)
I	First 5 years	R.L.467-466m	157	129	1
I		R.L.466-462m	140	99	4
II	Remaini ng plan periods	R.L.462-457m	157	129	5
III		R.L.457-452m	147	119	5
IV		R.L.452-447m	137	109	5
V		R.L.447-442m	127	99	5
VI		R.L.442-437m	117	89	5
VII		R.L.437-432m	107	79	5
VIII		R.L.432-427m	97	69	5
IX		R.L.427-422m	87	59	5
X		R.L.422-417m	77	49	5
					50m

(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 colour granite rejects are **110916m³** (up to 80%). The weathered rock is **27729m³** shall be removed and stacked for earth bund of lease hold area and to prevent inherent entry of cattle's and human as per rules 119 (1), Metalliferous Mines Regulations, 1961. If colour granite may be unsold will be keep within the lease boundary.

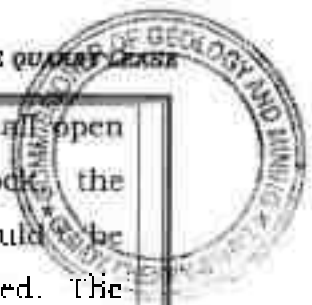
(iv) Whether back filling of pits after recovery of mineral upto techno-economically feasible depth envisaged. If so, describe the broad features of the proposal: -

The depth persistence of the deposit may likely to be continued for little downward, it is proposed not to backfill the mine - pit in this scheme period. Back filling will be proposed in the conceptual stage of mining.

(v) Whether post mining land use envisaged: -

At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.

g. Open cast Mines:	
i) Describe briefly giving salient features of the mode of working (Mechanized, Semi-	: The mining operation is opencast semi-mechanized method adopted on single shift basis only. Under the regulation 106 of the Metalliferous



<p>Mechanized, manual)</p>	<p>Mines Regulations, 1961 in all open cost workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.</p>
<p>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</p>	<p>The Colour Granite is proposed to quarry at 5m bench height & width conventional opencast method.</p> <ul style="list-style-type: none"> i) Drill hole diameter 32mm ii) Depth and inclination of drill hole: generally drilled vertically in an alignment, however in primary cutting in the absence of sheet joints to bottom level, horizontal holes also are drilled iii) Spacing and burden: The spacing shall be about 0.1m to 0.3m from hole to hole and burden goes up to 1.6m for the splitting of the rock.
<p>a. Details of Topsoil/ Overburden</p>	<p>There is no topsoil shall be removed.</p>
<p>b. Colour granite waste and side burden waste: -</p>	<p>The colour granite rejects are 110916m³ in this lease area. The weathered rock is 20253m³ shall be removed and stacked for earth bund of lease hold area and to prevent inherent entry of cattle's and human as per rules 106, Metalliferous</p>



		Mines Regulations, 1961. If colour granite may be unsold will be kept within the lease boundary.																														
h.	Underground Mines:	It is an open cast quarry operation only																														
i.	<p>Extent of mechanization: Being a fresh quarry, opencast semi-mechanized method of mining operation is adopted. Deployment of drills, compressors, excavators, tipper, Diamond wire saw, and line drilling machineries are deployed depending upon the size of the quarry, rate of production, etc. There will not continue or regular work to the above the machinery. Hence, most of the quarry operations, engage, these equipment on hire basis. The following machinery already deployed in this quarry by project proponent: -</p> <p>Drilling and cutting equipment:</p> <p>a). Drilling equipment:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Dia of hole (mm)</th> <th>Size/ Capacity</th> <th>Make</th> <th>Motive power</th> </tr> </thead> <tbody> <tr> <td>Jack Hammers</td> <td>4</td> <td>32mm</td> <td>110Cfm</td> <td>Atlas copco</td> <td>Compress or Air</td> </tr> <tr> <td>Compressors</td> <td>2</td> <td>--</td> <td>600Cpm</td> <td></td> <td>Diesel</td> </tr> </tbody> </table> <p>b). Cutting equipment's:</p> <p>i. Diamond wire saw machine = 2 nos ii. Line drilling machinery = 2nos</p> <p>(1) Loading Equipment:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>No s</th> <th>H.P</th> <th>Size/ Capa city</th> <th>Make</th> <th>Motive power</th> </tr> </thead> <tbody> <tr> <td>Excavator</td> <td>1</td> <td>180</td> <td>1.7Cbm</td> <td>Tata Hitachi</td> <td>Diesel</td> </tr> </tbody> </table> <p>(2) Haulage and Transport Equipment</p> <p>(a) Haulage within the mining leasehold:</p>		Type	Nos	Dia of hole (mm)	Size/ Capacity	Make	Motive power	Jack Hammers	4	32mm	110Cfm	Atlas copco	Compress or Air	Compressors	2	--	600Cpm		Diesel	Type	No s	H.P	Size/ Capa city	Make	Motive power	Excavator	1	180	1.7Cbm	Tata Hitachi	Diesel
Type	Nos	Dia of hole (mm)	Size/ Capacity	Make	Motive power																											
Jack Hammers	4	32mm	110Cfm	Atlas copco	Compress or Air																											
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Type	No s	H.P	Size/ Capa city	Make	Motive power																											
Excavator	1	180	1.7Cbm	Tata Hitachi	Diesel																											



Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	2	15 M.T	BMW	Diesel	110
<p>Whether the dumpers are fitted with exhaust conditioner should be indicated: The dumpers are not used in this quarry operation. It is a small B2 category mine.</p>					
<p>(b) Transport from mine head to the destination</p>			<p>: 15 M.T capacity of tipper will be used for transport Colour Granite from the mine head to needy customer.</p>		
<p>c. Describe briefly the transport system (please specify)</p>			<p>: The hired tipper and excavator will be used for carrying out day to day mining activities on the day basis or hourly basis as per market scenario.</p>		
<p>d. Ore transported by own trucks / hired trucks</p>			<p>: Hired tippers and hydraulic excavator for initially production purposes.</p>		
<p>e. Main destination to which ore is transported (giving to and from distance)</p>			<p>: The excavated colour granite transported to needy buyers</p>		
<p>f. Details of hauling / transport equipment:</p>					
Type	Nos	Size / Capacity	Make	Motive power	H.P.
Nil	Nil	Nil	Nil	Nil	Nil
<p>(3) Miscellaneous:</p>					
<p>Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier</p>					
<p>(A) Operations</p>			<p>: The mining operation is opencast, semi-mechanized method.</p>		
<p>(B) Machineries deployed</p>			<p>: Deployment of drills, compressors, excavators, tipper, Diamond wire saw, and line drilling machineries are</p>		



	<p>deployed depending upon the size of the quarry, rate of production, etc. There will not be any continuous or regular work to the above the machinery.</p>
<p>5.</p>	<p>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></p> <p>Blasting pattern: It is an Eco-friendly quarry operation, no blasting is proposed, Diamond wire saw cutting method is adopted by the applicant. Now a day, the splitting within the sheet rock is affected by diamond wire-sawing, which largely reduces the use of explosives in granite mining. Besides, chemical powder called as "Expansive mortar cement" $[Ca(OH)_2]$ are also used for splitting. Many adverse effects of blasting are avoided and hence diamond wire cutting will substantially increase the recovery. Since primary cutting comprising splitting from the sheet rock is affected by diamond wire-sawing there will not be any drilling or blasting involved. Hence, there will not any adverse effects and vibration due to this type of mining operation.</p> <p>Chemical Blasting Method: The Black Granite operations should not be conducted with any blasting. This will totally damage the possible output by inducing cracks in the rock. For this reason, Chemical explosives are not used for this process. Inserted the rock is split with help of chemical powder which is an expander of the rock. The process is as under long jack hammer holes of around 3 to 6 meters are drilled in close spacing. The spacing is generally 5 to 10mm after the entire line is drilled, it is plugged to prevent any foreign materials entering the hole, later two vertical and one bottom cut are made with slotters and wire saw machines. After these operations are complete, the holes are loaded with chemical generates a crack which is through the holes drilled. The crack is expanded any hydraulic bags are used to pull the rock.</p>



c) Miscellaneous:

Apart from the above, the following tools and tackles already provided by lessee in quarry leased area for quarry operations.

a) For operation:

1. Drill rods 0.4m, 0.5, 0.6m, 0.75m, 1.65m, 2.25m, 3m and 3.6m.
2. Steel alloy chains of sufficient length of 12mm, 16mm, 18mm sizes.
3. "D" Shackles to link the chain length,
4. Rubber hose of required length,
5. Hose clamps to link the compressor delivery hoses,
6. Feather and wedges of 6" and 12" sizes, utilized for splitting the block from the mother rock. This is an important tool in the operation of the quarry.
7. Crow bars,
8. Spades,
9. Sludge hammer,
10. Iron pans,
11. Pitcher hammer,
12. Chisels,
13. Consumables, such diesel, Hydraulic oil, etc

<p>d) Whether secondary blasting is needed, if so, describe it briefly</p>	<p>: Not applicable</p>
<p>e) Storage of explosives (like capacity and type of explosive magazine)</p>	<p>: 1. The applicant is advised to engage an authorized explosive agency to carry out blasting. 2. The blasting time at a day is proposed to be 1 PM to 2 PM. 3. First Aid Box will be keeping ready at all the time. 4 Necessary precautionary announcement will be carried out before the blasting operation</p>



6. MINE DRAINAGE	
<p>a) Likely depth of water table based on observations from nearby wells and water bodies</p>	<p>: The ground water table is reported as of 65m in summer and 60m in rainy season from the ground level which was predicted by observation of adjacent bore wells around the lease area.</p>
<p>b) Workings expected to be _____ m. above / reach below water table by the year _____:</p>	<p>: Ultimate mining depth is 43m below the ground level. So, the present mine lease shall be proposed above the water table and hence, quarrying may not affect the ground water.</p>
<p>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</p>	<p>: The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 Lpm and it shall be pumped out periodically by diesel powered centrifugal pump of 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.</p>



7. STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:

a) Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the next five years:

Year	Topsoil/Over burden (Cbm)	Weathered rock/ (Cbm)	Mineral rejects/Waste
First	---	10320	22176
Second	---	9933	22176
Third	---	---	22188
Fourth	---	---	22188
Fifth	---	---	22188
Total	---	20253	110916

b) Land chosen for disposal of waste with proposed justification : There is no topsoil shall be removed.

c) Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Yearwise. : The weathered rock is **20253m³** and some quantity of weathered rock may use to lay roads within the quarry area and rest will be dumped in the area earmarked in the plan and earth bund is made of 2m height in safety area to prevent inherent entry of cattle's and human as per rules 106 Metalliferous Mines Regulations, 1961.

8. USES OF MINERAL:

a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use) : The quarried colour granite blocks which are either exported as raw blocks or processed as value added products such as slabs and monuments of engineering applications. The export market for this granite blocks are European countries and Far East besides catering domestic purposes.



<p>b) Indicate physical and chemical specifications stipulated by buyers</p>	<p>: The materials produced at this quarry are Colour Granite is used in floors, furniture counter tops and monuments. The properties of granite which are normally valued for exploitation are compressive strength, tensile strength, density, p-wave velocity, etc. For marketability, other requirements like colour, texture, granularity, size, water absorption, porosity, hardness, moisture content, etc. are also essential. Raw blocks should be free from normal defects like fractures, joints, shears, hairline cracks, segregation, veins, etc.</p>
<p>c) Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.</p>	<p>: No blending process is involved in quarry. Blocks approved for export are shipped from harbor to exporter's designations.</p>
<p>9. OTHERS</p>	
<p>Describe briefly the following a) Site services</p>	<p>: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been providing as per the Metalliferous Mines Rules, 1961 as a welfare amenity for mine laborers. Being a semi-</p>



mechanized mine to proposed stack of spares, lubricant and fuels are required to be maintained at the mine site.

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 Colour granite during the five years period the same manpower will be utilize for this Mining Plan period to achieve the proposed production and to comply the provisions of the DGPS norms.

1.	Highly Skilled	Quarry Manager	1 No.
		Mines Foreman	---
		Geologist	1 No.
		Accountant cum & admin	1 No.
2.	Skilled	Earth moving Operator	2 No.
		Driver	4 Nos.
		Mechanic	1 No.
		Blaster/Mat	---
3.	Semi - skilled	Helpers, Greaser's	4 Nos
4.	Unskilled	Musdoor / Labours	10Nos
		Cleaners	2Nos
		Attendant's	1No
Total =			27 Nos

10 MINERAL PROCESSING/BENEFICIATIONS:

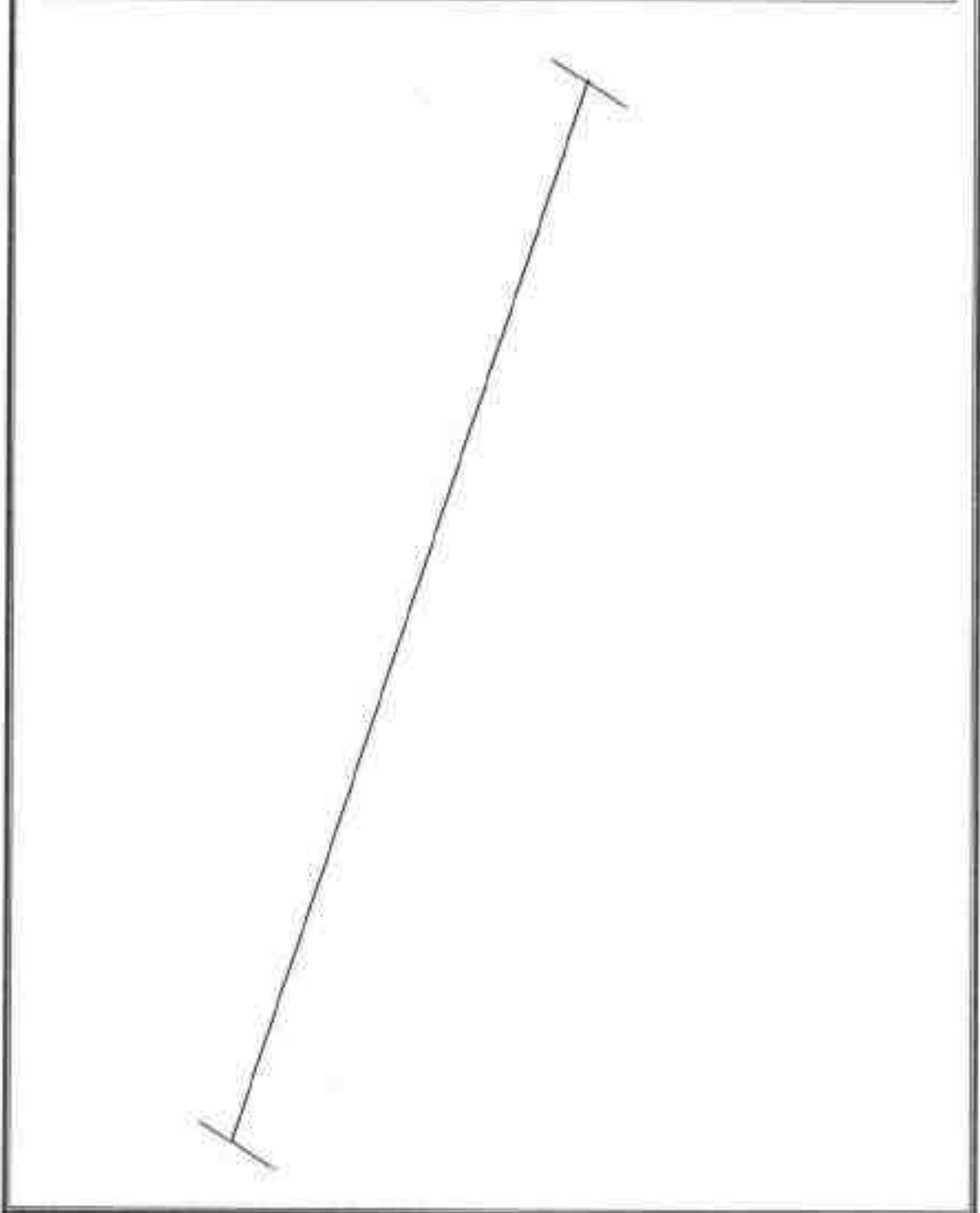
a) If processing / : Excavated Colour Granite raw beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should blocks shall be directly sale to the needy customer.



<p>indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.</p>	
<p>b) Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed to be discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam).</p>	<p>: No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system.</p>
<p>c) A flow sheet or schematic diagram of the processing procedure should be attached.</p>	<p>: Not applicable</p>
<p>d) Specify quantity and type of chemicals to be used in the processing plant.</p>	<p>: Not applicable</p>
<p>e) Specify quantity and type of chemicals to be stored on site / plant.</p>	<p>: Not applicable</p>
<p>f) Indicate quantity (KLD per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling.</p>	<p>: Drinking is 0.280KLD, utilized water is 1.0KLD, Dust suppression is 1.5KLD and Green Belt is 1.5KLD. Minimum quantity of water 4.28KLD per day has to be maintained as per</p>



		<p>the Mines Rules, 1960. It is proposed to make an own borewell for providing uninterrupted supply of RO drinking water, dust suppression and Green belt development.</p>
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PART - B

11.0 ENVIRONMENTAL MANAGEMENT PLAN :

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

11.1 Existing land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present and proposed land use pattern is given as below.

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Area Under Quarrying	Nil	2.14.0
2	Infrastructure	Nil	0.01.0
3	Road	Nil	0.02.0
4	Green Belt	Nil	0.10.5
5	Waste dump	Nil	0.80.0
6	Unutilized Area	3.46.0	0.38.5
	Total =	3.46.0	3.46.0

11.2 Water Regime : Water table in this area is noticed at a depth of 60m in rainy season and 65m in summer from general ground level and presently the quarrying of Colour Granite is proposed ultimate depth of mining is 43m from below the ground level. Hence, it will not affect the ground water depletion of this area. It is proposed to make an own bore well for providing uninterrupted supply of RO drinking water, dust suppression and Green belt development.

11.3 Flora and Fauna : There is no major flora found in this area. 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	<p>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.</p> <p>In this quarry, the machinery operations like jack hammer drilling compressor and excavators will generate sound pollution. The sound level should be within the limits of 58dBA. To minimize this sound pollution within the permissible limits, the machinery will be operated at different places time. The sound pollution can be reduced periodical maintenance of the mining equipment. However, periodical noise level monitoring will be carried out every six months around the quarry site.</p>
11.5	Climatic conditions	<p>Generally sub tropical climatic condition prevails throughout the year and this District receives rain both in South west and North east monsoon.</p> <p>The average rainfall is about 850mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 38°C during the summer.</p>



11.6 Human Settlement
 The nearest villages are found in the buffer zone with population as per 2011 census. The Samalpatti village of 4001 houses 639 peoples both Male (1962) and Female (2039).

S. NO	Village	Direction	Distance in Kms	Population
1	Kondappanayakempalli	North	2.5km	3653
2	Samalpatti	South	2.3km	4001
3	Kappalvadi	East	2.5km	1880
4	Kheel Srenivasapuram	West	3.5km	2039

11.7 Public buildings, places of worship and monuments : No infrastructure like residential building, places of special interest like archeological monuments, etc., are found around 300m 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 Colour Granite there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form:

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Area Under Quarrying	Nil	2.14.0
2	Infrastructure	Nil	0.01.0
3	Road	Nil	0.02.0
4	Green Belt	Nil	0.10.5
5	Waste dump	Nil	0.80.0
6	Unutilized Area	3.46.0	0.38.5
	Total =	3.46.0	3.46.0

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 Colour Granite 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	:	It is an Eco-friendly quarry operation,



	(due to blasting)		no blasting is proposed. Diamond wire saw cutting method is adopted by the lessee. Now a days, the splitting within the sheet rock is affected by diamond wire-sawing, which largely reduces the use of explosives in granite mining. Besides, chemical powder called as "Expansive mortar cement" $[Ca(OH)_2]$ are also used for splitting. Many adverse effects of blasting are avoided and hence diamond wire cutting will substantially increase the recovery. Since primary cutting comprising splitting from the sheet rock is affected by diamond wire-sawing there will not be any drilling or blasting involved. Hence, there will not any adverse effects and vibration due to this type of mining operation. The maximum peak particles velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	:	No major river or any other water bodies are found around 50m 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 10km radius.



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

i).	Temporary storage and utilization of topsoil	: There is no topsoil shall be removed.
ii).	Year wise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.	: The Ultimate mining is proposed to an upto depth of 50m from top of the Elevated topography which is 07m above ground level (R.L.467-460m) and 43m below ground level (R.L.460-417m) has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with S1 fencing. No immediate proposals for closure of pit as the Colour granite persist still at deeper level
iii).	<i>Programme of afforestation, Yearwise for the initial five years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares.</i>	



7.5m and 10m safety barrier, school and Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below

Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs
First	Lease Boundary	1050	115	80%	@:100 Rs Per sapling	11,500/-
Second	Approach road and Nearby Village Road	--	500	80%		50,000/-
Third	Schools	--	300	80%		30,000/-
Total						91,500/-

iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and upto conceptual plan period for 'A' category mines).	:	The colour granite rejects are 110916m³ in this lease area. The weathered rock is 20253m³ shall be removed and stacked for earth bund of lease hold area and to prevent inherent entry of cattle's and human as per rules 106, Metalliferous Mines Regulations, 1961. If colour granite may be unsold will be keep within the lease boundary.
v).	Measures to control erosion / sedimentation of water courses.	:	No erosion takes place in this quarry operation.
vi).	Treatment and disposal of water from mine.	:	It will not be harmful and it does not require any treatment before

		discharging into the natural courses.
vii).	Measures for minimizing adverse effects on water regime.	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.
viii).	Protective measures for ground vibrations / air blast caused by blasting.	It is a small B2 category opencast, semi mechanized mining and no heavy machinery shall be used. Smooth blasting is proposed therefore no change in ground vibration or noise in the quarry.
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.
x).	Socioeconomic benefits arising out of mining.	The nearest villages are will get employment benefits.

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

Not applicable. It is B2 category quarry

12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	The present mining is proposed to an up to depth of 10m from top of the elevated topography which
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		is 07m above ground level (R.L.467-460m) and 3m below ground level (R.L.460-457m). The mined-out area will be fenced on top of open cast working with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 100 trees per year will be proposed. No immediate proposals for closure of pit as the colour granite 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
12.4	Mine closure activity	The mined-out area will be fenced on top of open cast working with S1 fencing No immediate proposals for closure of pit as the colour granite persist still at deeper level.
12.5	Safety and security	Safety measures implement to the prevent access to surface opening



		<p>excavations will be taken as Metalliferous mine rules, 1960, it is a small open cast mining method adopted.</p> <p>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.</p>
<p>12.6</p>	<p>Disaster management and Risk Assessment</p>	<p>Open cast mining method is adopted in this quarry. If the benches are made with proposed height and width no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc , to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first</p>



		aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	: During temporary discontinuance the working place will be fenced completely and a board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and manpower entrenchments	: During the five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 27 labors will be improved. During the next five-year compensations will be given as per rules.

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

A	Fixed Asset Cost	
	1. Land Cust	: Rs. 3,04,000,000/-
	2. Labour Shed	: Rs. 2,00,000/-
	3. Sanitary Facility	: Rs. 1,00,000/-
	4. Fencing	: Rs. 3,00,000/-
	5. Other expenses (Security guard, bin, etc)	: Rs. 5,00,000/-
	Total	: Rs. 3,15,00,000/-
B	Machinery cost	: Rs. 30,00,000/- (Hire Basis)



C	Total Expenditure of EMP cost (for five years)	
	1. Drinking Water Facility	: Rs. 2,00,000/-
	2. Sanitary facility & Maintenance	: Rs. 1,50,000/-
	3. Permanent water sprinkler	: Rs. 3,00,000/-
	4. Afforestation and maintenance	: Rs. 91,500/-
	5. Safety Kits	: Rs. 2,00,000/-
	6. Provision of tyre washing facility	: Rs. 1,00,000/-
	7. Blasting materials with blast mat cost	: Rs. 20,00,000/-
	8. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 35,41,500/-
E	Total Project Cost (A+B+C)	: Rs. 3,80,41,500/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small B2 colour granite quarry.

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the Colour granite economically without any wastage and to improve the environment and ecology.
- (iii) The Mining Plan with progressive quarry closure plan is prepared by incorporating the conditions stipulated in the precise area communication issued by Principal secretary of TamilNadu, vide letter **900/MME.2/2021-1, Dated 26.02.2021.**
- (iv) Total production reserves of colour granite is **110805m³** for the 20 years lease period.



17.0 CSR Expenditure:

CSR (Corporate Social responsibility) shall provide by the lessee @ 2.0% of average net profit of the company for the last three financial years to the neighboring villages on the provisions under section 135(1) of the companies Act, 2013 and Rule 3(2) companies CSR Rules, 2014 as circular no.05/01/2014.

Place: Dharmapuri. TN

Signature of the Recognized Qualified Person

Date:

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/1893/2014/A
GEO TECHNICAL MINING SOLUTIONS
1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post Office,
Dharmapuri - 636 705. Tamil Nadu, India.
E-mail : info.gtmtdpi@gmail.com
website : www.gtmtd.com

COMMISSIONER
GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032

This Mining Plan is Approved
Subject to the Conditions/Stipulations
mentioned in the Mining Plan Approval
Letter No. 18939/MNH/2020 Dated 18-05-23



KRISHNAGIRI DISTRICT GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 20]

KRISHNAGIRI, OCTOBER 9, 2020
(Sarvati, Puratitasi 23 - Thiruvalluvar Aandu 2051)

NOTIFICATION BY THE COLLECTOR

[*Rec No 90/2017/(Minas), Dated 09.10.2020*]

[Notice Inviting Tender Applications for the Grant of Quarry Lease for Black / Multi Colour Granite situated in Government Land in Krishnagiri District under Tender-Cum-Auction system as per Rule 8-A of the Tamil Nadu Minor Mineral Concession Rules, 1959]

Last date and time for submission of tender application	31.10.2020 upto 4.00 pm
Date and time on which open auction will be conducted and opening of tender application	02.11.2020 from 11.00 am onwards

1. For and on behalf of the Government of Tamil Nadu sealed Tender applications in Triplicate are invited by the District Collector Krishnagiri at collectorate, Krishnagiri up to 4.00 pm on 31.10.2020 (as per the office clock of the Assistant Director of Geology and Mining, Krishnagiri, Room No.30, Ground Floor, Collectorate, Krishnagiri) from the individuals or companies or partnership firms for the purpose for obtaining quarry lease to quarry black / multi color granite from the areas situated in Government lands in Krishnagiri District specified in the schedule for a period twenty years in accordance with the Tamilnadu Minor Mineral Concession Rules, 1959 more specifically as per Rule 8-A of the above said rules notified in G.O.No.103/ Industries/MMC1/Department Dt:13.07.1996 and published in Tamilnadu Government Gazette, Extraordinary No 337, part-III, section 1(a) Dt:13.07.1996 and subsequently amended.
2. The tender applications submitted as per the notification shall be in the form prescribed as per appendix VI-A of Tamil Nadu Minor mineral concession Rules, 1959. Model application form is enclosed with this gazette notification. The applications not submitted as prescribed in appendix VI-A and the applications without statutory enclosures shall not be entertained.
3. The tenderers / Bidders shall make their own arrangements to visit the notified proposed quarry sites, assess the quantity and the quality of granite before making their offers. They should also make their own arrangements for providing necessary infrastructure including approach roads, etc., for quarrying granite, if the area is allotted to them on lease eventually.



4. (a) All applications made in response to this notification shall be in the form prescribed in Appendix VI-A to these rules and they shall be sent directly to The District Collector, Krishnagiri, District and submitted to the C/o The Assistant Director, Geology and Mining, Room No. 30, Ground Floor, Collectorate, Krishnagiri on or before 4.00 PM of 31.10.2020 in person or by RPAD in a sealed cover superscribed as 'TENDER APPLICATION FOR GRANT OF QUARRYING LEASE-ITEM SL No. ... IN THE NOTICE/ADVERTISEMENT DATED ...'. The name and address of the applicant shall also be legibly written on the sealed cover. For each item of area tender application shall be made.
- (b) Every tender application made for grant of quarrying lease shall be accompanied by:-
- (i) Original challan for payment of Rs.5000/- (Rupees Five Thousand only) towards non-refundable application fee in a Government Treasury in the District concerned. The amount can also be remitted through demand draft drawn in favour of the District Collector, Krishnagiri obtained from any Nationalized Bank or Co-Operative Bank and the original Demand Draft should be enclosed.
 - (ii) A demand draft for (Rs.25,00,000/-) (Rupees Twenty Five Lakhs only) towards Earnest Money Deposit in favour of the District Collector, Krishnagiri.
 - (iii) An affidavit showing the particulars of the areas mineral wise in each district of the State, which the applicant or any person jointly with him:
 - (i) already holds under a quarrying lease
 - (ii) already applied for but not yet granted
 - (iii) is being applied for simultaneously,
 - (iv) A valid mining dues clearance certificate obtained from the Collector of the District where the quarrying or mining lease area is situated in the form prescribed in Appendix-VIII to these rules for having paid the mining dues, such as royalty, weightage fee, lease amount, dead rent, surface rent, area assessment, penalty amount or any other dues payable under the Act or these rules or under the lease deed or agreement already executed or entered into by the applicant if the applicant is not having any Mining/Quarrying lease in the State of TamilNadu, an Affidavit, towards no mining dues also to be enclosed.
 - (iv) An affidavit stating that the applicant has:
 - (i) Filed upto date Income tax return
 - (ii) Paid the income tax assessed on him.
 - (iii) Paid the income tax on the basis of the self assessment as provided in the Income Tax Act, 1961 (Central Act 43 of 1961) or any other later instructions of the Central Government
- (c) The application thus made shall contain the particulars about the maximum amount the applicant is willing to offer for getting the area applied for by him on lease for quarrying purpose.
- (d) All applications shall reach the addressee specified in the notice or advertisement within the specified time and date.
5. (a) Where the application is delivered personally, its receipt shall be acknowledged in the form in Appendix-IX to the rules of TNMNCR, 1959. Where an application is sent by post it shall be sent by registered post and its receipt shall also be acknowledged to the applicant by RPAD within three days from the date of receipt of date. The District Collector shall have no responsibility for any delay in receipt or loss in postal transit of any application or communication.



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- (ii) If any application is made for an area when there is no invitation of application, it shall summarily be rejected as premature application. If any application is received after the due time and date fixed for receipt of application, it shall be rejected by the District Collector as time barred application. Failure to satisfy the conditions and to comply with the requirements specified above will result in summary rejection of an application for participation in auction or tender proceedings and the person who made such application is not entitled to participate in the auction or tender as the case may be. The rejection order passed on such application with the demand draft if any shall be sent through registered post to the applicant within seven days from the date of receipt of the application retaining the application and the cover.

TENDER - CUM - AUCTION PROCEDURE

- (a) (i) Before opening tender applications received for each area for which applications are invited through notification and advertisement, an auction shall be conducted in which all tender applicants and also others who consider themselves as eligible and pay an Earnest Money Deposit of (Rs. 25,00,000/-) by a bank draft can participate. The auction bids of the non-tender applicants will be accepted subject to verification of their eligibility and subject to their submitting the application form with statutory enclosures and payment of application fee before commencement of the tender-cum-auction proceedings. For people who have already paid Earnest Money Deposit in tender, no separate fee need be levied for participating in auction.
- (ii) In the absence of the applicant one nominee of the applicant may be permitted to participate in the auction and allowed to be present when the tender applications are opened provided the nominee produces a letter from the applicant authorising the nominee to do so and signed before a Notary Public who shall attest the signature of the applicant and his nominee.
- (iii) (i) Before opening tender applications received for each area, auction shall be conducted by the District Collector or the officer authorized by the District Collector allowing all eligible applicants to bid at the auction for making their offer of lease amount to obtain the area on lease. Immediately after conclusion of the auction, all the valid tender applications for the area shall be opened and examined by the District Collector or the authorized officer.
- (ii) The sealed tender applications shall be opened in the presence of the tender applicants or their nominees who may choose to be present. Failure on the part of any tender applicant or his nominee to be present on the date and time of auction or at the time of opening of the sealed tender applications shall not prevent the authorities concerned from conducting the auction and opening of the sealed tender applications with the participation of the other tender applicants or their nominees or others.
- (iii) Where the receipt of total no. of Tender cum Auction applications are less than three, auction process shall be annulled and recommended for a retender for one time within one month.
- (iv) The authorized officer shall declare the total number of valid applications received for an area, names of the applicants and the tender amount offered for the area by each of the applicants. He shall also declare the highest bid amount offered at the auction and the highest tender amount quoted in the tender applications and the names of the highest offerers of the bid amount and the tender amount before concluding the proceedings.
- (v) In a case where the highest auction amount is found to be less than the highest tender amount and where the said highest tender amount has been quoted by two or more applicants, the District Collector or the officer authorized by the District Collector shall call such applicants alone to make their further offers.



- (c) After declaring the name of the highest bidder/tender applicant for an area, the EMD received from the applicant bidders other than the highest bidder/tender applicant shall be returned forthwith to the applicants/bidders present on obtaining acknowledgement for receipt or the same or sent by registered post in due course, if they are not present. The Earned Money Deposit made by the highest bid amount or tender amount offered, as the case may be, shall be subjected towards payment of lease amount or to be held as referred for grant of the lease or lease to bid for quarrying purpose.
- (d) District Collector after the completion of the Auction/Tender procedure, shall forward all the applications received by the State Government through the Director of Geology and Mining. On receipt of the proposal from the District Collector, the Director of Geology and Mining shall forward the same to the State Government with his recommendations.
 - (i) On receipt of the recommendations of the Director of Geology and Mining for grant of lease to an area, the State Government shall communicate its decision to grant the lease to the applicant who has deposited the successful offer or of the bid amount or tender amount whichever is more.
 - (ii) The State Government shall communicate its decision to grant the lease for the precise area directing to remit the balance amount indicated in the order of the State Government in the District Treasury concerned and to submit the original challan to the State Government within one month from the date of receipt of such communication and to submit the approved mining plan as per Rule 12 of the Granite Conservation and Development Rules, 1999 to the State Government within a period of three months from the date of receipt of the communication from the State Government.
 - (iii) Where the applicants fail to remit the balance amount within the stipulated period, the amount already remitted shall be forfeited and the communication issued, shall be deemed to be cancelled. When the said applicants have remitted the amount within the stipulated period but are not able to submit the approved mining plan as per Rule 12 of the Granite Conservation and Development Rules, 1999 to the State Government within the stipulated period for reasons beyond their control, they may apply for extension of time for submission of the approved mining plan. The State Government on receipt of such request and after satisfying that the balance amount has been paid within the prescribed period, may grant extension of time for a further period not exceeding three months, if satisfied with the reasons furnished by the applicant. In case the applicant fails to submit the approved mining plan as per Rule 12 of the Granite Conservation and Development Rules, 1999 even in the extended period, the amounts remitted by the applicant shall be forfeited and the communication letter shall be deemed to be cancelled.
 - (iv) The applicant shall also submit the Environmental Clearance from the competent authority as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules 1959 within the time limit as prescribed by the State Government.
 - (v) The applicant shall have to submit the NOC obtained from District Forest Officer, Hosur for the proposed granite quarry.
 - (vi) On receipt of the approved mining plan as per Rule 12 of the Granite Conservation and Development Rules, 1999 and the Environmental Clearance from the competent authority as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules 1959 and NOC from the Forest Department, the State Government shall issue the order granting the lease.
- (e) Where the State Government is satisfied that the highest price offered by the applicant is not reasonable in the circumstances of the case and that it will not be in the interest of mineral development to grant the lease to the said applicant, an order refusing to grant the lease to the applicant shall be passed by the State Government, communicating the reasons therefor to the applicant.



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- (c) The lease deed shall be executed by the applicant with the district Collector on or before the date specified within one month from the date of receipt of the order of the State Government or within such further period not exceeding a period of thirty days as the District Collector may allow in this behalf. The lease deed shall be executed by the applicant on the appointed day and time with a map of the demarcated leased out area signed by the District Collector and the lessee, appended to it.
- (d) Where the State Government has granted a quarrying lease, to an applicant, if the applicant fails to produce the signed copy of the demarcated map of the area or fails to produce the required stamp papers for preparing the lease deed or fails to execute the lease deed within the stipulated time, the State Government may cancel the order granting the lease to the defaulter and forfeit all amounts paid by him to the State Government. In the case of an area for which there are two or more applicants, after cancellation of the order granting the quarrying lease to the defaulter the State Government may grant the quarrying lease in favour of the next below highest bidder or tender applicant. Subject to the provision of clauses (a) and (b) if the next highest bidder or tender applicant is not communicating his acceptance of such an offer of the State Government within fifteen days from the date of receipt of the State Government's offer, the State Government shall call for fresh tender applications for the area concerned.

CONDITIONS FOR CARRYING OUT QUARRYING OPERATIONS.

9. (a) The date of commencement of the period for which the quarry lease is granted under this Rule shall be the date on which the lease deed is executed.
- (b) Before execution of the lease deed the successful bidder/tender applicant shall deposit as security @ twenty percent (20%) of the bid/tender amount for which the lease has been granted by the State Government.
- (c) All the lessees, besides the onetime payment of the bid amount / tender amount which is the lease amount, shall also pay
- seigniorage fee or dead rent whichever is more in respect of the actual quantity of the mineral removed or consumed at the rates prescribed from time to time in Appendix-II to these rules. Besides the onetime payment of lease amount and seigniorage fee or dead rent whichever is greater the lessee shall pay such other levies as may be prescribed by the State Government from time to time.
- In the event of failure to pay the seigniorage fee or dead rent whichever is greater the lease shall be cancelled.
- Provided that the lessee shall pay the dead rent for the first year of the lease before the execution of the lease deed and for the subsequent years thirty days before the date of commencement of each year of the lease period.
- Provided further that the lessee is entitled to obtain transport permit and dispatch slips for removal of the mineral from the leasehold area without paying seigniorage fee until the amount of dead rent already paid is got adjusted towards seigniorage fee payment.
- (d) No lessee is entitled to raise any dispute with reference to the survey and demarcation of the area leased out to him after execution of the lease deed.
- (e) The lease shall expire on the date specified in the lease deed and in no case extension of the period of the lease shall be made.
- (f) No lessee shall commence any quarrying operation in any area without executing the lease deed. No lessee shall continue quarrying in the area after the expiry of the stipulated lease period. If any quarrying or transportation of the mineral is done without complying with or in violation of the above conditions, it shall be treated as illicit quarrying and illicit transportation and the lessee is liable to be punished for the offence without prejudice to any other actions that can be taken on the person as provided in these Rules or the Act.



- (g) The lessee shall remove and transport the mineral from the leasehold area after obtaining transport permit from the District Collector concerned or any Officer authorized by him in this behalf and complying with the other conditions stipulated in these Rules.
- (h) The lessee shall not quarry any other mineral other than the purpose for which the lease is granted. If, any other mineral / valuable metal is found to be noticed, the quarrying operation shall be stopped at once and intimated to the District Collector / Government.
- (i) The lessee shall not without the previous consent in writing of the State Government assign, sublet, mortgage or in any other manner transfer the quarrying lease as specified in Rule-36F of Tamil Nadu Minor Mineral Concession Rule 1959.
- (j) The lessee shall keep correct accounts showing the quantity and other particulars of all minerals quarried and transported from the quarry site. The lessee shall also allow any officer authorized by the State Government or the Director of Geology and Mining or the District Collector in this behalf to inspect the quarry and verify the records and accounts and to furnish such information and returns as may be required by him.
10. (a) The lessee shall carryout the quarrying operations in a skillful, scientific and systematic manner keeping in view the proper safety of the labour, conservation of minerals and preservation of the environment and ecology of the area
- (b) The lessee shall allow any officer authorized by State Government, or the Director of Geology and Mining, or the District Collector concerned to enter upon the leasehold area and inspect for the purpose mentioned in clause (a) and for any other purpose which may be required for compliance of the provisions of the Act and these rules or any other Act or Rules framed by the Central Government or the State Government.
11. The lease granted under this rule may be renewed for a period not exceeding twenty years, provided that renewal of lease shall be subject to the satisfactory performance of the lessee in the past in fulfilling the conditions of lease and as per the other rule provisions of Tamil Nadu Minor Mineral Concession Rules 1959

12. CONDITIONS

1. The period for which the area granted on lease for quarrying under this rules is only for twenty years.
2. The quarrying lease will be granted only in the name of the successful Tenderer/bidder declared by the state Government
3. No quarrying activities commenced there to shall be done before the execution of the agreement.
4. The Executed lease deed shall be registered at the cost of the lessee
5. While quarrying no hindrance shall be caused to the adjoining pattadars and public.
6. The lessee should restrict his mining operations strictly within the permitted area as defined in the sketch without any encroachments.
7. The lessee should maintain, at his cost proper signboards indicating the survey numbers, years of lease, name of the lease holder and lease period to the satisfaction of the District Collector and Commissioner/ Director of Geology and Mining and maintain it all time at the quarry site.
8. The lessee should make his/her own arrangement to form the approach road from the public road to the place of the quarry.
9. The lessee shall abide to all the provisions of Mines and Minerals (Development and Regulation) Act, 1957, The Metalliferous Mines Regulations 1961 or any other connected Laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1986, Indian Explosives Act 1884, (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Minerals Concession Rules, 1959.



10. Quarry lease area should be demarcated state on ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar with DGPS reading shall be recorded before commencement of quarrying and it should be maintained throughout the period of lease.
11. No quarrying shall be made within the safety distance of 7.5 mts to the adjacent patta lands and 10 mts to the adjacent Government Poramboke land.
12. Pit Mouth register should be maintained in the quarry site.
13. A minimum distance of 50 mts from any Civil structure/ habitation, Electric / Telephone lines, Rajiway line, Reservoir canal, National highways and other public works shall be kept from the periphery of any excavation area and 10mts safety distance to the village roads shall be kept and maintained during the entire lease period.
14. Quarry operations shall be carried only after appointing Mines Manager / Mines Mate and it should be carried out on the supervision of Mines Manager / Mines Mate.
15. Notice of opening of the quarry should be sent to the Director of Mines safety, Bangalore.
16. In any accident occur in the quarry area the lessees should give intimation to the Director of Mines safety Bangalore and District Collector, Krishnagiri at once and lessee is solely responsible for any violation.
17. The lessee should get the consent for establishment and for operation from the Tamil Nadu Pollution Control Board before the commencement of quarrying operation.
18. The conditions imposed by the TNPCB in the consent order should be adhered without any omission.
19. The Environmental clearance and the consent of the TNPCB should be renewed periodically without any lapse.
20. If any quarrying is found in the area granted on lease before the date of execution of lease deed, the lease is liable to be cancelled and criminal action will be initiated.
21. No lease granted under this rule shall be extended.
22. The lessee shall provide safety distance in the area as per the rules in force or any rule which may be imposed by Government. He must also take up all safety measures as directed by the Government at his own cost.

13. SPECIAL CONDITIONS

1. The Government reserves the right to accept or reject any or all tender / bid applications either in part or in full without any liability to the Government or any of the officers of the Government.
2. The authority for acceptance of tender / bid shall rest with the Government. The Government do not bind themselves to accept the highest or any other tender / bid applications.
3. The applicants participating in the tender / bid either should have (or) shall obtain a valid Permanent Account Number issued by the Income Tax department of Government of India.
4. The successful bidder shall pay 2% on the total tender / bid amount into the TAN number: CHE0025905R as TDS to IT Department and produce the remittance challan to the Assistant Director of Geology and Mining, Krishnagiri.
5. After execution of the lease deed the lessees shall have to pay as 2% on the seigniorage fee as TDS to Income Tax Department on the total Seigniorage fee paid for the total volume of transportation at the time of obtaining transport permit.
6. The lessee shall pay 10% of the total amount of the seigniorage fee paid for obtaining transport permit towards the contribution of Krishnagiri District Mineral Foundation Trust Fund and the said amount should be remitted to current account number 37243080996 @ the State Bank of India, Krishnagiri Branch then and there without fail.



7. Transportation of Black Granite/ Colour Granite blocks should not be carried out from 5.00 P.M. to 6.00 A.M.
8. The lessee shall strictly adhere to the statutory and safety requirements.
9. The waste materials generated during quarrying operation shall be dumped only within the area granted under lease.
10. Quarrying shall be done as per the approved Mining Plan and as such laws made by the Central Government/State Government and any other notifications issued then and there.
11. The lessee/grantee shall submit scheme of mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above as per rules.
12. The lessee shall submit half yearly returns in form 'F' and Annual returns in Form 'G' as per GCDR 1999 within the prescribed time limit.
13. The lessee should strictly adhere all the conditions imposed by the state Government, in the lease granting order, conditions imposed in the Environmental Clearance certificate, conditions imposed by the Director of Geology and Mining, the District Collector, Krishnagiri and any other directions / instructions issued from time to time.
14. Any other conditions stipulated by other Statutory/Government authorities shall be complied with.

14.SCHEDULE

KRISHNAGIRI DISTRICT

Areas notified for lease under Tender-Cum-Auction as per Rule 8-A of Tamil Nadu Minor Mineral Concession Rules, 1950

Sl. No	Taluk	Village	S.F. No.	Extent Proposed for lease (in hec.)	Classification of land	Mineral
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Bargur	Pasinayana palli	73(P)	4.25.0	Parai	Black Granite
2	Bargur	Guttur	362/1(P) BIT-1	1.02.0	Kallankuthu	Black Granite
3	Bargur	Guttur	362/1(P) BIT-2	1.42.0	Kallankuthu	Black Granite
4	Bargur	Guttur	309(P)	1.64.0	Kallankuthu	Black Granite
5	Bargur	Guttur	397/1 & 109/1	2.80.0	Kallankuthu UAW	Black Granite
6	Bargur	Pasinayana palli	10(P)	3.46.0	UAW Parai	Colour Granite
7	Bargur	Modikuppam	121(P)	2.52.0	UAW	Colour Granite



(1)	(2)	(3)	(4)	(5)	(6)	(7)
8	Hingur	Shoolamatai	333(F)	1.98.0	UAW	Colour Granite
9	Bargur	Kondam kothapalli	337/1(P)	2.54.0	Karadu	Colour Granite
10	Bargur	Puligunda	345(P) BIT-1	1.28.0	Kallankuthu	Colour Granite
11	Bargur	Puligunda	345(P) BIT-2	1.78.0	Kallankuthu	Colour Granite
12	Bargur	Jagadevi palayam	356(P)	1.37.0	UAW Pacai	Colour Granite
13	Pochampalli	Nagojana halli	609A(P) BIT-1	2.92.0	UAW Malai	Colour Granite
14	Pochampalli	Nagojana halli	609A(P) BIT-2	4.10.0	UAW Malai	Colour Granite
15	Pochampalli	Nagojana halli	609A(P) BIT-3	3.23.0	UAW Malai	Colour Granite
16	Pochampalli	Nagojana halli	609A(P) BIT-4	1.80.0	UAW Malai	Colour Granite
17	Pochampalli	Nagojana halli	609A(P) BIT-5	1.54.0	UAW Malai	Colour Granite
18	Denkani kottai	Trudhu kottai	1160/1 (Faru)	1.09.0	Podukal	Colour Granite

Krishnagiri,
09-10-2020.

V. JAYA CHANDRA BHANU REDDY,
District Collector,
Krishnagiri District.



10
APPENDIX VI-A
(See Rule 8-A)

TENDER APPLICATION FOR GRANT OF QUARRYING LEASE FOR GRANITE

(To be submitted in triplicate)

Dated Day of 2020

From

To

The District Collector,
Collectorate,
Krishnagiri.

Sir,

I/We submit the application under Rule 8-A of the TamilNadu Minor Mineral Concession Rules, 1959, in respect of item No. in District Gazette Notification No., Dt. 2020 or in newspaper advertisement, dated.2020. I/We request that quarrying lease under Rule 8-A of the TamilNadu Minor Mineral Concession Rules, 1959 may granted to me/us as per the procedure laid down in the above Rule.

ii. A sum of Rs.5000/- (Rupees Five Thousand only) being the non-refundable application fee has been remitted through challan under the following head of account

"0853 Non-Ferrous Mining and Metallurgical Industries-102, Mineral concession Fees rent and Royalties-AA quarries and Minerals 2705- Non-Taxation Fee-Application D.P.Code.No.0853-00-102-AA-2752" Vide Challan number Dated @ State Bank of India, Krishnagiri.

(or)

Demand draft Rs 5000/- (Rupees Five thousand only) from a Nationalized Bank (or) Co-operative Bank drawn in favour of the District Collector, Krishnagiri, DD No. dated of Bank Branch is enclosed.



III. The required particulars are given below :

1. Name of the applicant in which the quarry lease is required to be granted with full address.
2. (a) Is the applicant an Individual or Private Company, Firm or Association?
 - (b) If the applicant is an Individual, specify his name, nationality and address.
 - (c) If the applicant is private company, firm or association, specify name of directors, partners, members and their Nationality (Documentary evidence should be produced)
3. (a) Particulars of remittance of application fee (enclose original chalan or Demand draft from Nationalised bank / Co-operative bank)
 - (b) Particulars of remittance of Earnest Money Deposit (enclose original chalan or Demand draft from Nationalised bank / Co-operative bank)
4. Has the applicant filed an affidavit stating that the applicant-
 - (a) has filed up-to date income-tax returns.
 - (b) has paid the Income tax on him and
 - (c) has paid the income tax on the basis of self-assessment as prescribed in the Income Tax Act, 1961.
5. (a) Whether Mining Dues Clearance Certificate towards payment of quarrying dues, if any, enclosed?
 - (b) If on the date of application the applicant does not hold any quarrying lease / mining lease whether an affidavit to this effect is furnished?



6. Is the applicant having an existing industry or industrial programme for proposed industry? Specify and enclose the industrial programme and furnish the following:

- (a) Category of the existing / proposed industry: (e.g. 100% E.O.U./ D.G.T.D./ S.S.I.)
- (b) Licence Number and Date:
- (c) Installed capacity / Production capacity per annum in Sq.Mts
- (d) Total investment in the industry:
- (e) Date of commencement of the industry:
- (f) Nature of products manufactured [Specify quantities of individual items (e.g. building slabs/monuments/tiles etc.)] per annum in Sq. Mts.
- (g) Annual requirement of raw materials per annum in cubic metres.
- (h) Expansion details, if any (furnish documentary evidence) Furnish above details for proposed industry also excepting St.No 6(b); if licence is not yet obtained, 6(e) and 6(h):

Not Applicable

7. Minor Mineral which the applicant intends to quarry with descriptions.

8. Period for which quarrying lease is required:

9. Total extent of the area applied for:

10. Details of the area for which the tender application is made.

<i>Sl. No in the Gazette Notification</i>	<i>District</i>	<i>Taluk</i>	<i>Village</i>	<i>Survey Number</i>	<i>Area in Hectare</i>
(1)	(2)	(3)	(4)	(5)	(6)



13

11 Maximum tender amount the applicant is willing to offer for getting the area in lease for quarrying. (Specify both in figures and words)

12 Particulars of areas already held under quarrying lease in Tamil Nadu. (Enclose an affidavit showing the particulars of areas 'minera' wise in each District of the State which the applicant and any other person jointly with him already holds under a quarry lease, already applied for but not yet granted; and being applied for simultaneously)

13 Any other particulars which the applicant wishes to furnish

I/We do hereby declare that the particulars furnished above are correct and am/are ready to furnish any other details and security deposit as may required by the Government or District Collector or District Forest Officer. I hereby swear and state that I/We know very well about the provisions contained in the Tamil Nadu Minor Mineral Concession Rules, 1959 in respect of granting of quarry lease applied for and other conditions stipulated in connection with the quarrying and other operations.

Place

Yours faithfully,

Date :

Signature of the applicant.

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



Industries (MME.2) Department,
Secretariat, Chennai - 600 009



Letter No.900/MME.2/2021 - 1, Dated 26.02.2021

From

Thiru N. Muruganandam, I.A.S.,
Principal Secretary to Government.

To

M/s. Pranita Granites,
No.62/33,
Pulikuthi Street,
Gugai,
Salem - 636006.

Sir,

Sub: Mines and Minerals - Minor Mineral - Colour Granite -
Pasinayanapalli Village - Bargur Taluk - Krishnagiri
District - S.F.No.10 (Part) - Over an extent of 3.46.0
hectares of Government Poramboke land - Highest Bid
amount offered by M/s. Pranita Granites, Salem -
Precise Area Communicated - Balance Lease Amount -
Approved Mining Plan and Environmental Clearance -
Called for.

- Ref: 1. Krishnagiri District Gazette Extraordinary issue in
English No.20 and Tamil No.35 dated:09.10.2020.
2. Application of Highest Bidder of M/s. Pranita
Granites, Salem on 07.11.2020.
3. Proposal of the District Collector, Krishnagiri, in file
No.1043/2020 (Mines), dated 03.12.2020.
4. From the Commissioner of Geology and Mining, File
Rc No.6939/ MM4/ 2020, dated: 22.01.2021 and
08.07.2021.

I am directed to state that in the references third and fourth cited,
the District Collector, Krishnagiri and the Commissioner of Geology and
Mining have recommended to declare you as Successful bidder and to
grant quarry lease for quarrying of Colour Granite over an extent
of 3.46.0 hectares of Government Poramboke land in S.F.No. 10 (Part) in
Pasinayanapalli Village of Bargur Taluk, Krishnagiri District for a period of
20 years under rule 8-A of the Tamil Nadu Minor Mineral Concession
Rules, 1959.

//p.t.off



2. I am directed to declare you as successful bidder to grant quarry lease for quarrying of Colour Granite over an extent of 3.46.D hectares of Government Poramboke land in S.F.No. 10 (Part) in Pasinayanapalli Village of Bargur Taluk, Krishnagiri District for a period of 20 years under rule 8-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 subject to the outcome of W.P.No.18317 of 2020 and W.P.No.16060/2020 and W.M.P.No.19999 of 2020. The District Collector shall comply with the directions of the Hon'ble High Court of Madras in W.P.No.18317 of 2020 and W.P.No.16060/2020 and W.M.P.No.19999 of 2020 and undertake the activities mentioned in para 3 below strictly in compliance with the directions of the Hon'ble High Court of Madras.

3. In this connection, I am directed to request you to remit the balance lease amount of Rs.2,79,00,000/- in the District Treasury concerned and to submit the original challan to Government within a period of one month from the date of this communication and to submit the approved Mining Plan as per Rule 12 of Granite Conservation and Development Rules, 1999 through the Commissioner of Geology and Mining to Government within the period of 3 months from the date of receipt of this communication as per Rule 8-A(8)(a)(ii) of the Tamil Nadu Minor Mineral Concession Rules, 1959 and also to produce Environmental Clearance obtained from the Competent Authority for the above said area in the conditions stipulated in the prescribed Act and Rules in addition to the following conditions:-

- 1) A safety distance of 50 meters to be maintained to the Electric line passing on the North side of the lease area.
- 2) A safety distance of 10 meters to be maintained to the Government land in S.F.No.366 in South and West side of the lease area.
- 3) A safety distance of 7.5 meters to be maintained to the adjacent patta and should not cause any hindrance to them while quarrying and transportation.
- 4) All conditions stipulated in the District Gazette Extra ordinary notification English No.20 and Tamil No.35 dated.09.10.2020 should be adhered by the auctioner.
- 5) The waste materials generated during the course of quarrying should be dumped only within the lease hold area.
- 6) Environmental 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.
- 7) The applicant firm 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 the digitized map with DGPS readings should be submitted in the CD form to the Assistant Director (i/c), Krishnagiri.
- 8) The District Administration and Geology and Mining Department should ensure the conditions imposed in G.O.(Ms).No.79, Industries Department, dated 06.04.2015.
 - 9) As per Rule 12(V) of Minerals (other than Atomic & Hydrocarbon Energy Minerals) Concession Rules, 2016, the applicant firm shall at their own expenses erect, maintain and keep in repair all the boundary pillars.
 - 10) The applicant firm should use mild explosives during quarrying.
 - 11) Child Labourers should not be engaged in quarry works.
 - 12) If any violation is found during quarrying operation, the penal provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.
 - 13) The applicant firm should ensure that while starting the quarry work, all the quarry workers working under their control are registered in the Labour Welfare Board and also enrolled in the ongoing insurance scheme.
 - 14) The District Collector, Krishnagiri shall obtain a sworn-in-affidavit from the applicant firm containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No. 12789/MMB2/2002-7, Industries Department, Dated: 9.1.2003 are complied with.
 - 15) The grant of quarry lease to the applicant firm in the applied area will be based on the Judgment of Hon'ble High Court of Madras in W.P.No.18317 of 2020 and W.P.No.16060/2020 and W.M.P.No.19999 of 2020.

Yours faithfully,

[Signature]
26.2.2021

for Principal Secretary to Government

Copy to:

The Commissioner of Geology and Mining,
Guindy, Chennai -600 032.

The District Collector,
Krishnagiri. (for necessary followup action)

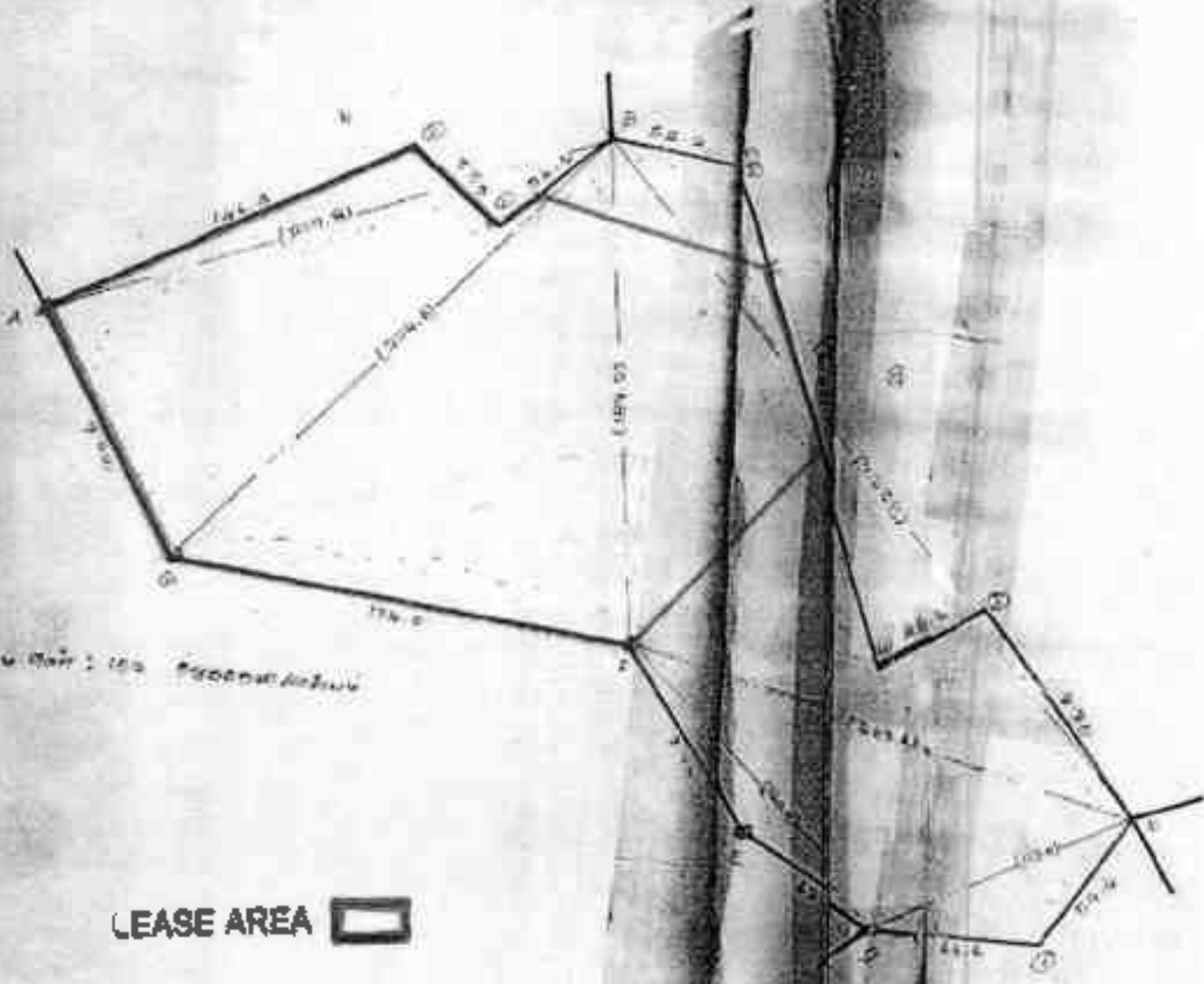
[Signature]
26/2/2021

[Signature]

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



Handwritten notes at the top of the page, including 'Date: 14.12.2014' and 'Area: 1.48.47.2000 Sq. Ft.'.



Signature of Dr. S. Karuprannan, M.Sc., Ph.D.
RQP/MAS/263/2014/A



Puzhambur Motel
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LEASE AREA

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

Munisipal, Thiruvananthapuram (Kerala) Slum														
No	Sl	Sub	Pr	Particulars	Category									
1	19	-2	P	படித்துவாரி	படித்துவாரி								14 (Kerala) 1000.00	
2	20	-2	P	படித்துவாரி	படித்துவாரி								1174- 1000.00	
3	20	-2	P	படித்துவாரி	படித்துவாரி								11-80 1000.00	
TOTAL FOR SLURFY NUMBER- 8											10	35.50	30	75
10	-	10	P	படித்துவாரி	படித்துவாரி								174.50 0 00	
11	-	11	P	படித்துவாரி	படித்துவாரி								21.50 0 00	
12	-	12	P	படித்துவாரி	படித்துவாரி								23.50 0 00	
13	1	13-1	P	படித்துவாரி	படித்துவாரி								1310- 1000.00	
14	2	-2	P	படித்துவாரி	படித்துவாரி								103-80 1000.00	
15	3	-3	P	படித்துவாரி	படித்துவாரி								1314 to 1000.00	
16	4	-4	P	படித்துவாரி	படித்துவாரி								712-100 1000.00	
17	5	-5	P	படித்துவாரி	படித்துவாரி								7.2-100 1000.00	

சென்னை மாநகராட்சி
 22, மாதிரியானபேட்டை
 திருவனந்தபுரம்-75, திருவனந்தபுரம்-19.

Form Inward to govt of Revenue Office - 16/11/2011

S	Sl. No.	Year	Category	Area	Sub Area	Area	Area	Area	Area	Area	Area	Area	Area	Area	Area
1	10	-2	F	Subdivision	Udipi										
2	11	-2	F	Subdivision	Udipi										
3	12	-2	F	Subdivision	Udipi										
TOTAL FOR SURVEY NUMBER - 8											10	55.50	30	75	
10	-	10	F	Sub	Subdivision										
11	-	11	F	Sub	Subdivision										
12	-	12	F	Sub	Subdivision										
13	1	13-1	F	Subdivision	Udipi										
14	2	-2	F	Subdivision	Udipi										
15	3	-3	F	Subdivision	Udipi										
16	4	-4	F	Subdivision	Udipi										
17	5	-5	F	Subdivision	Udipi										

22/11/2011
 22, பரமசிவன் பள்ளி
 22, பரமசிவன் பள்ளி



	2	3	4	5	6	7	8	9	10	11	12
14Y-1A	ர	4	...	8-2	4	2	77	0 33-0	0 64	524 ரா. வெங்கட் சாமநாயகு.	
14Z-1A	ர	4	...	8-2	4	2	77	0 16-0	0 44	92 ரா. குள்ளம்மாள்.	
14A-1B	ர	4	...	8-2	4	2	77	0 18-0	0 50	153 ரா. சம்பூர்ணம் மாள்.	
14-2A	ர	4	...	8-2	4	2	71	0 01-5	0 06	524 ரா. வெங்கட் சாமநாயகு.	
14B-2A	ர	4	...	8-2	4	2	77	0 05-0	0 14	515 ரா. புட்டு (எ) வெங்கட்ராம நாயகு.	
14C-2A	ர	4	...	8-2	4	2	77	0 04-0	0 11	541 ரா. சாமநாயகு.	
14D-2A	ர	4	...	8-2	4	2	77	0 02-0	0 06	524 ரா. வெங்கட் சாமநாயகு.	
								30 95-5	30 36		
10	...	...	...	...	...	...	...	5 74-5	...		...
11	...	...	...	...	...	...	...	0 21-5	...		...
12	...	...	...	...	...	...	...	0 29-5	...		...
13-1A	ர	4	...	8-2	4	2	77	0 34-0	1 49	426 ரா. மாதவமாள்.	
13-1B	ர	4	...	8-2	4	2	77	0 48-0	1 53	169 ரா. சாலம்மாள்.	
13-1C	ர	4	...	8-2	4	2	77	0 00-0	2 48	153 ரா. சம்பூர்ணம் மாள்.	சுதரர் கிணறு-1.
13-1D	ர	4	...	8-2	4	2	77	0 29-5	0 82	712 ரா. வெங்கட் சாமநாயகு (1), ரா. முருகன் (2), ரா. சங்கரன் (3).	
13-1E	ர	4	...	8-2	4	2	77	0 17-5	0 57	342 ரா. சாமநாயகு.	
13-1F	ர	4	...	8-2	4	2	77	0 18-0	0 50	187 ரா. சிவசாமநாயகு.	
								2 00-0	7 19		
14-1A	ர	4	...	8-2	4	2	77	0 33-5	1 53	543 ரா. வந்தை.	
14-1B	ர	4	...	8-2	4	2	77	0 16-0	0 44	2 ரா. சம்பூர்ணம் மாள்.	
14-1C	ர	4	...	8-2	4	2	77	0 04-0	0 11	241 ரா. சிவசாமநாயகு.	
14-1D	ர	4	...	8-2	4	2	77	0 10-5	1 08	181 ரா. சிவசாமநாயகு (எ) சிவசாமநாயகு.	

(Handwritten Signature)

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

PHOTOCOPY OF THE LEASE AREA

Field photos in respect of Colour granite quarry lease, Govt land through tender cum auction in quarry lease over an extent of 3.46 Hectares in S.F.No:10(Part) of Pasinayanapalli Village, Bargur Taluk, Krishnagiri District, Tamil Nadu State belongs to **M/s. Pranita Granites.**



Fig.1 Photographs showing DGPS Survey of the Base Point



Fig.2 Photographs showing DGPS Survey of the Rover Unit Pillar No.



FORM C

(See rule 5(a))

Acknowledgement of Registration of Firms

The Registrar of Firms, Tamil Nadu hereby acknowledges the receipt of the statement prescribed by Section 58(1) of the Indian Partnership Act, 1932. The statement has been filed and the name of the firm **PRANITA GRANITES** has been entered in the Register of Firms as No **FR/Salem East/121/2020**.

Date : 22-Oct-2020
Station : Salem East

Digitally Signed by Thiru/ Tmt/ Selvi
subithalakshmi S
Registrar of Firms

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





தமிழ்நாடு தமிழ்நாடு TAMILNADU 6.10.2020

₹.100/-

V. LAKSHMIDHEVI
SALEM-7.

CA 260717

N. K. Kumar

N. கந்தசாமி

சுதந்திர சிபுராசாமி
L. No: 16613/C/R6
சுதந்திர சிபுராசாமி, சென்-636 007
சுதந்திர



PARTNERSHIP DEED

This deed of partnership entered into this the 06th day of October 2020, between:

- Mrs.V.Lakshmidhevi Wife of Shri.V.Venkateshwaran. aged 42 years residing at New No.86-A Old No-77-A, Ram Nagar Kumarasampatti Salem-636007 [Hereinafter referred to as First Partner] [PAN:ADKPL2067M],[Aadhaar:3323 4895 2158]

V.Lakshmidhevi	Nehal Sr LV
First Partner	Second Partner



தமிழ்நாடு தமில்நாடு TAMILNADU 6-10-2020

15-10-20
V. LAKSHMIDHEVI
SAC. E.M. 7.

CA 260719
N. K. Srinivasan
N. கந்தசாமி
சென்னை கிராமிய சபை
L. No. 16613/C/96
சென்னை, தொலை-536 009



Whereas the two partners above mentioned have agreed as to the terms and conditions governing this partnership, now reduce the same in writing as under:

Now therefore this indenture witnesses as follows:

NAME:

1. The name and style under which this partnership is to carry on business shall be "Pranita Granites".

OBJECT:

2. The business to be carried out are

V. Lakshmidhevi	Nehaol Sri LV
First Partner	Second Partner



2.1. Trading, Processing, import, export, or otherwise deal in all kinds and varieties of Dhall and allied products

2.2. Excavating, Mining, Cutting, Polishing, Processing, treating, trading, importing, exporting or otherwise deal in all types stones, including marble, granite, rough blocks, Lime stone, sand stone, quartz, blue metal or any other stone of all description, including setting, processing, trading or dealing into waste and by products arising from such activities

2.3. Any other business or businesses as may be found profitable may also be carried on by this partnership subject to the terms of this deed of partnership.

PLACE OF BUSINESS:

3. The main place of business shall be at No.62/33, 1st Pulikuthi Street, Gagai, Salem-636006, either this main place may be shifted to some other place or places and/or branch or branches may be opened at such other place or places as may be decided by all the partners from time to time.


CAPITAL:

4. The capital of this partnership shall be the amounts standing to the credits of the partners from time to time and such accounts may carry simple interest not exceeding twelve percent per annum.

POWERS AND DUTIES:


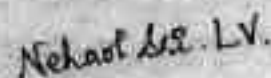
5. V.Lakshmidhevi [First Partner] and shall have power individually

5.1. Submit a dispute relating to the business of the firm to arbitration, compromise, resolution or otherwise;

	
V.Lakshmidhevi	Nehal Sri LV
First Partner	Second Partner



- 5.2. Open, operate all types of banking accounts (including current overdrawn or otherwise);
- 5.3. Compromise or relinquish any claim or portion of a claim by the firm;
- 5.4. Proceed or take action on behalf of the company either by filing of suit, case or otherwise;
- 5.5. To alter, acquire, purchase, manage, develop, exchange, lease, mortgage, underlet, sell, give in gifts or dispose of, improve or otherwise deal with all kinds of land, building or other immovable property, on behalf of the firm, either in full or any part thereof for such consideration as may be agreed upon by all and to sign all related deeds, agreements or documents related to it;
- 5.6. Invest funds of the partnership in such modes and to modify or otherwise handle it as may be decided from time to time;
- 5.7. Enter into ventures, association, partnership, subscribe shares or associate otherwise on behalf of the firm;
- 5.8. Receive articles (either by post, courier, delivery or otherwise) addressed to the firm;
- 5.9. To nominate persons to act on behalf of partnership firm by execution of a power of attorney, letter, or otherwise. In such a case all such actions done by such duly nominated person on behalf of the partnership shall be binding on all partners and partnership firm.
- 5.10. Represent this firm before any Court of Law or other Government Departments, Agencies, Corporations, associations or otherwise or to authorize any other person to so represent;

	
V. Lakshmidhevi	Nehaol Sri LV
First Partner	Second Partner

5 | Page


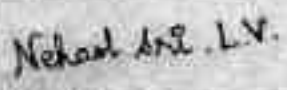


6. However in respect of the following, V.Lakshmidhevi (First Partner) and Nehal Sri LV (Second partner) alone shall have powers to

- 6.1. Borrow funds for the business
- 6.2. Do such other acts, deeds or activities that are necessary, incidental, or conducive for the management of the affairs of the business of this partnership

BOOKS OF ACCOUNTS:

7. The fiscal year of the partnership shall be the financial year starting from 1st April of every year and ending on 31st March of every year.
8. Proper books and records shall be kept with reference to all partnership transactions, and each partner shall at all reasonable times during business hours have access to the books and records.
 - 8.1. The books shall be kept upon such method of accounting as shall properly reflect the income of the partnership and as shall be agreed upon by the partners.
 - 8.2. The books and records shall include the designation and identification of any property in which the partnership owns a beneficial interest; such records shall include, but shall not be limited to, the ownership of property, real, personal, and mixed, as well as any property in which the partnership owns an interest

	
V.Lakshmidhevi	Nehal Sri LV
First Partner	Second Partner



REMUNERATION:

9. The day to day affairs of partnership shall be taken care by active participation in the management of the affairs by following partner who will be paid remuneration as under:

Serial	Name	Salary
1.	V.Lakshmidhevi	75000 per month
	Total	75000 per month

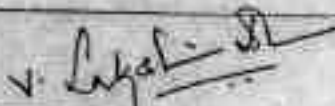
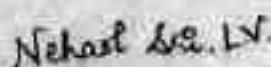
SHARING RATIO:

10. The accounts of this partnership shall be closed to profit and loss account on the 31st of March every year and the resultant net profit or loss shall be divided among or borne by the partners in the following ratios:

Serial	Name	Profit/Loss sharing ratio
1.	V.Lakshmidhevi	60.00 %
2.	Nehal Sri LV	40.00 %
	Total	100.00%


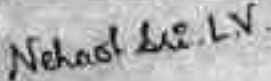
OTHERS:

11. All real or personal property, including all improvements placed or located on such property, acquired by the partnership shall be owned by the partnership, such ownership being subject to the other terms and provisions of this Agreement. Each partner hereby expressly waives the right to require partition of any partnership property or any part of that property.

	
V.Lakshmidhevi	Nehal Sri LV
First Partner	Second Partner




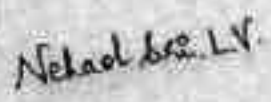
12. The Partnership can obtain Government or Private lease for mining, operation of quarries or otherwise, either in the name of the partnership or any of the partners of the firm out of the funds of the partnership and in such a case such lease, mine or quarry shall be the property of partnership and shall be operated by it for its purposes.
13. If any of the partners desire to retire from this partnership then he/she may do so by giving one month's advance intimation. Such retiring partner shall have no right to demand dissolution of this partnership. Such retiring/expelled partner shall have no right to claim a share in the goodwill of the firm, if any.
14. Any difference of opinion among the partners shall be decided by First partner and such decision shall be binding upon the partnership firm. However if the difference of opinion still continues it may be left to arbitration and settled amicably. Arbitration shall be conducted in English in accordance with Arbitration and Conciliation Act, 1996.
15. This partnership shall be a partnership at will.
16. The headings used in this Agreement are used for administrative purposes only and do not constitute substantive matter to be considered in construing the terms of this Agreement.
17. This Agreement shall not be more strictly construed against any one party than against any other.



	
V. Lakshmidhevi	Nehal Sri LV
First Partner	Second Partner



18. Modification of the addresses due to renumbering or reclassification or renaming or otherwise by operation of law will not invalidate the agreement and the addressees referred to above shall accommodate such modification and operate accordingly.












19. Subject to the foregoing, this partnership shall be governed by the provisions of the Indian Partnership Act of 1932.

	
V. Lakshmidhevi	Nehal Sri LV
First Partner	Second Partner

Witnesses:		
1.	Signature	
	Name	S. Loganathan
	Father's Name	M. Subbalakshmi
	Address	No. 12, Tipperary Road, Yercaud Salem-1.
	Pan Number	ANAPK 8879 G
	Aadhaar Number	5821 9055 2252
2.	Signature	
	Name	K. THYAGARAJAN
	Father's Name	K. KARUPPAIYAN
	Address	No. 5, 3rd Street, KC Flat, ASTALAKSHMI Nagar, Royur, Chennai - 600116.
	Pan Number	AFUPT 4832 N
	Aadhaar Number	433T 0133 2469

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  <p style="text-align: center;">இந்திய அரசாங்கம் Unique Identification Authority of India Government of India</p> <p>உபயோக எண் / Enrolment No.: 2192/50232/45399</p> <p>To: வ. விநாயகம் செவ்வாய் அண்ணா Venkateshwarar Venkateshwaran W/O: Venkateshwaran OLD No 77 A, ROW No 88 A, RAMNAGAR CUMARASAMPATTI Salem Hathampatti Salem Tamil Nadu - 636007 994455280</p>  <p style="text-align: center;">உங்கள் ஆதார் எண் / Your Aadhaar No 3323 4895 2158 UID: 9125290749581118</p> <p style="text-align: center;">எனது ஆதார் எனது அனை யாளம்</p>	  <p style="text-align: center;">ஆதார் AADHAAR</p> <p style="text-align: center;">தகவல்</p> <ul style="list-style-type: none"> ஆதார் உங்கள் அடையாளம், இடம், பாலினம், உயரம், எடையை உடனடி செய்தி நுகர்வன குடிசை. உள்ளடக்க எண்ணு ஆதாரம் ஆதார் செய்தி நுகர்வன குடிசை. இது மின்னணு செய்தி நுகர்வன குடிசை செய்தி நுகர்வன குடிசை. <p style="text-align: center;">INFORMATION</p> <ul style="list-style-type: none"> Aadhaar is a proof of identity, not of citizenship. To establish identity, authenticate online. This is electronically generated letter. <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> ஆதார் உங்கள் அடையாளம், இடம், பாலினம், உயரம், எடையை உடனடி செய்தி நுகர்வன குடிசை. உள்ளடக்க எண்ணு ஆதாரம் ஆதார் செய்தி நுகர்வன குடிசை. இது மின்னணு செய்தி நுகர்வன குடிசை செய்தி நுகர்வன குடிசை. </div> <p style="text-align: center;">ஆதார் உங்கள் அடையாளம், இடம், பாலினம், உயரம், எடையை உடனடி செய்தி நுகர்வன குடிசை.</p> <p style="text-align: center;">Aadhaar is valid throughout the country.</p> <p style="text-align: center;">Aadhaar will be helpful in availing Government and Non-Government services in future.</p>
  <p style="text-align: center;">இந்திய அரசாங்கம் Unique Identification Authority of India Government of India</p> <p>உபயோக எண் / Enrolment No.: 2192/50232/45399</p> <p>To: வ. விநாயகம் செவ்வாய் அண்ணா Venkateshwarar Venkateshwaran W/O: Venkateshwaran OLD No 77 A, ROW No 88 A, RAMNAGAR CUMARASAMPATTI Salem Hathampatti Salem Tamil Nadu - 636007 994455280</p>   <p style="text-align: center;">உங்கள் ஆதார் எண் / Your Aadhaar No 3323 4895 2158 UID: 9125290749581118</p> <p style="text-align: center;">எனது ஆதார் எனது அனை யாளம்</p>	  <p style="text-align: center;">ஆதார் AADHAAR</p> <p style="text-align: center;">தகவல்</p> <p>உங்கள் அடையாளம், இடம், பாலினம், உயரம், எடையை உடனடி செய்தி நுகர்வன குடிசை.</p> <p>உள்ளடக்க எண்ணு ஆதாரம் ஆதார் செய்தி நுகர்வன குடிசை.</p> <p>இது மின்னணு செய்தி நுகர்வன குடிசை செய்தி நுகர்வன குடிசை.</p> <p style="text-align: center;">INFORMATION</p> <p>Aadhaar is a proof of identity, not of citizenship.</p> <p>To establish identity, authenticate online.</p> <p>This is electronically generated letter.</p> <p style="text-align: center;">ஆதார் உங்கள் அடையாளம், இடம், பாலினம், உயரம், எடையை உடனடி செய்தி நுகர்வன குடிசை.</p> <p style="text-align: center;">Aadhaar is valid throughout the country.</p> <p style="text-align: center;">Aadhaar will be helpful in availing Government and Non-Government services in future.</p>

(Handwritten Signature)

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



Sri Krishna Explosives

"Sri Krishna Explosives"
 Plot No. 7, (Door No. 4/197-1)
 Indira Nagar Extension,
 Jagrithipalli, Salem-636 002
 Phone : 0427-2340738, 04432-44073
 E-mail : srikrishnamohan2008@gmail.com



Prop. **G. MOHAN, B.E.,**

Date: _____

23.04.2021

To

M/s Pranita Granites,
 No. 62/33, Fulikuthi Street,
 Cugai, Salem-636006.

Dear Sir,

Subj. Regarding Blasting Work using Explosives in your proposed quarry.

.,.,.

We are having Explosive Licence in Form LE-3 holding No. E/SC/TN/22/515(E.47493) valid upto 31.03.2024 situated in S.F.No. 18/2 Kadiripuram Village, HarurTk, Dharmapuri Dt and our office functioning at above address. We are engaging Two Explosive Vans for transporting Explosives(Class-2) and Detonators(Class-3) separately from our magazine to your worksite and will employ experienced licensed blasters, Certified 2nd class Managers and shotfirers for safe blasting works.

We are willing to undertake blasting work on contract basis at your S.F.No.10 (Part)over an extent of 3.46.0 Hect. in Pasinayanapatti Village, BargurTk, Krishnagiri-Dt, Tamilnadu

Thanking you.

Yours faithfully,
 For **SRI KRISHNA EXPLOSIVES**

G. MOHAN, B.E.
 PROPRIETOR



Enclosure:

1. Our Explosive Licence copy.



अनुमति प्रारूप एस.ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) में (ग) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपरोक्त के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुमति

Licence to possess - (g) for use, explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magz

अनुमति सं. (Licence No.): E/SC/TN/22/515(E47483)
वार्षिक फीस राशि (Annual Fee Rs): 4800/-



1. Licence is hereby granted to

Shri G. MOHAN, Proprietor M/s Sri Krishna Explosives (अभिजागी / Orasplie) Shri G. Mohan, Sri Vashta Kurma, Plot No 7, (Door No 4/197), Indane Nagar Extension, Jayar Roadpatti, Salem-636302, state: Tamilnadu, Town/Village - Salem, District-SALEM, State-Tamil Nadu, Pincode - 636302

को अनुमति अनुदत्त की जाती है।

2. अनुमतिधारी की प्रकृति। Status of licensee: Individual

3. अनुमति निम्नलिखित प्रयोजनों के लिए विधिवान्व है। Licence is valid only for the following purpose. प्रारूप के लिए Nitrate Mixture, Safety Fuse, Detonating Fuse, Detonators, के उपयोग के लिए

4. अनुमति विस्फोटकों के निम्नलिखित विधियों, प्रकार और मात्रा के लिए विधिवान्व है। Licence is valid for the following kinds and quantity of explosives. (क) (a)

क्र. सं. (Sl. No.)	नाम और विवरण (Name and Description)	वर्ग और प्रमाण (Class & Quantity)	उप-वर्णन (Sub-division)	समय किसी एक समय में (Quantity at any one time)
1.	Nitrate Mixture	1.0	0	750 Kg.
2.	Safety Fuse	0.1	0	10000 Mtrs
3.	Detonating Fuse	0.2	0	25000 Mtrs
4.	Detonators	0.3	0	20000 Nos.

(क) किसी एक स्थान में अधिकतम मात्रा में विस्फोटक की मात्रा (अनुच्छेद 3(क) में (ग) के अधीन अनुमति के लिए) 25 times
(d) Quantity of explosives to be purchased in a calendar month (applicable to licencee under article 3(d) and (e)) is above.

5. निम्नलिखित रेखाचित्र (रेखाचित्र) से अनुमति परिसर की वृष्टि होती है। रेखाचित्र सं. (Drawing No.) E/SC/TN/22/515(E47483)
The licensed premises shall conform to the following drawing(s): दिनांक (Dated) 17/10/2008

6. अनुमति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:
Survey No(s): 18/2, ग्राम (Town/Village): Kadripuram village, Harur Taluk पुलिस थाना (Police Station): Bommalidi
जिला (District): DEARMAPURI राज्य (State): Tamil Nadu पिनकोड (Pincode):
दूरभाष (Phone): ई-मेल (E-Mail): फोन (Fax):

7. अनुमति परिसर में निम्नलिखित सुविधाएं उपलब्ध हैं। A Main Magazine room, Lobby and a Detonator Room
The licensed premises consist of following facilities.

8. अनुमति समक - समय पर सहासकारी विस्फोटक अधिनियम, 1884 और उसके अधीन विधित विस्फोटक नियम, 2008 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपबंधों के अधीन रहते हुए अनुमति की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

1. उपर्युक्त क्रम सं 5 में बसा कथित रेखाचित्र (स्थान, संरचनात्मक संरचना और अन्य विवरण दर्शाते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
2. अनुमति अधिकारी द्वारा हस्ताक्षरित इस अनुमति की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
3. सूची प्रारूप DE-3) Distance Form DE-3.

9. यह अनुमति तारीख 31 मार्च 2010 तक विधिवान्व रहेगी। The licence shall remain valid till 31st day of March 2010.

यह अनुमति अधिनियम या उसके अधीन विधित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपस्थित इस अनुमति की शर्तों का अधिग्रहण करने या यदि अनुमति परिसर खोजता या उसमें समक उपबंध में दृष्टि विवरण के अनुरूप नहीं पाए जाने पर निरस्त या प्रतिबंधित की जा सकती है, जहां यह लागू हो।

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 17/10/2008

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives



Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 06/01/2011
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 11/06/2011
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 01/10/2011
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 25/04/2014

Transfers :

- Change in Licensee Name/Address/Status dated : 15/04/2014

सर्वीकरण के प्रस्ताव के लिए स्थान
Space for Endorsement of Renewal

सर्वीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापक प्राधिकारी के हस्ताक्षर और स्थान Signature of licensing authority and stamp
25/01/2019	31/03/2024	 Controller of Explosives, Vellore मिसफोट के निबंधक, वेल्दूर Controller of Explosives, Vellore

कानूनी चेतावनी : मिसफोटिंग को गंभीर ढंग से घमसाने या उसका दुरुपयोग विधि के अर्थों में गंभीर दण्डनीय अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

(Faint, mostly illegible text in the middle section of the document, likely containing administrative details and conditions of the license.)

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



Signature

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

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

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

उनकीपंजीयन संख्या है
His registration number is

ROP/MAS/263/2014/A

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

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

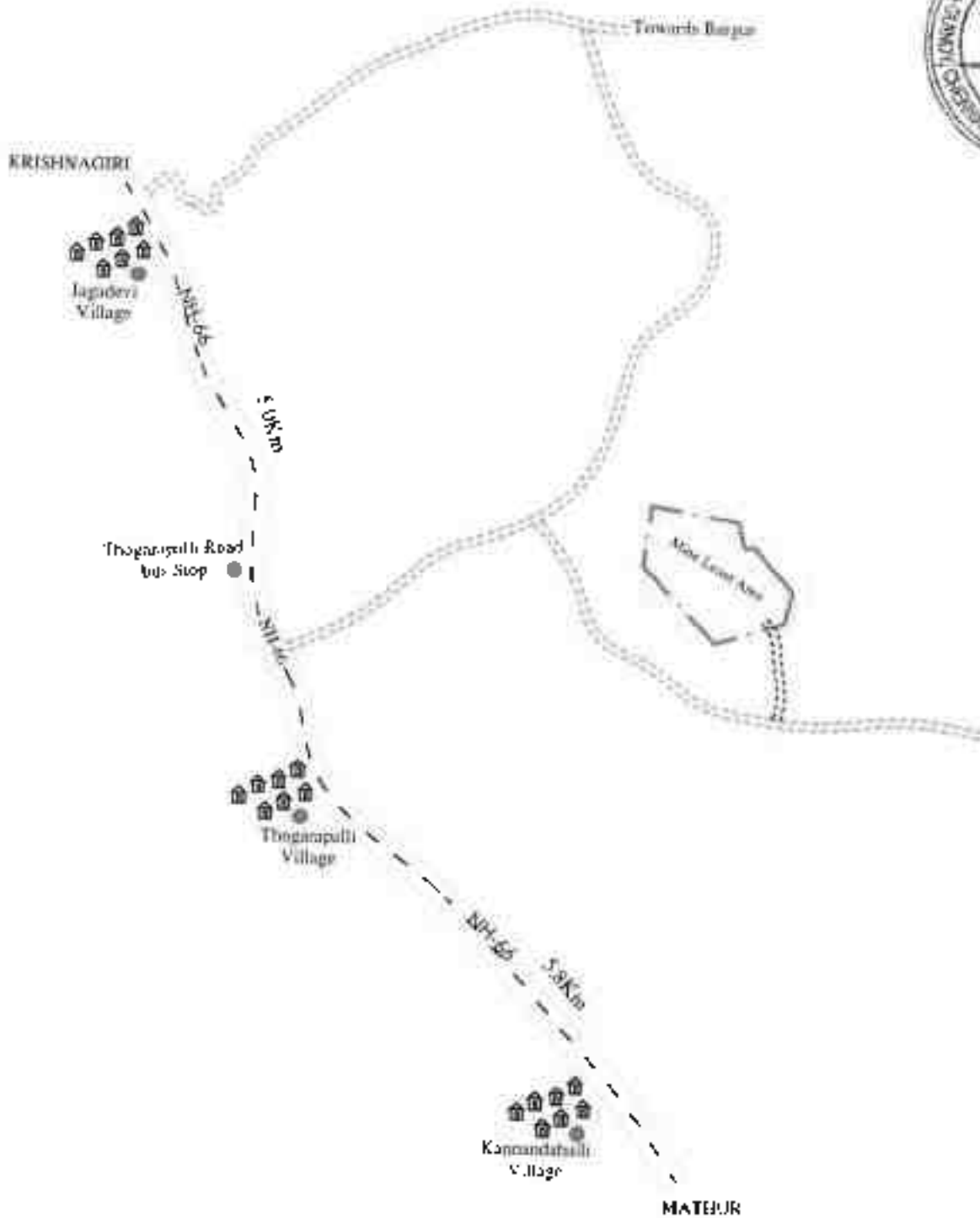
This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.





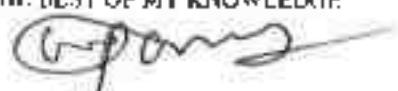
स्थान/ Place Chennai
दिनांक/ Date 16.12.2014

Signature

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

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



<p>APPLICANT: M/s. PRANITA GRANTIES, No.62/35, PULIKUTED STREET, GUGAI, SALIPAL-636006.</p>	<p>PLATE NO-I</p>	<p>ROUTE MAP Not to Scale</p>
<p>LOCATION: EXTENT : 3.46.0 Hect. S.F.NO : 10(Part) VILLAGE : PASINAYANAPALLI. TALUK : BARGUR, DISTRICT : KRISHNAGIRI. STATE : TAMIL NADU</p>	<p>INDEX</p> <p>QUARRY LEASE AREA </p> <p>APPROACH ROAD </p> <p>VILLAGE ROAD  279</p> <p>NH-66 </p>	<p>Prepared By:</p> <p>I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE</p> <p></p> <p>Dr. S. KARUPPANNAM, M.Sc., Ph.D., RECOGNIZED QUALIFIED PERSON RQP/MAS/263/2014/A</p>

78°21'41.4649"E

12°28'49.6385"N



PLATE NO-IA

APPLICANT:

M/S. PRANITA GRANITES,
No. 62/33,
PULIKETTU STREET,
GUGAI,
SALEM-636006.

LOCATION:

EXTENT : 3.46.0Hect.
S.F. NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

QUARRY LEASE AREA: ●

TOPO SHEET NO : 57 L/07

LATITUDE: 12°28'42.3501"N-12°28'49.6385"N

LONGITUDE: 78°21'41.4649"E-78°21'49.6891"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.,
RECOGNIZED QUALIFIED PERSON
ROP/MAS/263/2014/A

12°28'49.6385"N



PLATE NO-IC

APPLICANT.

Ms. PRANITA GRANITES,
No.62/33,
PULIKUTH STREET,
GUGAL,
SALEM-636006.

LOCATION:

EXTENT : 3.46 Hect.
S.F.NO : 10 Part
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

TOPO SHEET NO : 57-L07
LATITUDE: 12°28'42.3501"N-12°28'49.6385"N
LONGITUDE: 78°21'41.4649"E-78°21'49.6891"E

INDEX

QUARRY LEASE AREA	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
VILLAGE ROAD	
EXISTING QUARRY PIT	
EB LOW TENSION LINE	

SATELLITE IMAGE FOR 1KM RADIUS

SCALE - 1:10000

PREPARED BY:

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

OCTOBER TO DECEMBER



PLATE NO-10

APPLICANT:

M/s PRANITA GRANITES,
No.62/33,
PULIKOTH STREET,
GUGAI,
SALFM-636006.

LOCATION:

EXTENT : 2.46.00 Hect,
S.F NO : 101 Part
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

TOPO SHEET NO : 57-L/07

LATITUDE: 12°28'42.3501"N-12°28'49.6385"N

LONGITUDE: 78°21'41.4649"E-78°21'49.6891"E

INDEX

QUARRY LEASE AREA	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
VILLAGE ROAD	
EXISTING QUARRY PIT	
EB LOW TENSION LINE	

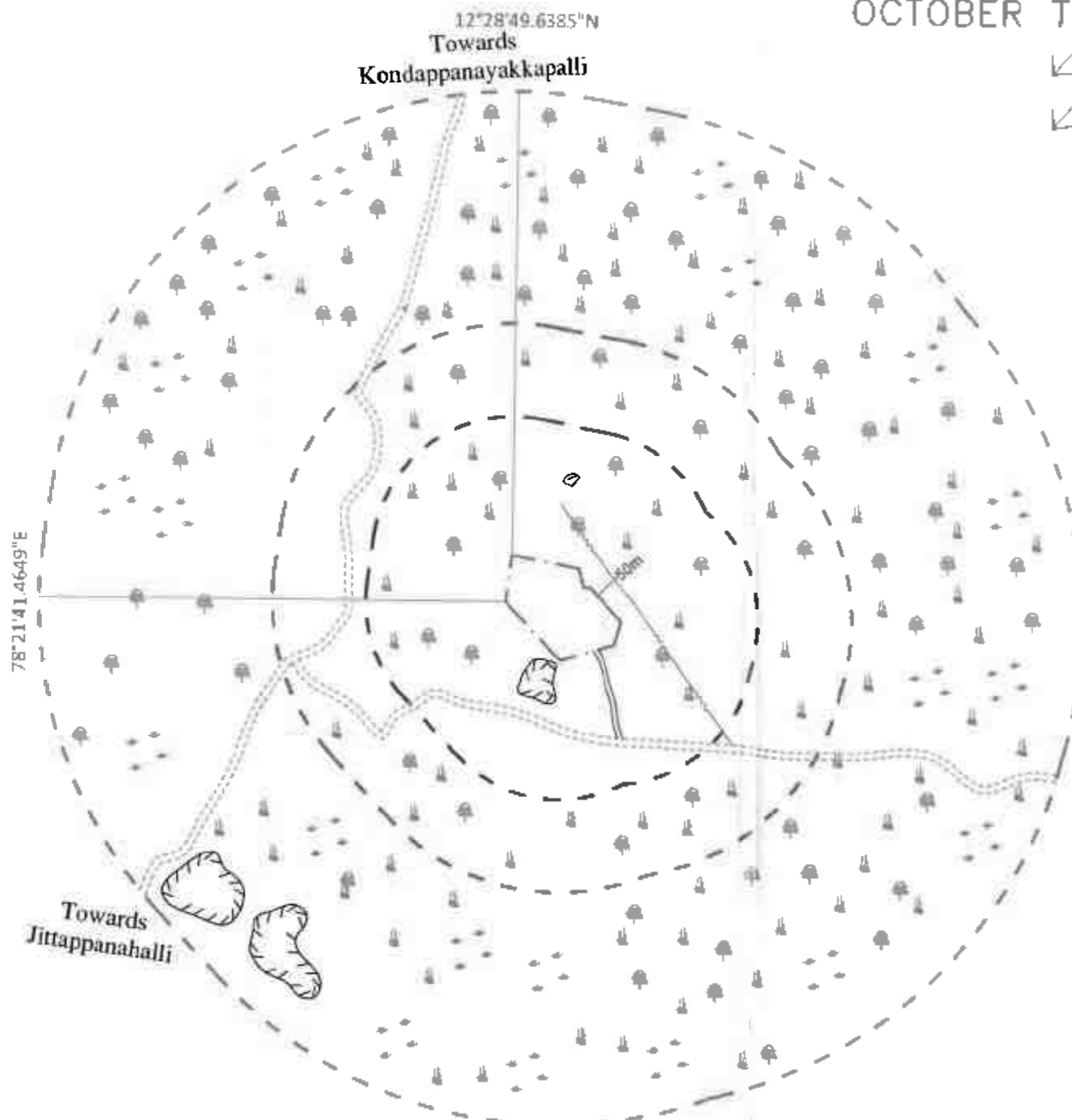
ENVIRONMENTAL AND LAND USE
PLAN FOR 1KM RADIUS

SCALE - 1:10000

PREPARED BY:

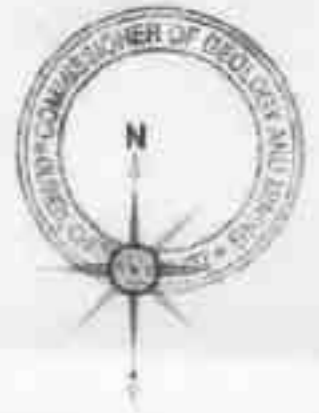
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Dr. S. KARIUPHANNAN, M.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



JULY TO SEPTEMBER

DESCRIPTION	AREA IN (%)
ROAD	05
TREES	20
BARREN LAND	35
AGR CULTURAL LAND	40



S.F.NO:365/2G
Jagadevipalayam Village
Patta Land

S.F.NO:6/1
Patta Land

S.F.NO:10 (Part)
Extent:3.46.0Hect
Govt. Land

S.F.NO:10
Govt. Land

DEPUTY DIRECTOR
Geology and Mining,
Collectorate, Krishnagiri.

S.F.NO:9/10
Patta Land

S.F.NO:10
Govt. Land

S.F.NO:367/201
Jagadevipalayam Village
Patta Land

K. Neelakandan
K. NEELAKANDAN
Sub-Inspector of Survey,
O/o. Deputy Director, Geology and Mining,
Krishnagiri District.

S.F.NO:366
Jagadevipalayam Village
Govt. Land

BOUNDARY EXPTS CO-ORDINATES

PILLAR No	LATITUDE	LONGITUDE
1	12°28'48.3802"N	78°21'46.3802"E
2	12°28'43.5252"N	78°21'46.8802"E
3	12°28'47.8802"N	78°21'47.3802"E
4	12°28'48.1102"N	78°21'48.8802"E
5	12°28'43.5252"N	78°21'48.2802"E
6	12°28'43.5902"N	78°21'48.5802"E
7	12°28'46.3802"N	78°21'48.8802"E
8	12°28'48.6802"N	78°21'48.3802"E

PLATE NO-II

APPLICANT:

M/s.PRANTA GRANITES,
No.62/33,
PULIKUTHI STREET,
GUGAI,
SALEM-636006.

LOCATION:

EXTENT : 3.46.0Hect,
S.F.NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

- LEASE BOUNDARY
- SAFETY DISTANCE
- APPROACH ROAD
- PILLAR STONES
- EB LOW TENSION LINE

LEASE PLANE
SCALE 1 : 1000

Prepared By:

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TO THE BEST OF MY KNOWLEDGE

Dr. S. Karuppanan

Dr.S.KARUPPANNAN M.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/201-4/A

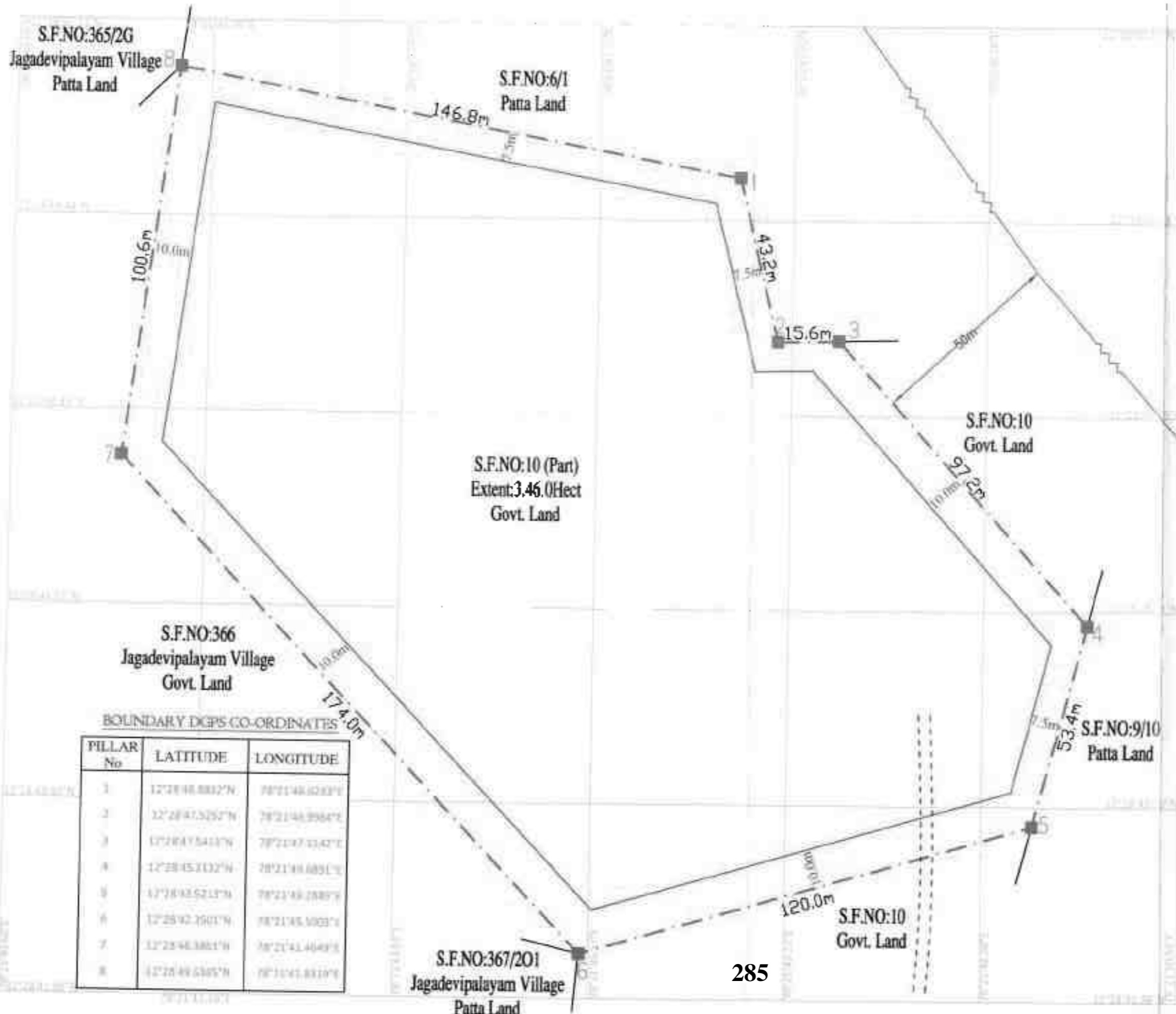


PLATE NO-II

APPLICANT:

Ms. PRANITA GRANTES,
No.62/11
PULKITHE STREET,
GUGAI,
SALEM-636006.

LOCATION:

EXTENT : 3.46 Hect.
S.F NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARBUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

- LEASE BOUNDARY
- SAFETY DISTANCE
- APPROACH ROAD
- PILLAR STONES
- EB LOW TENSION LINE

LEASE PLANE
SCALE 1 : 1000

Prepared By:

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

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

BOUNDARY DGPS CO-ORDINATES

PILLAR No	LATTITUDE	LONGITUDE
1	12°28'48.8832"N	78°21'48.1033"E
2	12°28'47.3257"N	78°21'48.3964"E
3	12°28'47.5413"N	78°21'47.3342"E
4	12°28'45.3132"N	78°21'48.6895"E
5	12°28'43.5213"N	78°21'48.2887"E
6	12°28'42.3501"N	78°21'48.5003"E
7	12°28'48.3801"N	78°21'41.4049"E
8	12°28'49.5305"N	78°21'41.8319"E

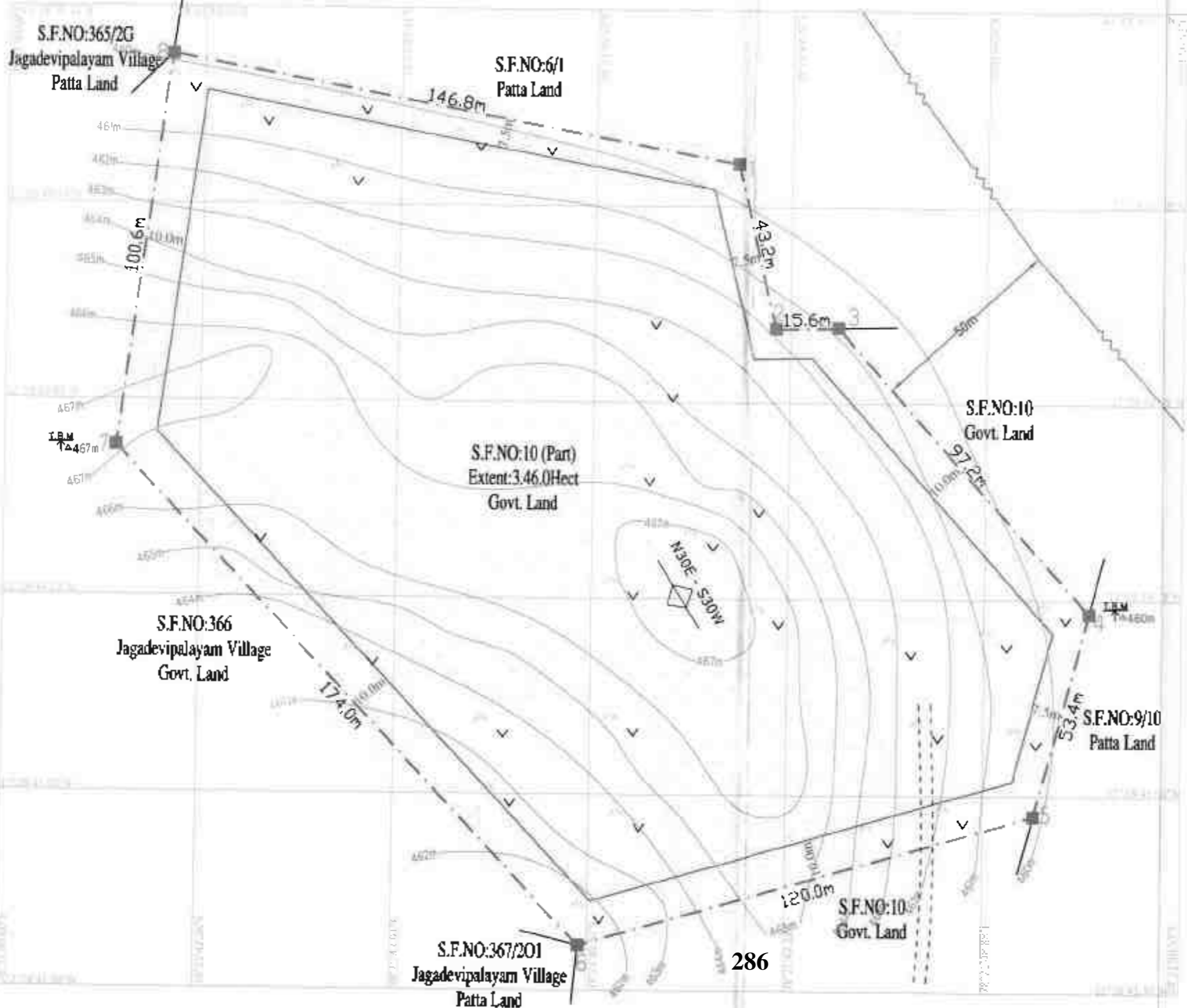


PLATE NO-III

APPLICANT:

M/S. PRANITA GRANITES,
No.62/33,
PULIKUDDI STREET,
GUDIAL,
SALEM-636006

LOCATION:

EXTENT : 3.46 Hect.
S.F.NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BAROOR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARKS	
SHRUBS	
CONTOUR LINES	
OUTCROP	
TOPSOIL	
STRIKE & DIP	
EB LOW TENSION LINE	

SURFACE PLAN
SCALE: 1 : 1000

Prepared By:

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



PLATE NO-IV

APPLICANT:

MS. PRANITA GRANTES,
No. 62/13,
PULIKOTHU STREET,
GURAI,
SALEM-636006

LOCATION:

EXTENT : 3.46 Hect.
S.F.NO : 10 (Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARCER,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

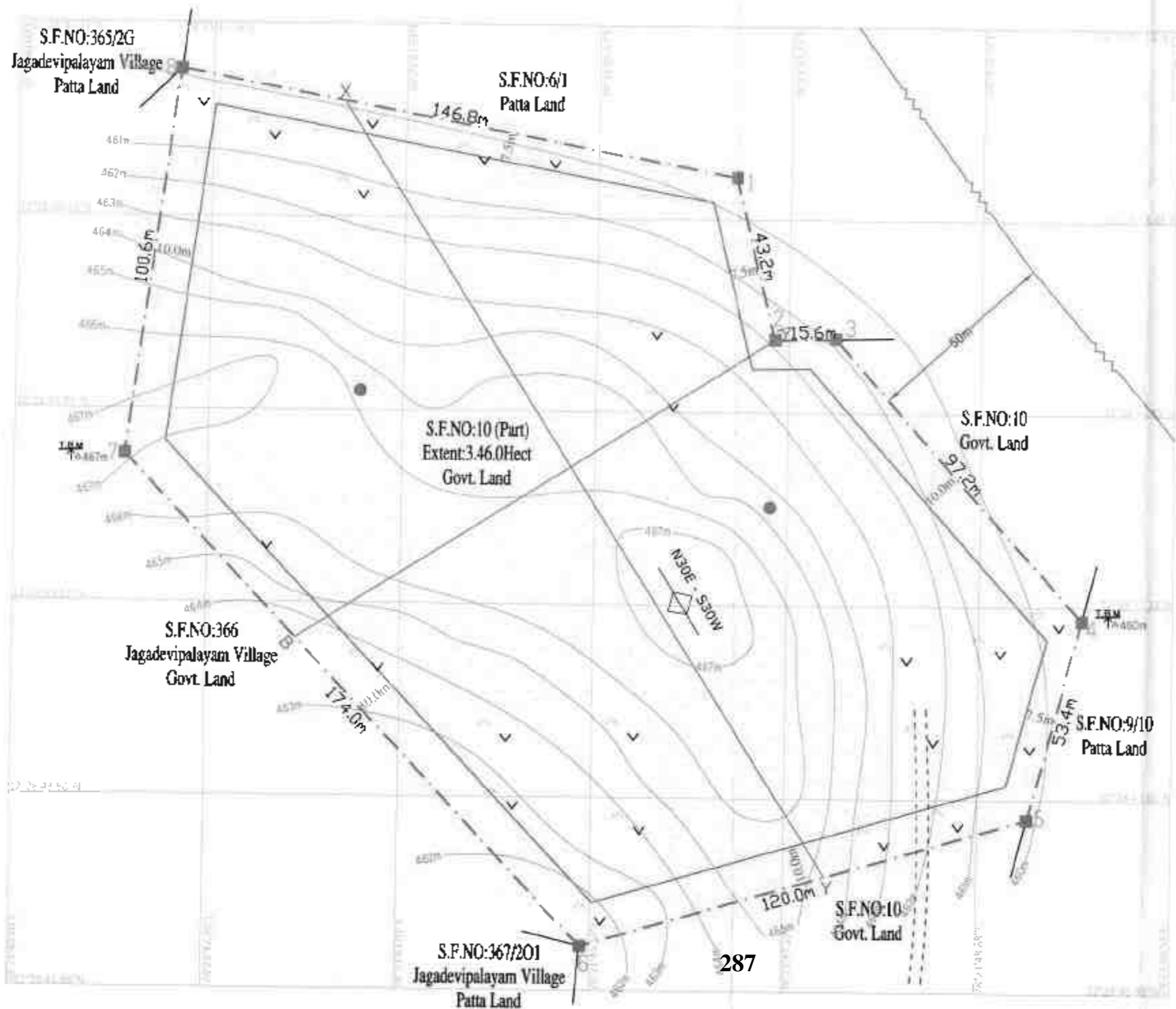
LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARKS	
SHRUBS	
CONTOUR LINES	
OUTCROP	
TOPSOIL	
STRIKE & DIP	
PROPOSED BORE HOLES	
FB LOW TENSION LINE	

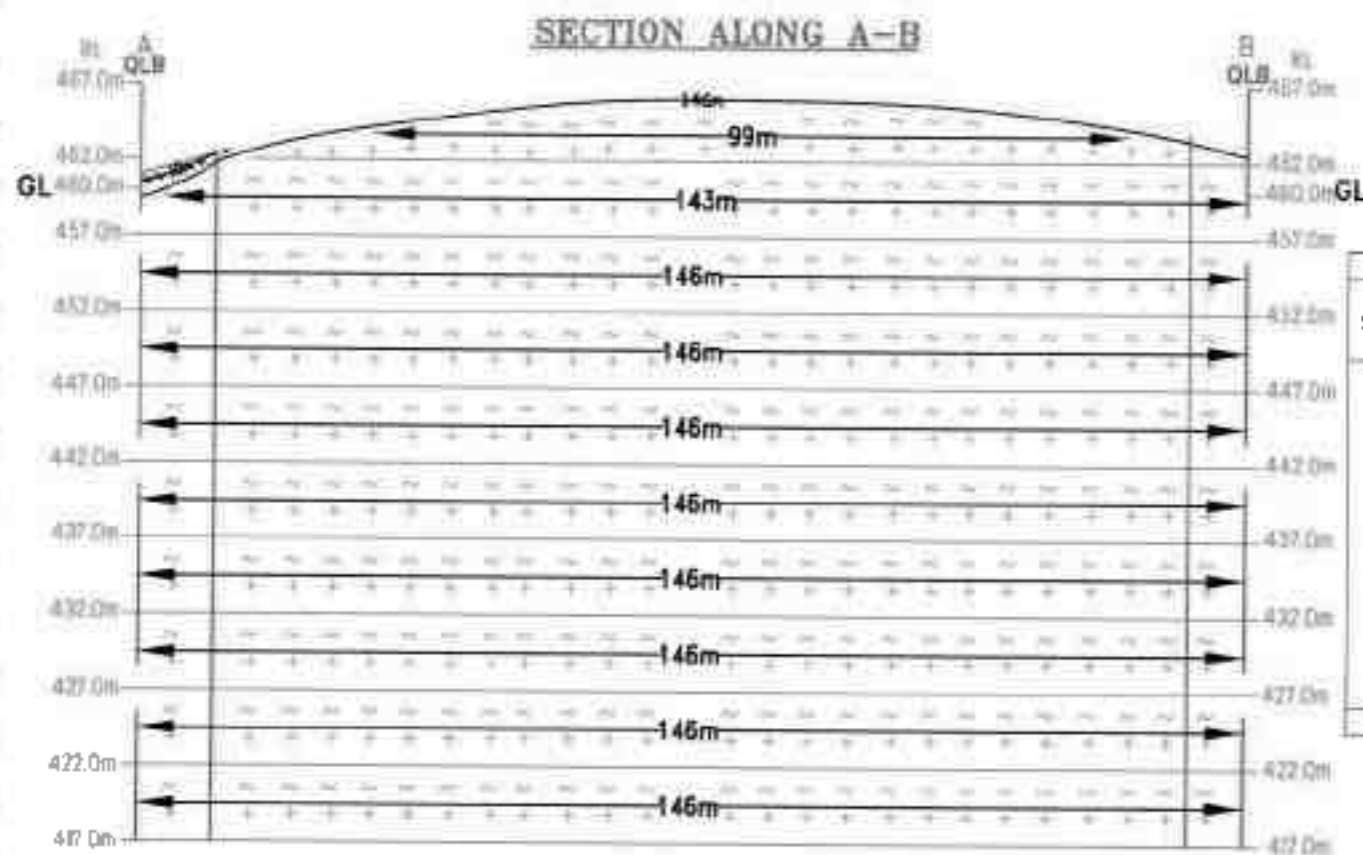
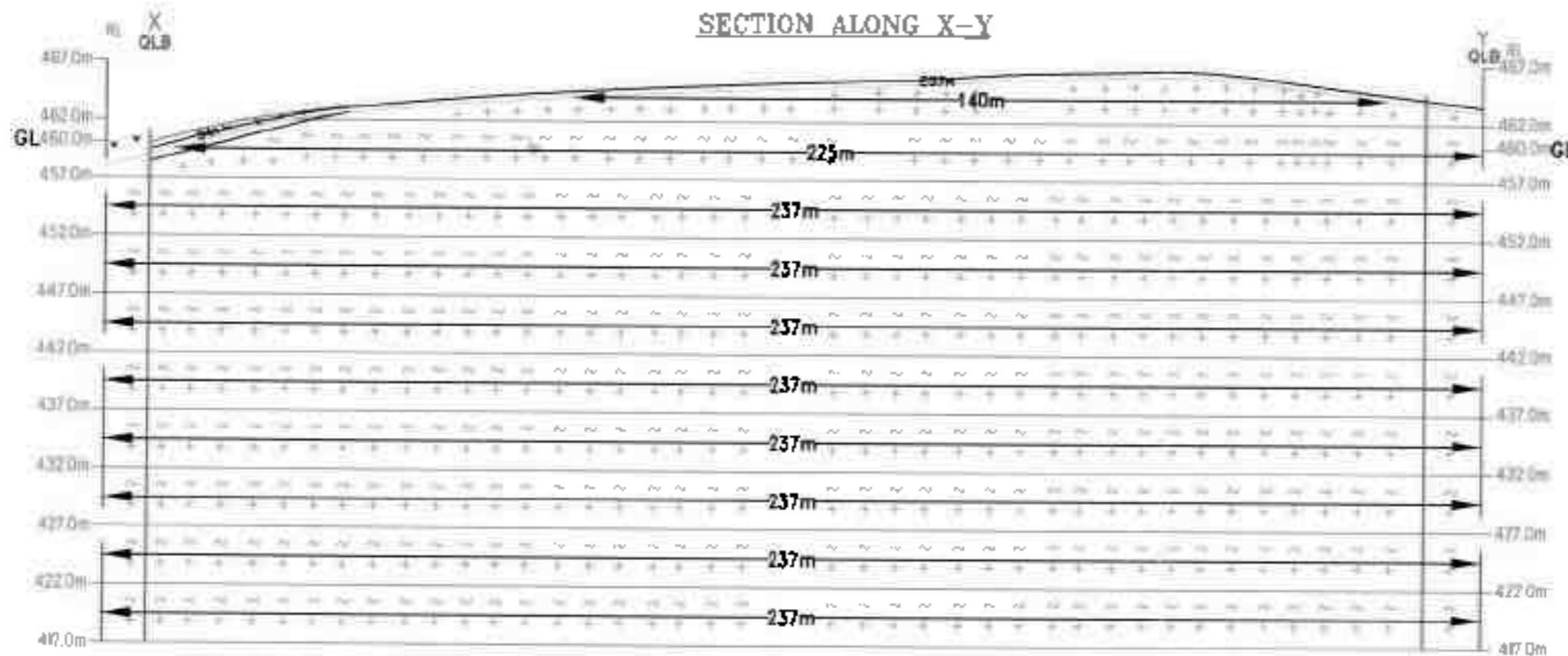
GEOLOGICAL PLAN
(SCALE)
Plan 1 : 1000

Prepared By:

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RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A





GL = GROUND LEVEL

GEOLOGICAL RESOURCE										
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Room in (m ³)	Geological Resources in m ³	Colour Granite 20% Recovery in m ³	Granite Waste 80% in m ³	Weathered rock in m ³	Top Soil in m ³
X-Y AB	Elevation	34	10	3	340					340
	i	237	146	3	34602				34602	
	ii	140	97	4	55440	55440	11088	44352		
	iii	225	143	5	160875	160875	32175	128700		
	iv	237	146	5	173010	173010	34602	138408		
	v	237	146	5	173010	173010	34602	138408		
	vi	237	146	5	173010	173010	34602	138408		
	vii	237	146	5	173010	173010	34602	138408		
	viii	237	146	5	173010	173010	34602	138408		
	ix	237	146	5	173010	173010	34602	138408		
x	237	146	5	173010	173010	34602	138408			
TOTAL				50	1635387	1600385	320079	1280316	34602	340

PLATE NO-IVA

APPLICANT:
 M/S. DRANITA GRANITES,
 No.62/11,
 PULIKUTHI STREET,
 GUGAI,
 SALEM-636006.

LOCATION:
 EXTENT : 3.40 Hect,
 S I NO : 10/Part
 VILLAGE : PASINAYANAPALLI
 TALUK : BARGUR,
 DISTRICT : KRISHNAGIRI,
 STATE : TAMIL NADU.

INDEX

- LEASE BOUNDARY [Symbol]
- SAFETY DISTANCE [Symbol]
- TOPSOIL [Symbol]
- COLOUR GRANITE [Symbol]
- WEATHERED ROCK [Symbol]

GEOLOGICAL SECTIONS
 SCALE
 SEC- HOR 1:1000
 VER 1:500

Prepared By:
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 TO THE BEST OF MY KNOWLEDGE

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 RECOGNIZED QUALIFIED PERSON
 RQP/MA/263/2014/A

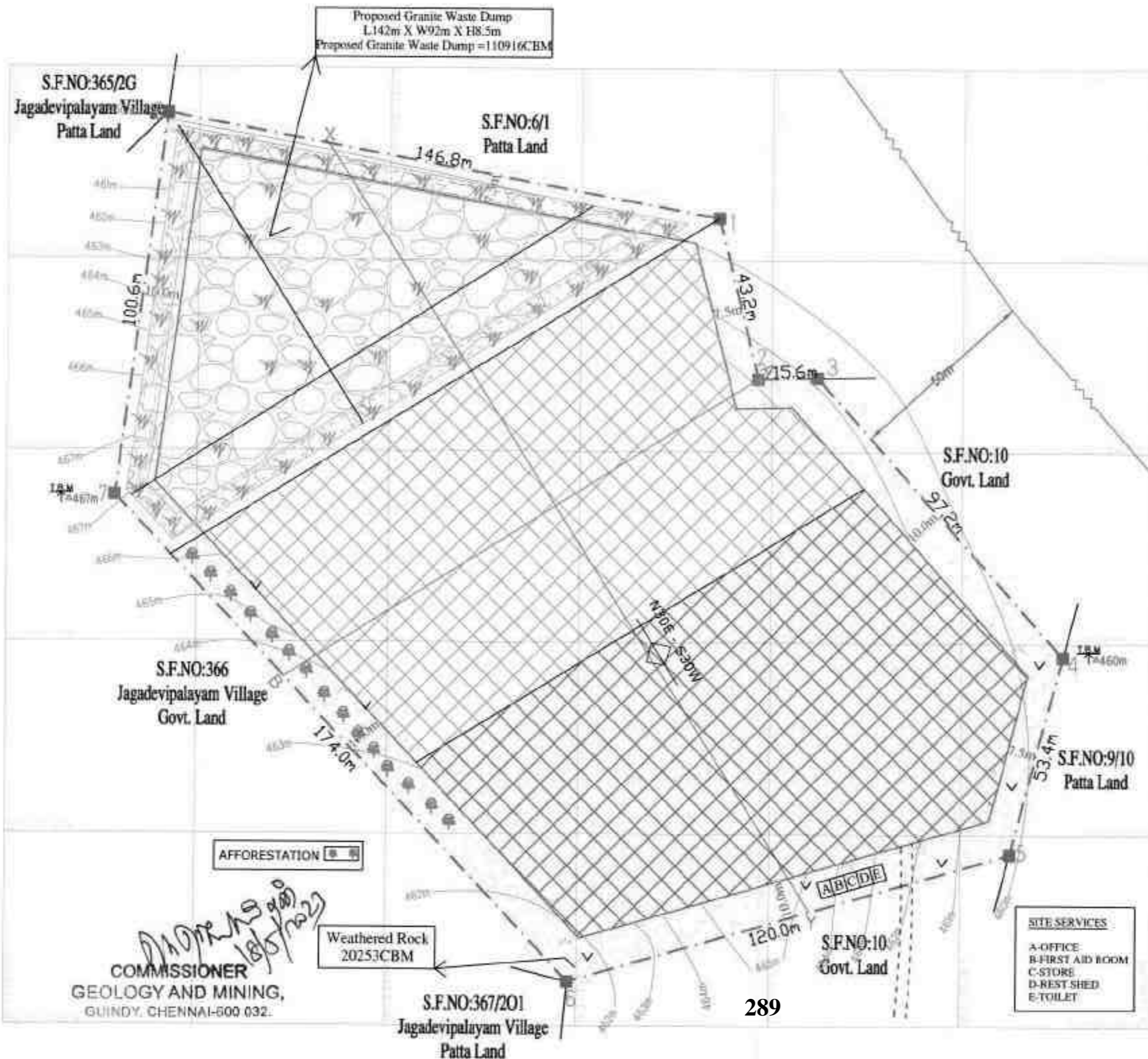


PLATE NO-V

APPLICANT:

M/s. PRASITA GRANITES,
No.62/33
PULIKUTHI STREET,
GUGAL,
SALEM-636006

LOCATION:

EXTENT : 3.46 Hect.
S.F.NO : 10; Part I
VILLAGE : PASINAYANAPALLI.
TALUK : BARGUR.
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARK	
SHRUB	
CONTOUR LINE	
OUTCROP	
TOPSOIL	
STRIKE & DIP	
WEATHERED ROCK	
GRANITE WASTE DUMP	
DUMP ROAD	
EE LOW TENSION LINE	

YEARWISE DEVELOPMENT AND PRODUCTION PLAN (SCALE) Plan 1: 1000

Prepared By:

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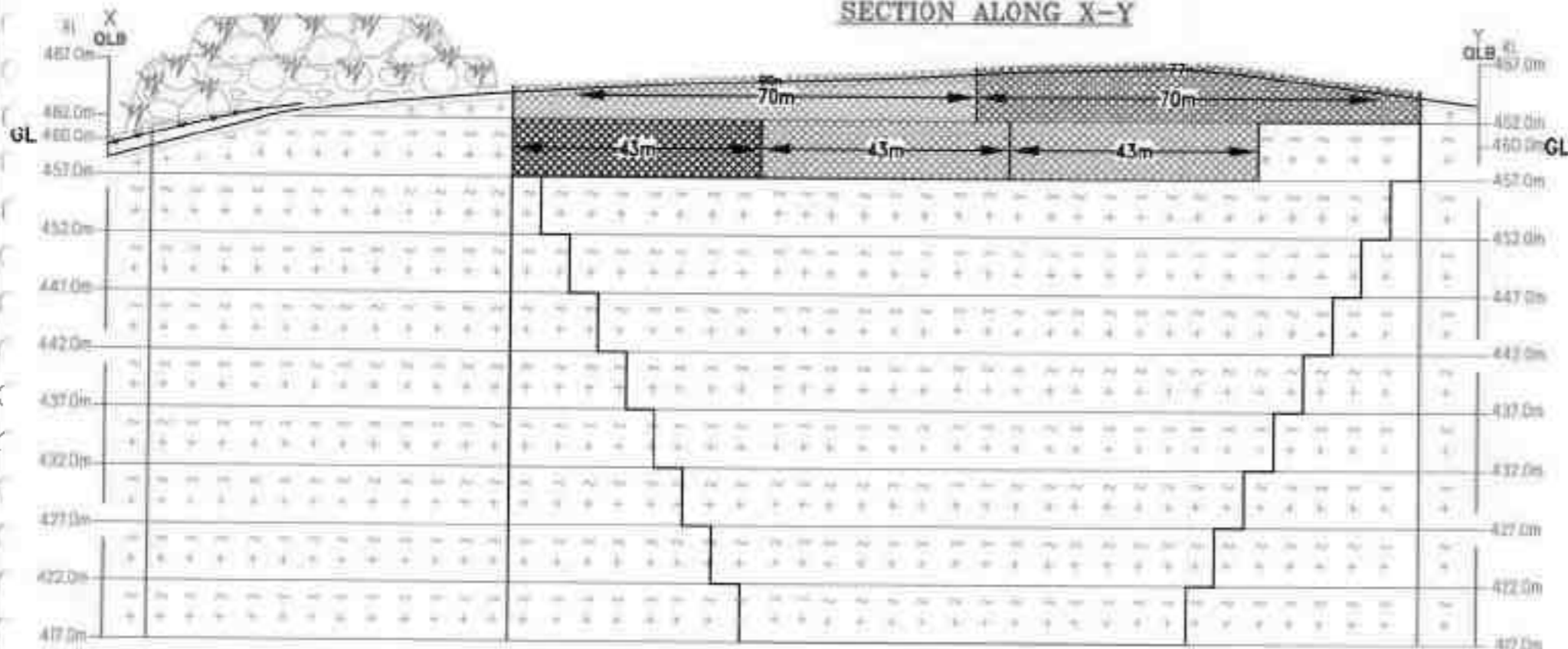
Dr.S.KARUPPIAN M.T.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQI/MAS/263/2014/A

COMMISSIONER
GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032.

Handwritten signature and date: 18/5/2023

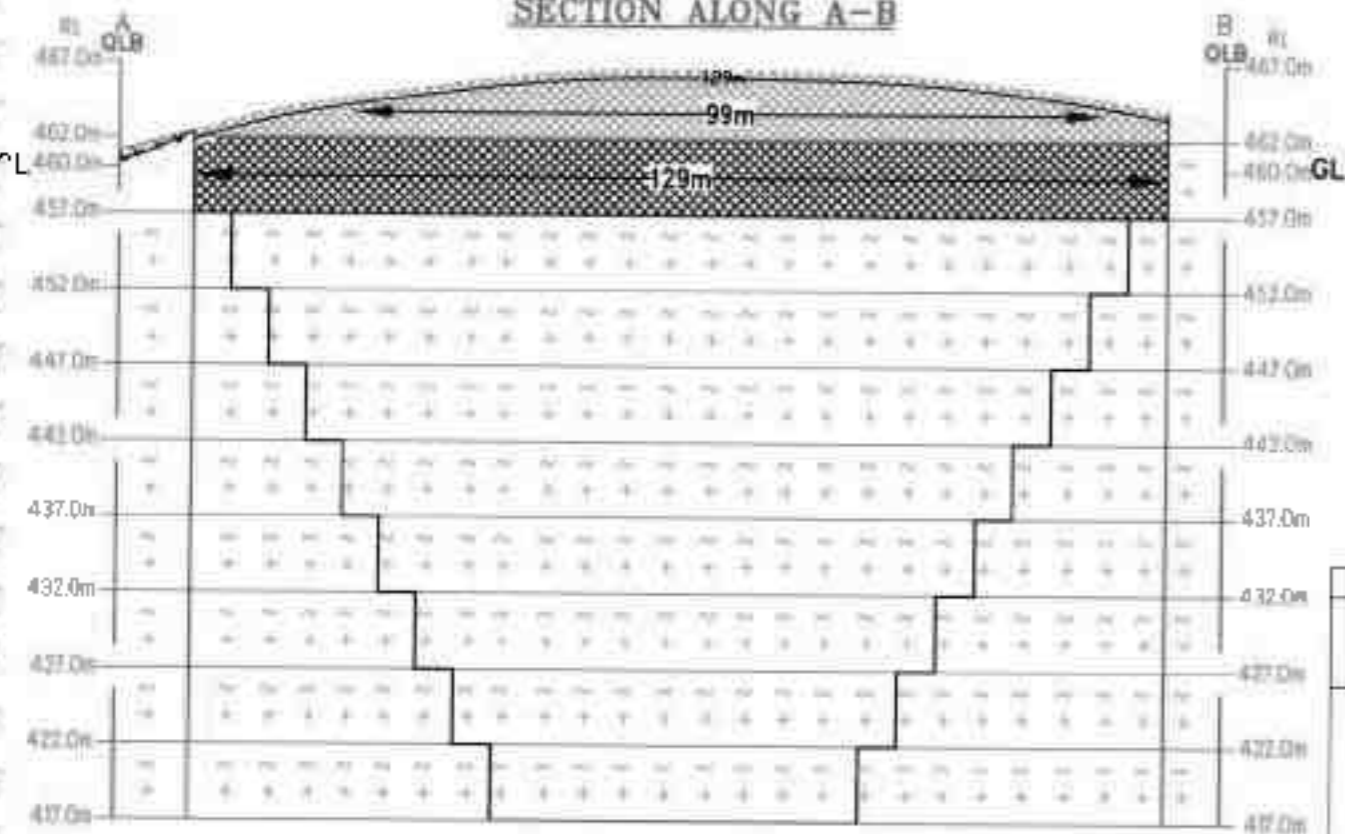


SECTION ALONG X-Y



GL = GROUND LEVEL

SECTION ALONG A-B



I-YEAR EXCAVATION I-L80m X W129m X D1m WEATHERED ROCK I-L70m X W99m X D4m COLOUR GRANITE	
II-YEAR EXCAVATION II-L77m X W129m X D1m WEATHERED ROCK II-L70m X W99m X D4m COLOUR GRANITE	
III-YEAR EXCAVATION II-L43m X W129m X D5m COLOUR GRANITE	
IV-YEAR EXCAVATION II-L43m X W129m X D5m COLOUR GRANITE	
V-YEAR EXCAVATION II-L43m X W129m X D5m COLOUR GRANITE	

YEARWISE PRODUCTION										
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Room in (m ³)	Mineable Reserves in m ³	Colour Granite 20% Recovery in m ³	Granite Waste 80% in m ³	Weathered rock in m ³
XY-AB	I-YEAR	I	80	129	1	10320	---	---	---	10320
		II	70	99	0	27720	27720	5544	22176	---
	II-YEAR	I	77	129	1	9933	---	---	---	9933
		II	70	99	4	27720	27720	5544	22176	---
	V-YEAR	II	43	129	5	27735	27735	5547	22188	---
TOTAL					10	158898	138645	27729	110916	20753

PLATE NO-VA

APPLICANT:
M/S. PRANITA GRANITES,
No.62/33,
PULIKU, THI STREET
CITTAI,
SALEM-636006.

LOCATION:
EXTENT : 3.46 Hect.
S.F.NO : 10/Part
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

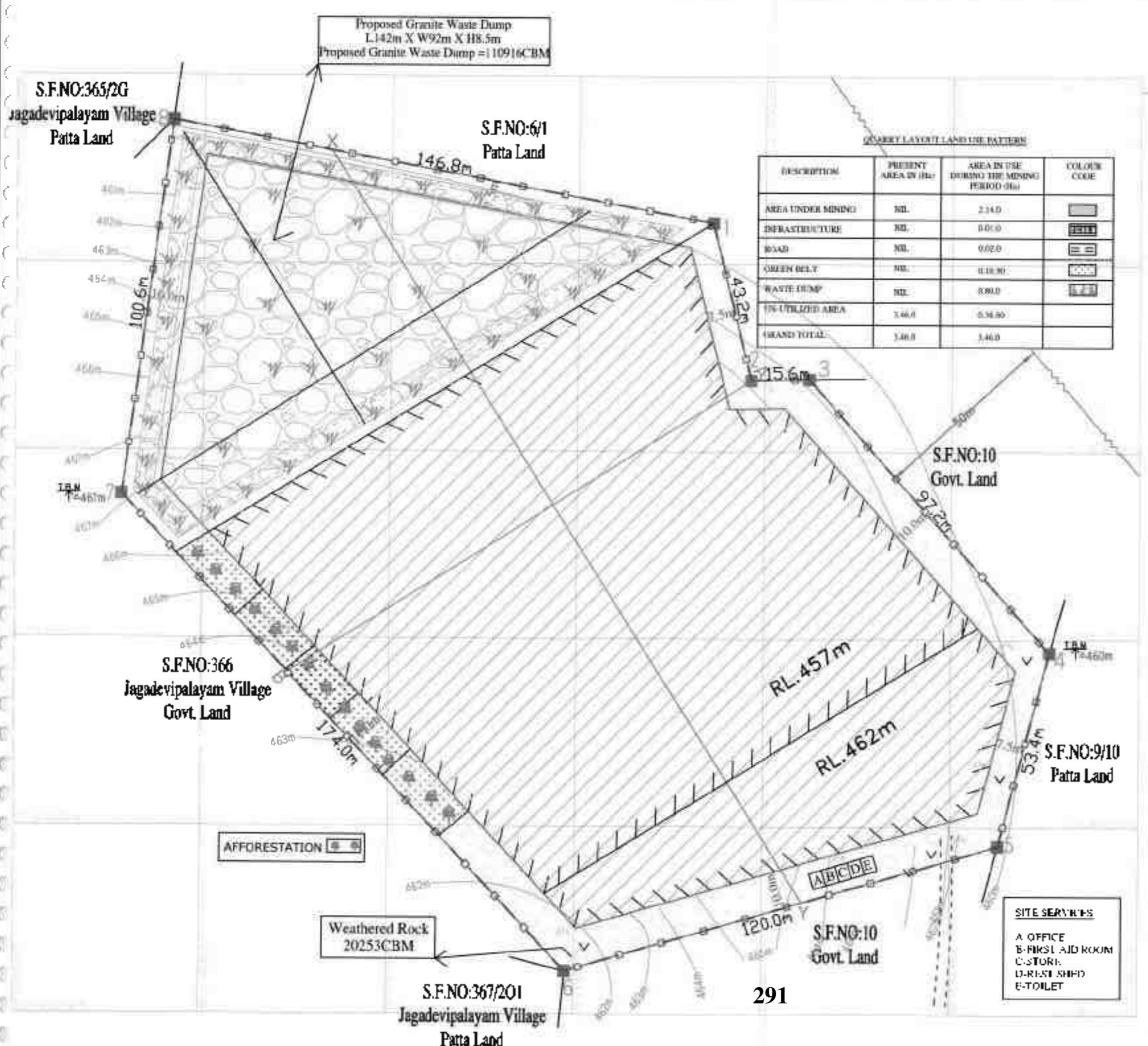
INDEX

LEASE BOUNDARY	
SAFETY DISTANCE	
TOPSOIL	
COLOUR GRANITE	
WEATHERED ROCK	
GRANITE WASTE DUMP	
DUMP ROAD	
PROPOSED BENCH	
ULTIMATE BENCH	

YEARWISE DEVELOPMENT AND PRODUCTION PLAN SECTIONS
(SCALE) Plan 1 : 1000

Prepared By:
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Dr. S. KARI PANNIAN, M.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



Proposed Granite Waste Dump
L:142m X W:92m X H:8.5m
Proposed Granite Waste Dump = 110916CBM

S.F.NO:365/2G
Jagadevipalayam Village
Patta Land

S.F.NO:6/1
Patta Land

S.F.NO:366
Jagadevipalayam Village
Govt. Land

Weathered Rock
20253CBM

S.F.NO:367/201
Jagadevipalayam Village
Patta Land

S.F.NO:10
Govt. Land

S.F.NO:10
Govt. Land

S.F.NO:9/10
Patta Land

QUARRY LAYOUT & LAND USE PATTERN

DESCRIPTION	PRESENT AREA IN (Ha)	AREA IN USE DURING THE MINING PERIOD (Ha)	COLOR CODE
AREA UNDER MINING	NIL	2.14.0	[Pattern]
INFRASTRUCTURE	NIL	0.01.0	[Pattern]
ROAD	NIL	0.02.0	[Pattern]
GREEN BELT	NIL	0.18.0	[Pattern]
WASTE DUMP	NIL	0.80.0	[Pattern]
UNUTILIZED AREA	3.46.0	0.58.00	[Pattern]
GRAND TOTAL	3.46.0	3.46.0	

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

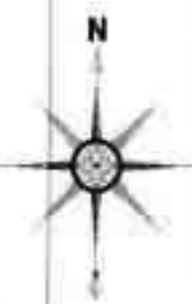


PLATE NO:VI
APPLICANT:
M/S. SUNITA GRANITES,
No.612B,
PULIKUTHI STREET,
GUGAL,
SALEM-636005

LOCATION:
EXTENT : 3.46.0Hect,
S.F.NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

- INDEX
- LEASE BOUNDARY [Symbol]
 - SAFETY DISTANCE [Symbol]
 - APPROACH ROAD [Symbol]
 - PILLAR STONES [Symbol]
 - TEMPORARY BENCH MARK [Symbol]
 - SHRUB [Symbol]
 - CONTOUR LINE [Symbol]
 - OUTCROP [Symbol]
 - TOPSOIL [Symbol]
 - STRIKE & DIP [Symbol]
 - WEATHERED ROCK [Symbol]
 - GRANITE WASTE DUMP [Symbol]
 - DUMP ROAD [Symbol]
 - PROPOSED BENCH [Symbol]
 - FENCING [Symbol]
 - EB LOW TENSION LINE [Symbol]

QUARRY LAYOUT & LAND USE
PATTERN PLAN
SCALE 1 : 1000

Prepared By:
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HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr. S. KARIUPPANNAN, M.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/265/2014/A

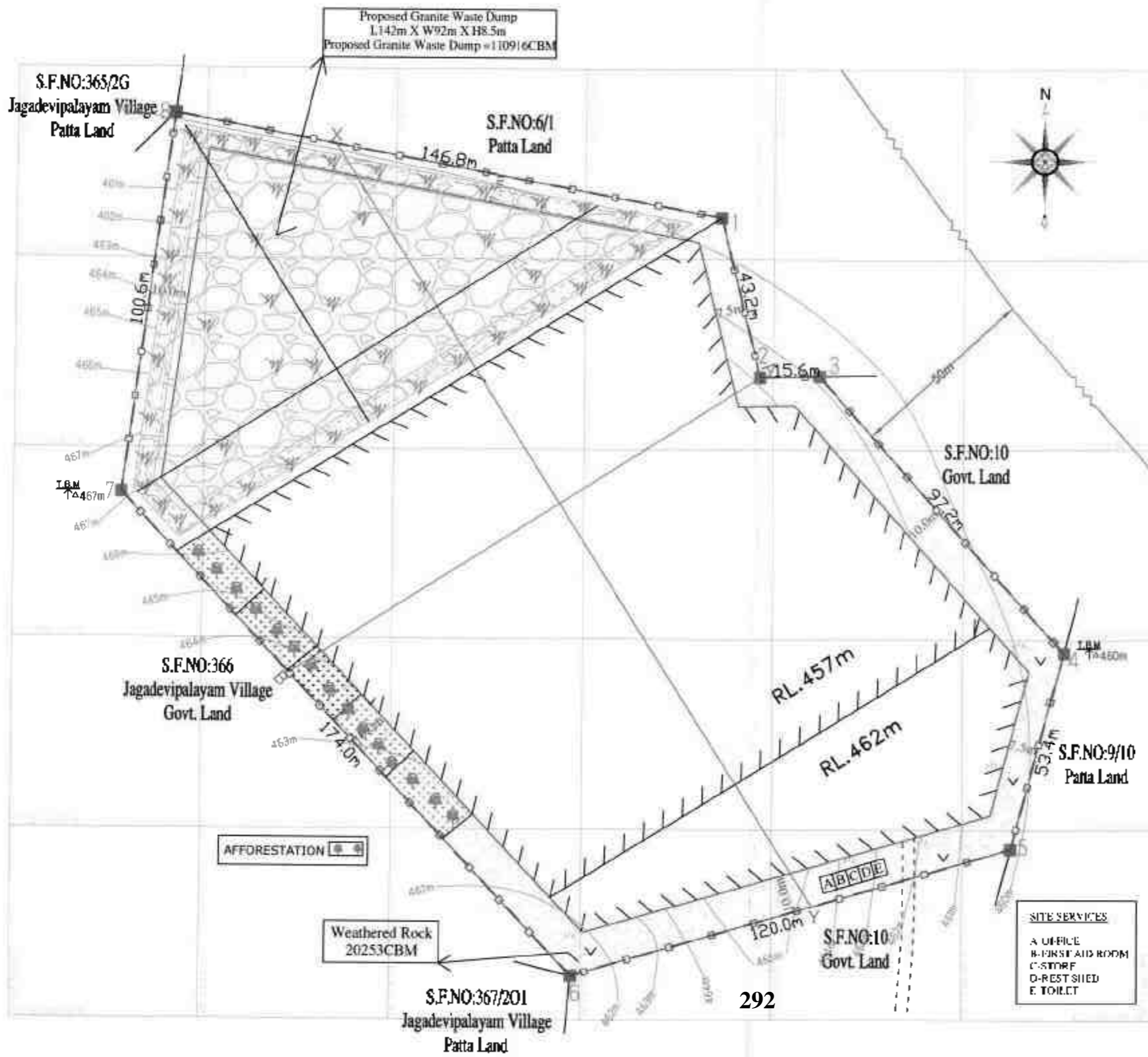


PLATE NO-VII

APPLICANT
 M/S. PRANITA GRANITES,
 No.62/33,
 PULIKUTHI STREET,
 GUGAL,
 SALEM-636006.



LOCATION:
 EXTENT : 3.46 Hect.
 S.F.NO : 10/Part I
 VILLAGE : PASINAYANAPALLI.
 TALUK : BARGUR,
 DISTRICT : KRISHNAGIRI,
 STATE : TAMIL NADU.

INDEX

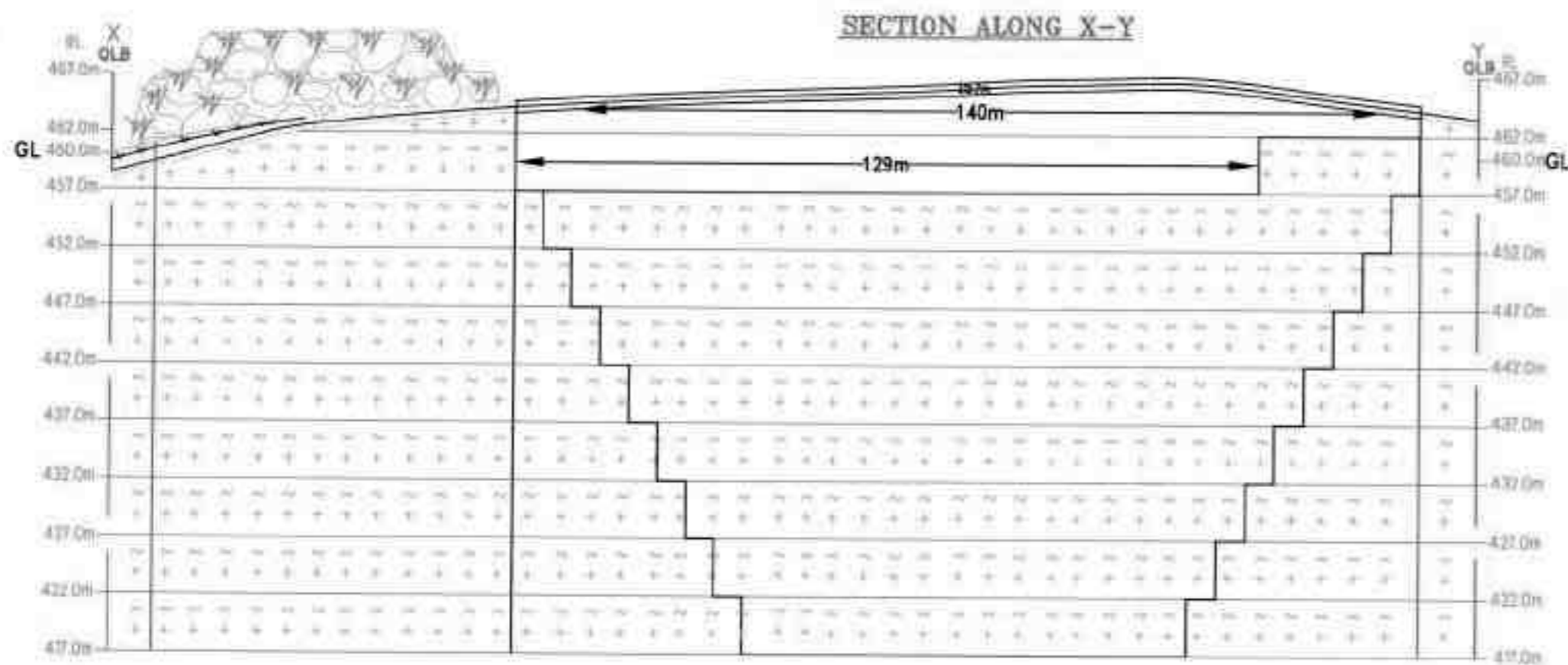
LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARK	
SHRUB	
CONTOUR LINE	
OUTCROP	
TOPSOIL	
STRIKE & DIP	
WEATHERED ROCK	
GRANITE WASTE DUMP	
DUMP ROAD	
PROPOSED BENCH	
FENCING	
LB LOW TENSION LINE	

PROGRESSIVE QUARRY CLOSURE PLAN (SCALE) PLAN 1:1000

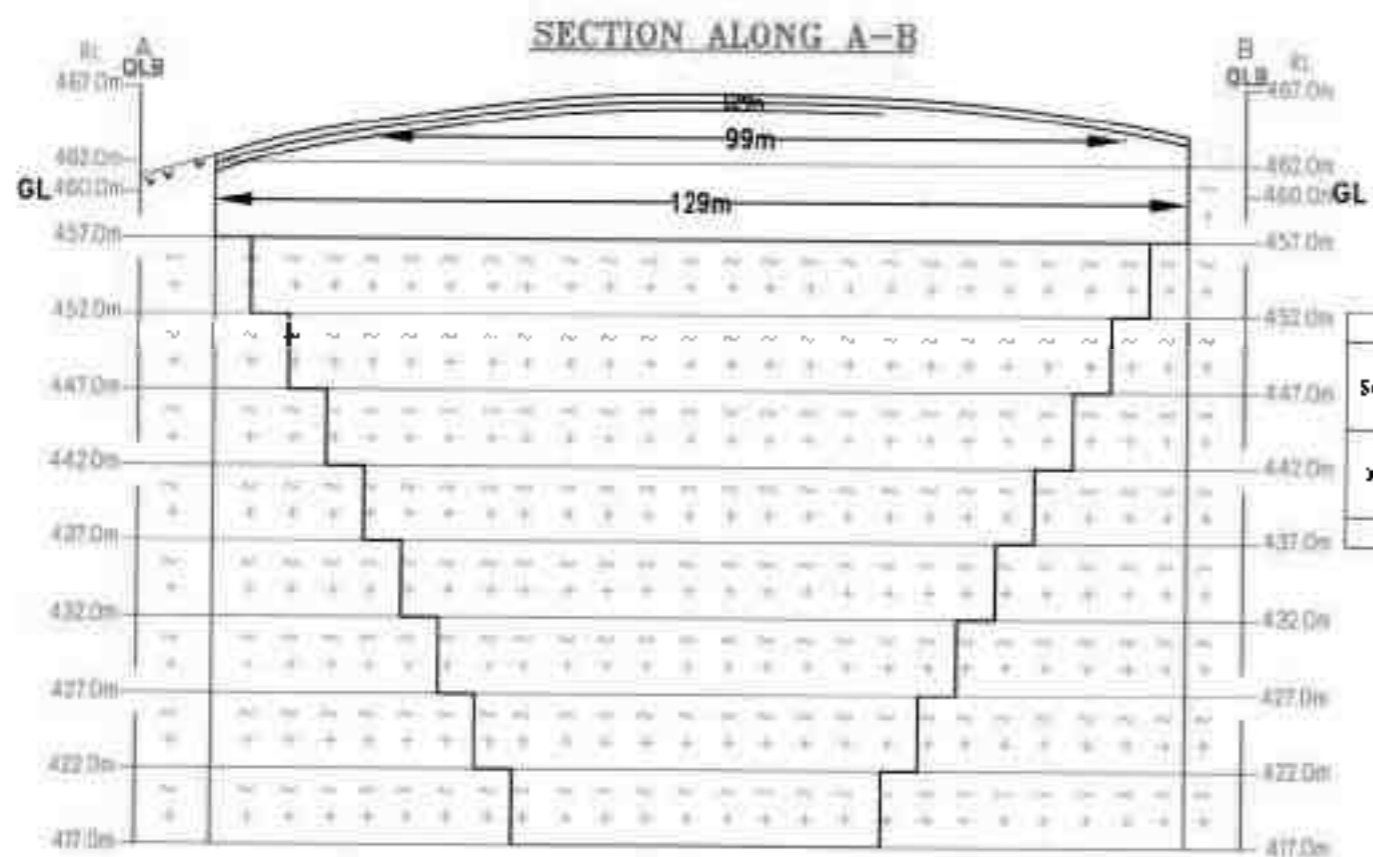
Prepared By:
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(Signature)

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
 RECOGNIZED QUALIFIED PERSON
 RQP/MA/26/V2014/A



GL = GROUND LEVEL



PRODUCTION RESERVES									
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Room in (m ³)	Miscellaneous Reserves in m ³	Colour Granite 20% Recovery in m ³	Granite Waste Bins in m ³	Weathered rock in m ³
XY-AB	I	157	129	1	20253	—	—	—	20253
	I	140	99	4	55440	55440	11088	55440	—
	II	129	129	5	83205	83205	16641	83205	—
TOTAL				10	158898	138645	27729	110916	20253

PLATE NO-VIIA

APPLICANT:

M/s PRANITA GRANITES,
No.62/33,
PULIKUTHI STREET,
GUGAI,
SALEM-636006

LOCATION:

EXTENT : 3.46.0Hect,
S.F.NO : 10(Part)
VILLAGE : PASINAYANAPALLI,
TALUK : BARGUR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU.

INDEX

- LEASE BOUNDARY [Symbol]
- SAFETY DISTANCE [Symbol]
- TOPSOIL [Symbol]
- COLOUR GRANITE [Symbol]
- WEATHERED ROCK [Symbol]
- GRANITE WASTE DUMP [Symbol]
- DUMP ROAD [Symbol]
- PROPOSED BENCH [Symbol]
- ULTIMATE BENCH [Symbol]

**PROGRESSIVE QUARRY
CLOSURE SECTION**
SEC-HOR 1:1000
VER 1:500

Prepared By:

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

Dr. S. KARUPPANAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/267/2014/A

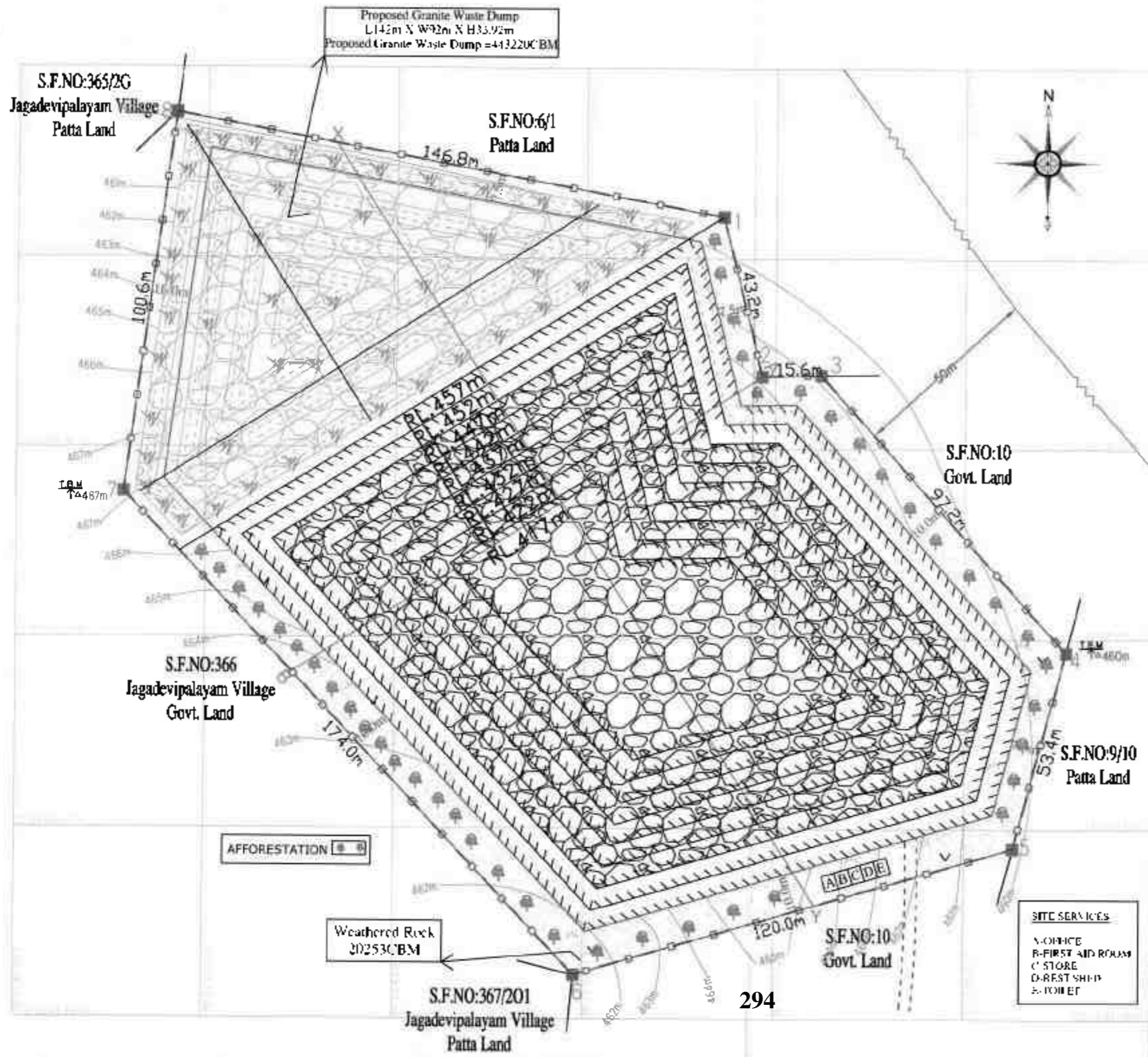


PLATE NO-VIII

APPLICANT:
 M/A PRANITA GRANITES,
 No.62/33,
 PULIKUTHI STREET,
 GUGAL,
 SALEM-636006.



LOCATION:
 EXTENT : 3.26 HECTARE
 S.F.NO : 10(Part)
 VILLAGE : PASINAYANAPATTI,
 TALUK : BARGUR,
 DISTRICT : KRISHNAGERI,
 STATE : TAMIL NADU.

INDEX	
LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARK	
SHRUB	
CONTOUR LINE	
OUTCROP	
TOPSOIL	
STRIKE & DIP	
WEATHERED ROCK	
GRANITE WASTE DUMP	
DUMP ROAD	
ULTIMATE BENCH	
FENCING	
PROPOSED BACKFILLING	
EB LOW TENSION LINE	

CONCEPTUAL PLAN
 (SCALE) PLAN 1:1000

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

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



PLATE NO-VIII A

APPLICANT:

M.S. PRANITA GRANTUS,
No.62/41,
PULIKUTHI STREET,
GUGAI,
SALEM-636006.

LOCATION:

EXTENT : 3.46 Hect.
S.F.NO : 10/Part
VILLAGE : PASNAYANAPALLI,
TALUK : BAROOR,
DISTRICT : KRISHNAGIRI,
STATE : TAMIL NADU

INDEX

LEASE BOUNDARY	
SAFETY DISTANCE	
TOPSOIL	
COLOUR GRANITE	
WEATHERED ROCK	
GRANITE WASTE DUMP	
DUMP ROAD	
ULTIMATE BENCH	
PROPOSED BACKFILLING	

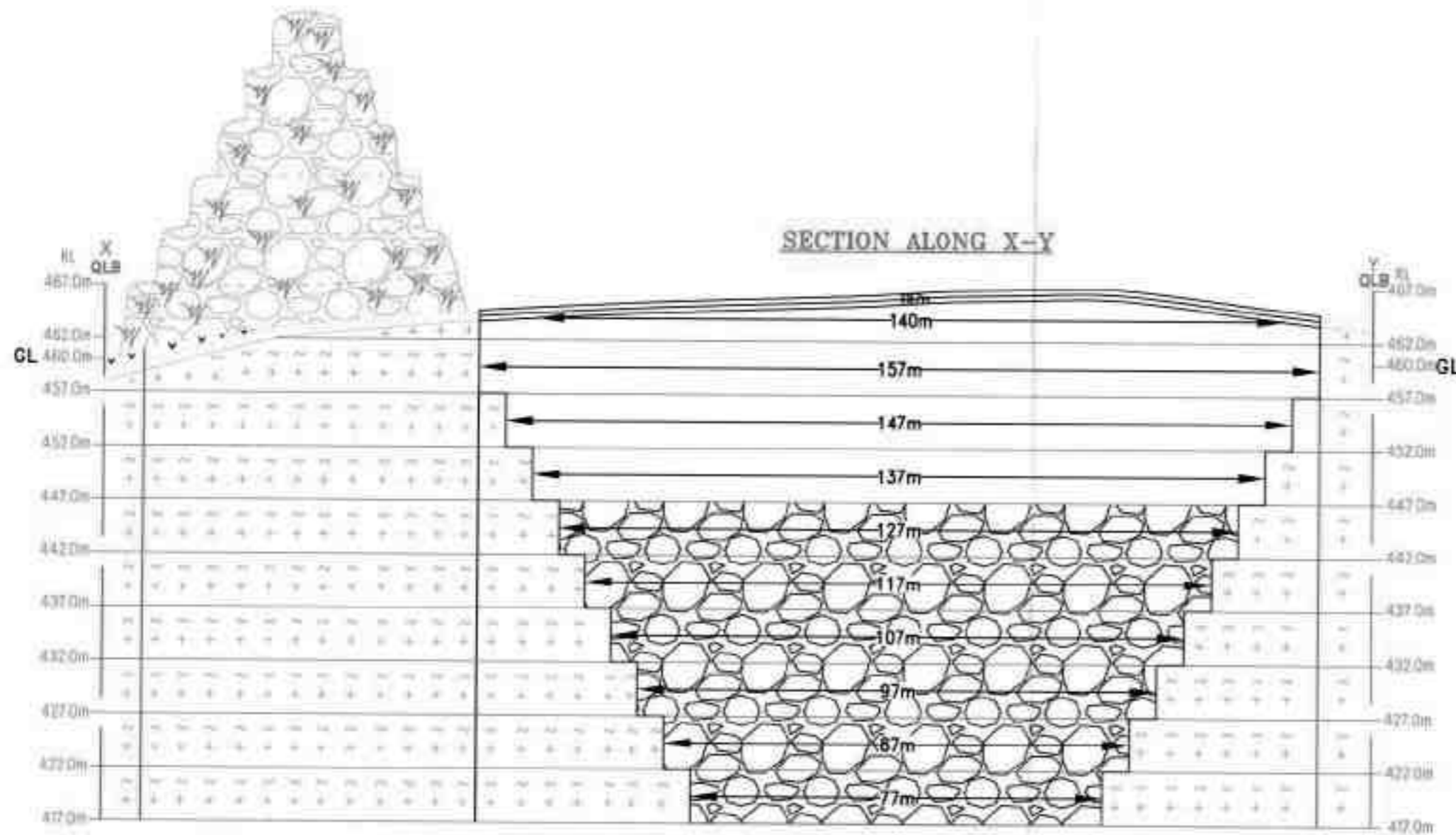
CONCEPTUAL SECTION
SEC-HOR 1:1000
VER 1:500

Prepared By:

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

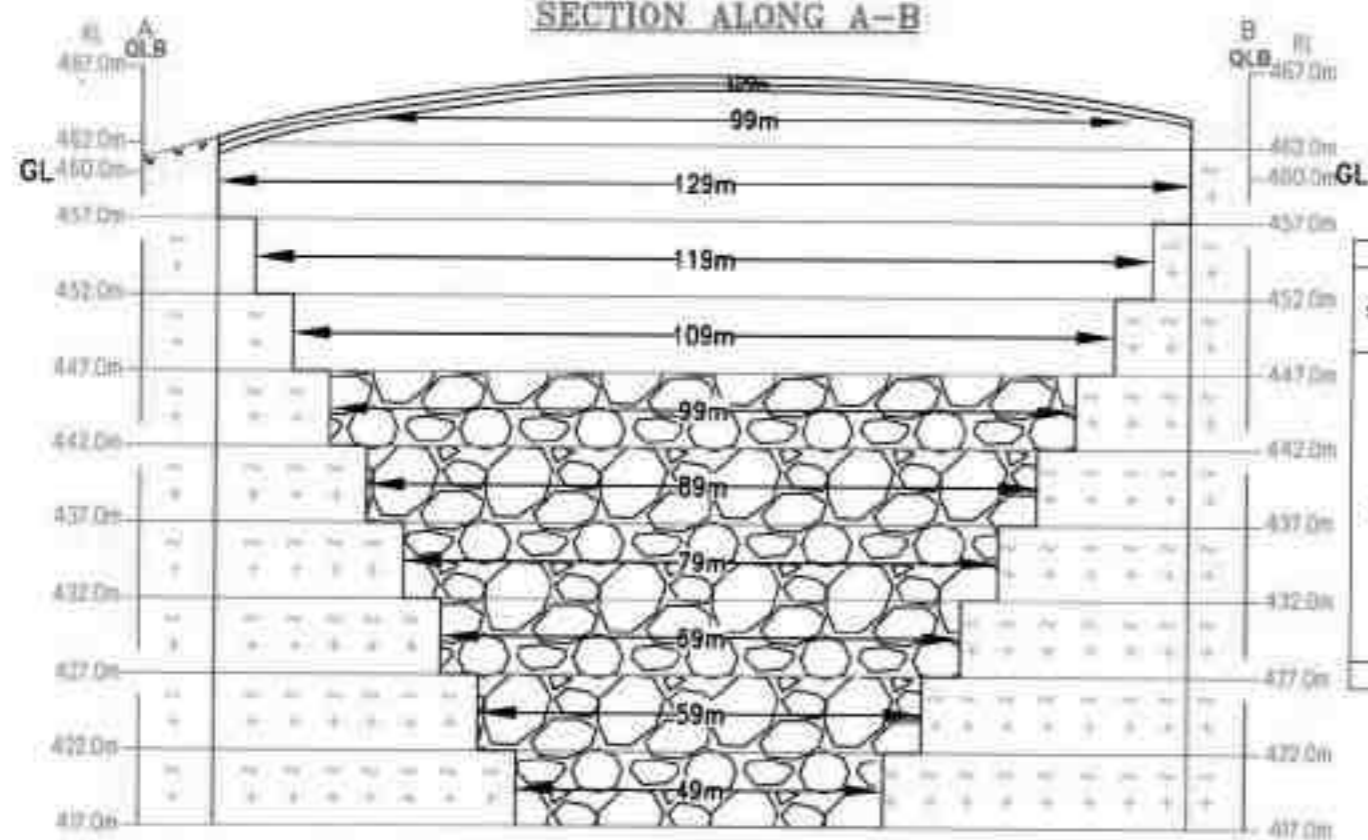
Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RECOGNIZED QUALIFIED PERSON
RQP/MA5/263/2011/A

SECTION ALONG X-Y



GL = GROUND LEVEL

SECTION ALONG A-B



MINEABLE RESERVES

Section	Bench	length in (m)	Width in (m)	Depth in (m)	Room in m ³	Mineable Reserves in m ³	Colour Granite 20% Recovery in m ³	Granite Waste 80% m ³	Weathered rock in m ³
XY-20	I	157	129	1	20253	—	—	—	20253
	I	140	99	4	55440	55440	11088	44352	—
	II	157	129	5	101265	101265	20253	81012	—
	III	147	119	5	87465	87465	17493	69972	—
	IV	137	109	5	74865	74865	14933	59732	—
	V	127	99	5	62865	62865	12573	50292	—
	VI	117	89	5	52065	52065	10413	41652	—
	VII	107	79	5	42265	42265	8453	33812	—
	VIII	97	69	5	33465	33465	6693	26772	—
	IX	87	59	5	25665	25665	5133	20532	—
X	77	49	5	18865	18865	3773	15092	—	
TOTAL				30	574278	554025	110805	443220	20253

சிறீமணியார் மாவட்டம், பரீட்சை
 வட்டம். 22. பாதிநாயணயன் தீர்ப்பு,
 பாதிநாயணயன் கிராம மலகண் 10ல்
 5.74.5 பரணை சாதிர்வை ஏற்படாத
 கிராம வட்டம். இம்மலத்தில் பலவண்ண
 கற்கள் வைப்பதற்காக கலாம் முகையியல்
 வட்டத்து வட்டம் 62/33, 1st மாதிரித்தொகுதி
 கலாம் கலாம் என்ற முகையியல்
 இயங்கி வட்டம் மராத்திர கிராமணயல்
 என்ற நிலுவைத்திட்டி கித்திரைகொழியுமி
 வாழ்த்தியபடுள்ள சிமார் 300 மீற்றலலை
 குடியகும்பகிராம, மராத்திர கித்திரைகள்,
 வட்டியக குலங்ககிராம மற்றும் கலம்பித்
 கி உயர்மகிண்ணகித்திரை கம்பககிராம
 கலாம் இல்லை என கித்திரை
 கிராமணயக மககிராம

10250
 கிராம நிர்வாக அலுவலர்
 22, பாதிநாயணயன்
 மலகண்-10, கித்திரை-01,

சுரண்டி

கிருஷ்ணகிரி மாவட்டம், பர்க்கூர்
வட்டம், 22, பாதிநாயணபள்ளி கரய்ய
பாதிநாயணபள்ளி கிராம 4ல எண்
10 வால்நீரணம் 5 74.5 மாற்ற தீ.சு.த
அதிகம் செயல்பாட்டிற்குக் கும் குவாரி
மற்றும் கைவாடப்பட்ட குவாரி செயல்
பாட்டில் ஏதும் கில்லை என அறிய
புலம் சுரண்டல்கள்படுகிறது

10230
கிராம நிர்வாக அலுவலர்
22, பாதிநாயணபள்ளி
பர்க்கூர், கிருஷ்ணகிரி-Dt.

சூட்டு

கிண்கிண்கிரி மாவட்டம், பர்க்கர் வட்டம்,
 22, பாதிநாயகப்பள்ளி கிராமம், பாதிநாயகப்பள்ளி
 கிராம எண் 10 ஊர் தீர்மானம் 5.74.5 பரணை
 தீர்மானம் ஏற்படாத தீர்மானம் ஆகும் இப்பலத்தின்
 பலவகளை கற்குள் ஏற்படாததற்கு காரணம்
 முகவரியால் வசிக்காமல் வரும் 62/33 154
 பதினாறு எட்டு குறை எண் முகவரியால்
 இவர்க்கு வரும் பாதிநாயக கிராமத்தை
 என்ற திருவள்ளூர் கிராமத்தை அனுமதி
 வாங்குகப்பட்டுள்ளது எனவே கிராமத்தை
 அனுமதி வாங்குகப்பட்டுள்ள சமீபம் 300m
 சமீபத்தில் குடியிருப்புகளாக, பரணைத்
 திருவள்ளூர், வாங்குகப்பட்டுள்ள
 மாதிரியும் உயர்மதினத்திற்கு கம்மிகளாக
 எதுவும் இல்லை என இதன் மூலம்
 சமீபம் தீர்மானம்

10250
 கிராம தீர்மானம்/அனுமதி
 22, பாதிநாயகப்பள்ளி கிராமம்
 பர்க்கர்-TR, கிண்கிண்கிரி-Dt.

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.

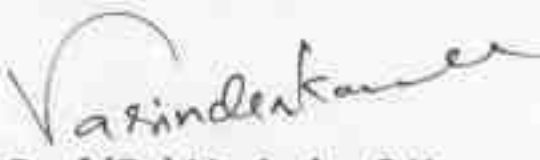
Issue Date
Feb 19, 2024

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)