

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

**Environmental Clearance under EIA Notification – 2006  
Schedule Sl. No. 1 (a) (i): Mining Project**

**“B1” CATEGORY – MINOR MINERAL – CLUSTER – NON-FOREST LAND  
CLUSTER EXTENT = 12.02.5 hectares**

**M/s. Dahlia Granites Private Limited  
At  
K.Pitchampatti Village, Karur Taluk, Karur District**

**ToR issued vide Letter No. SEIAA-TN/F.No.9654/SEAC/ToR-1394/2022  
dated 16.02.2023**

<b>Name and Address</b>	<b>Extent &amp; S.F.No.</b>
<b>M/s.Dahlia Granites Pvt Ltd K.Pitchampatti Village, Karur Taluk, Karur District</b>	<b>2.65.0 ha &amp; S. F. No. 417/2, 417/5, 417/7 (P), 454/2</b>

**ENVIRONMENTAL CONSULTANT  
GEO TECHNICAL MINING SOLUTIONS**



**No: 1/213-B, Ground Floor, Natesan Complex  
Oddapatti, Collectorate Post office,  
Dharmapuri - 636 705. Tamil Nadu.  
E-mail: info.gtmsdpi@gmail.com,  
Website: www.gtmsind.com**



**ENVIRONMENTAL LAB  
EXCELLENCE LABORATORY**

**NABET ACC. NO: NABET/EIA/2124/SA 0184  
Valid till : Dec 31, 2023**

**Baseline Study Period – December 2022 to February 2023**

## TERMS OF REFERENCE (ToR) COMPLIANCE

ToR issued vide Letter No. SEIAA-TN/F.No.9654/SEAC/ToR-1349 dated 16.02.2023 for

**M/s. Dahlia Granites Private Limited**

SPECIFIC CONDITIONS		
1	The proponent is requested to carry out a survey and enumerate on the structures located within 50m, 100m, 150m, 200m, 250m, 300m and 500m from the boundary of the mine lease area.	The report about the structures within the radius of 50m, 100m, 150m, 200m, 250m, 300m and 500m will be attached with final EIA report.
2	The proponent shall discuss the funds for mitigation measures to be included in the EMP.	A detailed EMP has been provided in Table 10.10 and 10.11 under Chapter X, pp.157-164.
3	The proponent shall adhere to the bench height - 5m as stated in the approved mining plan.	The proponent will carry out mining with benches having 5 m height and 5 m width as described in the approved mining plan.
4	The proponent shall submit an affidavit on participation in the Anna University Star rating system.	The affidavit showing participation of the proponent the Anna University Star rating system will be attached along with final EIA report.
5	The pp shall frame Environmental policy and shall appoint Environmental Manger etc.,	A detailed environmental policy has been given in Section 10.1 under Chapter X, pp.145-146.
6	The PP shall furnish ownership details of all survey numbers in EIA report.	A document containing ownership details of all survey numbers has been enclosed in the approved mining plan report attached in Annexure III.
7	The Project Proponent shall conduct the hydrogeological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.37-49.

	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.	
8	The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.	This information will be updated in the final EIA report.
9	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or partially formed as per the approved Mining plan, the project proponent (PP) shall prepare and submit an ‘Slope Stability Action plan’ for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director and mining during the time of appraisal for obtaining the EC.	Slope stability action plan is not required for this project as it is a green field project.
10	Details of Green belt & fencing shall be included in the EIA Report.	Photographs showing green belt and fencing will be included in the final EIA Report.
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 attached with final EIA report.
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.	
	a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The conditions are not applicable as the project is a green field project.
	b. Quantity of minerals mined out.	
	c. Highest production achieved in any one year	

	d.	Detail of approved depth of mining.	
	e.	Actual depth of the mining achieved earlier.	
	f.	Name of the person already mined in that leases area.	
	g.	If EC and CTO already obtained, the copy of the same shall be submitted.	
	h.	Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	
13		All corner coordinates of the mine lease area superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.5, p.14 under Chapter II.
14		The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	Drone video and photographs showing fencing and greenbelt development will be included in the final EIA report. The drone video will be submitted during the final EIA report appraisal.
15		The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Photographs showing fencing, green belt will be included in the final EIA report.
16		The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated	The details of mineral reserves have been discussed in Section 2.5 under Chapter II, p.16. The anticipated impact of mining on land, air, noise, water, soil, biology, and

	impacts of the mining operations on the surrounding environment and the remedial measures for the same.	socio economy is discussed under Chapter IV, pp.95-121.
17	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.25.
18	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III, pp. 28-94.
19	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII, pp.136-137.
20	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The rainwater harvesting management plan will be submitted along with the final EIA report.
21	Land use of the study area delineating forest area, agricultural land, gazing 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	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

	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.	in Section 3.1, pp.28-36 under Chapter III. The details of surrounding sensitive ecological features have been provided in Table 3.38 under Chapter III, p.92-93. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.22.
22	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease. such as extent of land area, distance from mine lease' its land use, R&R issues. If any, should be provided.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
23	Proximity to Areas declared as 'Critically 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.	This condition is not applicable to this project because this project is not located in proximity to the areas of areas declared as 'Critically Polluted' (or) the project areas which attracts the court restrictions for mining operations.
24	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Details about rainwater harvesting structures will be included in the final EIA report.
25	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section 3.7 under Chapter III, pp.90-92.
26	A tree survey study shall be carried out (nos., name of the species, age, diameter etc,) both within the mining lease applied area & 300m buffer zone and its management during mining	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.64-86.

	activity.	
27	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.8 under Chapter II, p.22.
28	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	The comments made in public hearing meeting will be updated in the final EIA report after public hearing meeting.
29	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Details of advertisement will be updated in the final EIA report.
30	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	The Tamil version of EIA report, executive summary and other related information will be incorporated in this report.
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the importance of protecting the biological environment.
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics A wide range of indigenous plant species should be planted as given in the <b>appendix-I</b> in consultation	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV, pp.109-116.

	with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities, botanist/Horticulture with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
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.131-135.
35	A Risk Assessment and management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII, pp.128-131.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV, pp.117 & 119.
37	Public health implications of the Project and	No public health implications are anticipated



	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.	due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII, pp.142 & 143.
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 27 people directly as discussed in Section 8.1 under Chapter VIII, p.141.
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.141-143.
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.	CCR will be submitted during appraisal of final EIA.
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.145-164. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted along with final EIA.
43	Concealing any factual information or submission	The EIA report has been prepared keeping

	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.	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.
	<b><u>Discussion by SEIAA and the Remarks: -</u></b>	
	The proposal was placed in the 592 <sup>nd</sup> Authority meeting held on 16.10.2023. The authority noted that this proposal was placed for appraisal in this 347 <sup>th</sup> meeting of SEAC held on 13.01.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in Annexure 'B' of this minute.	
1	The activity should not result in CO <sub>2</sub> release and temperature rise and add to micro climate alternations.	This mining activity will use the eco-friendly mining equipment such as diamond wire saw, electric crane, etc. therefore, the project will not emit so much carbon to the extent that alters the climate.
2	The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution' to water sources in the area.	It is ensured that the activity will not disturb the water bodies and natural flow of surface and ground water and that it will not cause any pollution to water sources in the area.
3	The proponent shall ensure that the activity does not disturb Soil health & bio-diversity, Climate change leading to Droughts, Floods etc.	It is ensured that the activity will not disturb soil health & bio-diversity, climate change leading to droughts, floods etc.
4	The proponent shall ensure that the activity does not Pollute leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.	It is ensured that the activity will not release greenhouse gases leading to rise in temperature and livelihood of the local people.
5	The proponent shall ensure that the activity does not make the possibilities of water contamination	It is ensured that the activity will not contaminate water bodies near the project

	and impact on aquatic ecosystem health.	site, leading to deterioration of aquatic health.
6	The trees present in the site shall be protected, replanted elsewhere.	It is ensured that the trees present in the safety margin of lease area will be protected and that the trees inside the area that is going to be mined out will be uprooted and replanted elsewhere.
7	The PP shall study the impact on invasive Alien Species (IAP).	The report on the impact of the project on invasive alien species will be submitted along with the final EIA report.
8	The PP shall revise EMP.	Following recommendation of SEAC, a detailed EMP has been devised and provided in Tables 10.10 and 10.11 under Chapter X, pp.157-164.
<b>Annexure 'B'</b>		
<b>Cluster Management Committee</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 rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development Water sprinkling, tree plantation, blasting etc.,	The members of the cluster management committee will be instructed to carry out EMP in coordination.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with	All the information has been discussed in Section 2.6 & 2.7 under Chapter II, pp.17-

	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.	26.
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	It will be advised to the cluster management committee to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised will be given in detail.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The committee will submit the fire safety and evacuation plan as discussed in Section 7.3 under Chapter VII, pp.131-135.
<b>Impact study of Mining</b>		

12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following	
	a)	Soil health & soil biological, physical land chemical features.
	b)	Climate change leading to Droughts, Floods etc.
	c)	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local People.
	d)	Possibilities of water contamination and impact on aquatic ecosystem health.
	e)	Agriculture, Forestry, & Traditional practices.
	f)	Hydrothermal/Geothermal effect due to destruction in the Environment.
	g)	Bio-geochemical processes and its foot prints including environmental stress.
	h)	Sediment geochemistry in the surface streams.
	<b>Agriculture &amp; Agro-Biodiversity</b>	
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.109-116.
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.65-84. 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.64-86. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV, pp.109-116.
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.64-86 and measures have been provided in Section 4.6 under Chapter IV, pp.109-116.
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.95-121.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV, pp.95 & 96.
	<b>Forests</b>	
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.109-116.

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.109-116.
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National parks, corridors and wildlife pathways, near project site.	There are no protected areas, National Parks, Corridors and Wildlife pathways near project site. The list of environmentally sensitive areas within 10 km radius has been provided in Table 3.38 under Chapter III, pp.92 & 93.
<b>Water Environment</b>		
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.37-49.
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.96-98.
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.95-121.
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem is under process and report will be added to the final EIA report.

27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV, pp.95-121.
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.109-116.
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.96.
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.96- 98.
<b>Energy</b>		
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.95-121.
<b>Climate Change</b>		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV, pp.109-116.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The information will be included in the final EIA report.
<b>Mine Closure Plan</b>		
34	Detailed Mine closure plan covering the entire	A progressive mine closure plan has been



	mine lease period as per precise area communication order issued.	attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.8 under Chapter II, p.22.
<b>EMP</b>		
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.145-164.
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 10.9 & 10.10 under Chapter X, pp.157-164.
<b>Risk Assessment</b>		
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.128-131.
<b>Disaster Management Plan</b>		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII, pp.131-135.
<b>Others</b>		
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	The VAO certificate of 300 m radius will be attached with final EIA report.

	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.	The concerns raised during the public consultation and all the activities proposed will be updated in the final EIA report.
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in Section 7.5 under Chapter VII, pp.137 & 138.
<b>STANDARD TERMS OF REFERENCE</b>		
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. This is not a violation category project. This proposal falls under B1 category.
2.	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	The proposed site for quarrying is a 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, p.14 under Chapter II.
5.	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III.
6.	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The lease area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7.	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical 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	The proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under chapter X, p.145 & 146.

	shareholders or stakeholders at large, may also be detailed in the EIA Report.	
8.	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90 <sup>0</sup> bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	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, pp.28-36 under Chapter III. The details of surrounding sensitive ecological features have been provided in Table 3.38 under Chapter III, pp.92 & 93. Land use plan of the project area showing pre-operational, operational and post-

		operational phases are discussed in Table 2.7 under Chapter II, p.19.
11.	Details of the land for any over burden dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given	It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.
12.	Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.38 under Chapter III, pp.92 & 93.
13.	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	It is not applicable as the proposed project area does not involve any forest land.
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable.  The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional

		Forest Dwellers will not be compromised on account of the project.
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest is found within the study area. The matter has been discussed Table 3.38 under Chapter III, pp.92 & 93.
16.	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	There is no any wildlife/protected area within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.38 under Chapter III, pp.92 & 93.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/ (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished	There are no National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.38 under Chapter III, pp.92 & 93.
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 REET 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	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.64-86.

	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.	The condition is not applicable as the project area / study area is not declared as '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 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	Not Applicable. There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.

	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.	Baseline data were collected for the period of October 2022 - December 2022 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III, pp. 28-94.
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,	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.98-106.



	if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	
24.	The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.	The water requirement for the project, its availability and source have been provided in Table 2.9 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.	The condition is not applicable because 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 and drinking water will be sourced from the approved water vendors.
26.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
27.	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV, pp. 96 -98.
28.	Based on actual monitored data, it may clearly be shown whether working will intersect	Not Applicable. The ground water table is found at the depth

	<p>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.</p>	<p>of 60 m below ground level. The ultimate depth of quarry is 25 m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III, pp.37-49.</p>
29.	<p>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.</p>	<p>Not Applicable.</p> <p>There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated.</p>
30.	<p>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.</p>	<p>The highest elevation of the project area is 205 m AMSL. Ultimate depth of the mine is 25 m BGL. Depth to the water level in the area is 60 m BGL.</p>
31.	<p>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</p>	<p>Greenbelt development plan has been given in Section 4.6 under Chapter IV, pp.109-116.</p>

	have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	
32.	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	Traffic density survey was carried out to analyse the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III, pp.90 - 92.
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6 under Chapter II, pp.16-26.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6 under Chapter II, pp.16-26.
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	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV, pp.117 -119.

	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.	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.142 & 143.
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.141.
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 10.10 & 10.11 under Chapter X, pp.157-164.
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	The outcome of public hearing will be updated in the final EIA/EMP report.
40.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 11519290/- CER Cost is Rs. 10,00,000/- In order to implement the environmental protection measures, an amount of Rs. 2258000 as capital cost and recurring cost as Rs. 1181600 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. 17424910, as shown in Tables 10.9 & 10.10 under Chapter X, pp.157-164.
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.131-135.
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.141-143.
44.	<b>Besides the above, the below mentioned general points are also to be followed:</b>	
a)	Executive Summary of the EIA/EMP Report	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been properly referenced with index and continuous page numbering.
c)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of tables and source of the data collected have been mentioned.
d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Original Baseline monitoring reports will be included in the final EIA report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be enclosed along with final EIA/EMP report.
g)	While preparing the EIA report, the instructions	Instructions issued by MoEF & CC O.M.

	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.	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.	The certified report of the status of compliance of the conditions will be submitted along with final EIA report.
j)	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

## TABLE OF CONTENTS

S No.	TITLE	PAGE No.
<b>I</b>	<b>Introduction</b>	<b>1-7</b>
1.0	Preamble	1
1.1	Purpose of the report	1
1.2	Environmental clearance	4
1.3	Terms of reference (Tor)	4
1.4	Post environment clearance monitoring	5
1.5	Transferability of Environmental Clearance	5
1.6	Identification of the project proponent	5
1.7	Brief description of the project	5
1.8	Scope of the study	6
1.9	References	7
<b>II</b>	<b>PROJECT DESCRIPTION</b>	<b>8-26</b>
2.0	Introduction	8
2.1	Description of the project	8
2.2	Location and accessibility	9
2.3	Leasehold area	9
2.4	Geology and Geomorphology	13
2.5	Resources and Reserves	16
2.6	Mining method	16
2.6.1	Magnitude of Operation	17
2.6.2	Extent of Mechanization	17
2.7	Project Implementation Schedule	26
<b>III</b>	<b>DESCRIPTION OF THE ENVIRONMENT</b>	<b>27-94</b>
3.0	General	27
3.1	Land environment	28
3.1.1	Geology and Geomorphology	28
3.1.2	Land use/Land cover	28
3.1.3	Topography	29
3.1.4	Drainage pattern	29
3.1.5	Seismic sensitivity	29
3.1.6	Soil Environment	29
3.1.6.1	Methodology	34
3.1.6.2	Results and discussion	34

3.2	Water Environment	37
3.2.1	Surface Water Resources and Quality	37
3.2.2	Ground water Resources and Quality	37
3.2.3	Hydrogeological Studies	38
3.2.3.1	Groundwater level and flow direction	38
3.2.3.2	Electrical resistivity investigation	48
3.3	Air Environment	49
3.3.1	Meteorology	49
3.3.1.1	Climatic	51
3.3.1.2	Wind Pattern	51
3.3.2	Ambient Air Quality Study	55
3.4	Noise Environment	61
3.5	Biological Environment	64
3.5.1	Flora	66
3.5.2	Fauna	81
3.6	Socio-Economic environment	86
3.6.1	Objectives of the Study	87
3.6.2	Scope of work	87
3.6.3	Socio-Economic status of Study area	87
3.6.4	Recommendation and Suggestion	90
3.6.5	Summary & conclusion	90
3.7	Traffic density	90
3.8	Site Specific Features	92
<b>IV</b>	<b>ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES</b>	<b>95-121</b>
4.0	General	95
4.1	Land Environment	95
4.1.1	Anticipated Impact	95
4.1.2	Common Mitigation Measures from Proposed Project	95
4.2	Soil Environment	96
4.2.1	Impact on Soil Environment	96
4.2.2	Mitigation Measures for soil conservation	96
4.3	Water Environment	96
4.3.1	Anticipated Impact	96
4.3.2	Common Mitigation Measures from Proposed Project	97
4.4	Air Environment	98



4.4.1	Anticipated impact from Proposed Project	98
4.4.1.1	Emission Estimation	98
4.4.1.2	Frame work of Computation and Model Details	99
4.4.1.3	Modelling of Incremental Concentration	99
4.4.1.4	Model Results	99
4.4.2	Common Mitigation Measures	105
4.5	Noise Environment	106
4.5.1	Anticipated Impact	107
4.5.2	Common Mitigation Measures	108
4.5.3	Ground Vibrations	109
4.6	Ecology And Biodiversity	109
4.6.1	Impact on Ecology and Biodiversity	109
4.6.2	Mitigation Measures on Flora	109
4.6.3	Anticipated Impact on Fauna	113
4.6.3.1	Measures for Protection and Conservation of Wildlife Species	113
4.6.3.2	Mitigation Measures	113
4.6.4	Impact on Aquatic Biodiversity	113
4.6.5	Impact Assessment on Biological Environment	113
4.7	Socio Economic Environment	116
4.7.1	Anticipated Impact	116
4.7.2	Mitigation Measures	116
4.8	Occupational Health and Safety	117
4.8.1	Respiratory Hazards	117
4.8.2	Noise	117
4.8.3	Physical Hazards	118
4.8.4	Occupational Health Survey	118
4.8.5	Post COVID Health Management Plan for Workers	118
4.8.6	Plastic Waste Management	119
4.9	Mine Closure	119
4.9.1	Mine Closure Criteria	120
4.9.1	Physical Stability	120
4.9.1.2	Chemical Stability	120
4.9.1.3	Biological Stability	120
<b>V</b>	<b>ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)</b>	<b>122</b>

5.0	Introduction	122
5.1	Factors behind the Selection of Project Site	122
5.2	Analysis of Alternative Site	122
5.3	Factors behind Selection of Proposed Technology	122
5.4	Analysis of Alternative Technology	122
<b>VI</b>	<b>ENVIRONMENTAL MONITORING PROGRAM</b>	<b>123-127</b>
6.0	General	123
6.1	Methodology of Monitoring Mechanism	123
6.2	Implementation Schedule of Mitigation Measures	125
6.3	Monitoring Schedule and Frequency	125
6.4	Budgetary provision for Environment Monitoring Program	127
6.5	Reporting schedules of monitored data	127
<b>VII</b>	<b>ADDITIONAL STUDIES</b>	<b>128-140</b>
7.0	General	128
7.1	Public Consultation for Proposed Project	128
7.2	Risk Assessment for Proposed Project	128
7.3	Disaster Management Plan for Proposed Project	131
7.3.1	Roles and Responsibilities of Emergency Team	133
7.3.2	Emergency Control Procedure	134
7.3.3	Proposed Fire Extinguishers at different locations	134
7.4	Cumulative Impact Study	136
7.4.1	Air Environment	136
7.4.1.1	Cumulative Impact of Air Pollutants	136
7.4.2	Noise Environment	136
7.4.3	Socio Economic Environment	137
7.4.4	Ecological Environment	137
7.4.5	Traffic Density	137
7.5	Plastic Waste management Plan for Proposed Project	137
7.5.1	Objective	137
7.6	Post Covid health management Plan for Proposed Project	138
7.6.1	Post-Covid follow-up Protocol	139
<b>VIII</b>	<b>PROJECTS BENEFITS</b>	<b>141-143</b>
8.0	General	141
8.1	Employment Potential	141

8.2	Socio-Economic Welfare Measures Proposed	141
8.3	Improvement in Physical Infrastructure	141
8.4	Improvement in Social Infrastructure	141
8.5	Other Tangible Benefits	142
8.6	Corporate Social Responsibility	142
8.7	Corporate Environment Responsibility	143
8.8	Summary of project benefits	143
<b>IX</b>	<b>ENVIRONMENTAL COST BENEFIT ANALYSIS</b>	<b>144</b>
<b>X</b>	<b>ENVIRONMENTAL MANAGEMENT PLAN</b>	<b>145-164</b>
10.0	General	145
10.1	Environmental Policy	145
10.1.1	Description of the Administration and Technical setup	145
10.2	Land Environment Management	146
10.3	Soil Management	147
10.3.1	Top Soil Management	147
10.3.2	Overburden / Waste and Side Burden Management	147
10.4	Water Management	148
10.5	Air Quality Management	148
10.6	Noise Pollution Control	149
10.7	Ground Vibration and Fly rock control	150
10.8	Biological Environment Management	151
10.8.1	Green Belt Development Plan	151
10.9	Occupational Safety & Health Management	152
10.9.1	Medical Surveillance and Examinations	152
10.9.2	Proposed Occupational Health and Safety Measures	153
10.9.3	Health and Safety Training Program	155
10.9.4	Budgetary Provision for Environmental Management	156
10.10	Conclusion	164
<b>XI</b>	<b>SUMMARY AND CONCLUSION</b>	<b>165-176</b>
11.0	Introduction	165
11.1	Project Description	165
11.2	Description of the Environment	166
11.2.1	Land Environment	166
11.2.1.1	Soil Characteristics	166
11.2.2	Water Environment	166
11.2.3	Air Environment	167

11.2.4	Noise Environment	168
11.2.5	Biological Environment	168
11.2.6	Socio-Economic Environment	168
11.3	Anticipated Environmental Impacts and Mitigation Measures for Proposed Project	169
11.4	Analysis of Alternatives	173
11.5	Environmental Monitoring Program	174
11.6	Additional Studies	174
11.7	Project Benefits for Proposed Project	175
11.8	Environment Management Plan	176
11.9	Conclusion	176
<b>XII</b>	<b>DISCLOSURE OF CONSULTANT</b>	<b>177-182</b>

### LIST OF TABLES

<b>TABLE No.</b>	<b>CONTENTS</b>	<b>PAGE No.</b>
1.1	Details of Quarries within the cluster area of 500 m radius	2
1.2	Details of project proponent	5
1.3	Details of the project	5
2.1	Site connectivity to the project area	9
2.2	Corner coordinates of proposed project	13
2.3	Estimated resources and reserves of the project	16
2.4	Year-wise production details	16
2.5	Operational Details for Proposed Project	17
2.6	Machinery details	17
2.7	Land use data at present, during scheme of mining, and at the end of mine life	19
2.8	Progressive Mine closure budget	22
2.9	Water requirement for the project	22
2.10	Fuel Requirement Details	24
2.11	Employment Potential for the Proposed Project	25
2.12	Capital Requirement Details	26
2.13	Expected Time Schedule	26
3.1	Monitoring attributes and frequency of monitoring	27

3.2	LULC statistics of the study area	29
3.3	Soil sampling locations	34
3.4	Soil quality of the study area	36
3.5	Water sampling locations	37
3.6	Surface and Ground Water Quality Result	40
3.7	Pre-monsoon water level of Open wells within 2 km radius	42
3.8	Post-monsoon water level of Open wells within 2 km radius	42
3.9	Pre-monsoon water level of bore wells within 2 km radius	43
3.10	Post-monsoon water level of bore wells within 2 km radius	43
3.11	Vertical electrical sounding data	48
3.12	Onsite Meteorological Data	50
3.13	Methodology and instrument used for AAQ analysis	55
3.14	National ambient air quality standards	55
3.15	Ambient air quality (AAQ) monitoring locations	56
3.16	Summary of AAQ result	58
3.17	Noise Monitoring Locations	61
3.18	Ambient Noise Quality Result	61
3.19	Calculation of density, frequency (%), dominance, relative density, relative frequency, relative dominance & important value index	65
3.20	Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness	65
3.21	Flora in 300-meter radius	67
3.22	Calculation of Species Diversity in 300-meter radius	69
3.23	Species Richness (Index) in 300-meter radius	70
3.24	Flora in Buffer Zone	71
3.25	Calculation of Species Diversity in buffer Zone	75
3.26	Species Richness (Index) in Buffer Zone	77
3.27	Aquatic Vegetation	80
3.28	Fauna in Core Zone	82
3.29	Fauna in buffer zone	84

3.30	Karudayampalayam village Population Facts	87
3.31	Population and literacy data of study area	88
3.32	Educational Facilities & Water & Drainage Facilities Data of Study Area	88
3.33	Other Facilities in the Study Area	89
3.34	Traffic survey locations	91
3.35	Existing traffic volume	91
3.36	Rough stone transportation requirement	91
3.37	Summary of traffic volume	91
3.38	Details of environmentally sensitive ecological features in the study area	92
4.1	Empirical formula for emission rate from overall mine	98
4.2	Estimated emission rate	99
4.3	Incremental & Resultant GLC of PM <sub>2.5</sub>	104
4.4	Incremental & Resultant GLC of PM <sub>10</sub>	104
4.5	Incremental & Resultant GLC of SO <sub>2</sub>	105
4.6	Incremental & Resultant GLC of NO <sub>x</sub>	105
4.7	Activity and noise level produced by machinery	107
4.8	Predicted Noise Incremental Values	108
4.9	Carbon Released During Five Years of Multi-Colour Granite Production	109
4.10	CO <sub>2</sub> Sequestration	110
4.11	Recommended Species for Greenbelt Development Plan	111
4.12	Greenbelt development plan	112
4.13	Budget for greenbelt development plan	112
4.14	Ecological Impact Assessments	114
4.15	Anticipated Impact of Ecology and Biodiversity	115
4.16	Action Plan	119
6.1	Implementation schedule for proposed project	125
6.2	Proposed monitoring schedule post EC for the proposed quarry	126
6.3	Environment monitoring budget	127

7.1	Risk assessment& control measures for proposed project	129
7.2	<b>Proposed teams to Deal with Emergency Situation</b>	133
7.3	Incremental and Resultant Ground Level Concentration from the Quarry	136
7.4	Predicted Noise Incremental values from Cluster	136
7.5	Greenbelt Development Benefits	137
7.6	Action plan to Manage Plastic Waste	138
8.1	CER – action plan	143
8.2	Project Benefits to the State Government	143
10.1	Proposed controls for land environment	146
10.2	Proposed controls for Soil management	147
10.3	Proposed controls for Water environment	148
10.4	Proposed controls for Air environment	149
10.5	Proposed controls for Noise Environment	149
10.6	Proposed controls for Ground Vibrations & Fly Rock	150
10.7	Proposed greenbelt development plan	152
10.8	Medical examination schedule	153
10.9	List of periodical trainings proposed for employees	155
10.10	EMP budget for proposed project	157
10.11	Estimation of overall EMP budget after adjusting 5% annual inflation	164
11.1	K.Pitchampatti Village Population Facts	168
11.2	Anticipated Impacts & Mitigation Measures	169

### **LIST OF FIGURES**

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>
1.1	<b>Location of the Proposed and Existing Multi-Coloured Quarries in the Cluster of 500m Radius</b>	3
2.1	Overall view of proposed project site	9
2.2	Key map showing location of the project site	10

2.3	Route Map Showing Location of the Project Site	11
2.4	Mine Lease Plan	12
2.5	Map showing Pillars of the Proposed Project Site	14
2.6	Surface and Geological Plan & Sections	15
2.7	Year wise Development Production Plan & Sections	18
2.8	Quarry Layout and Land Use Pattern Plan	20
2.9	Progressive quarry Closure Plan and Section	21
2.10	Conceptual Plan & Sections	23
3.1	Geology Map of the Proposed Project Site	30
3.2	Geomorphology Map of the Proposed Project Site	31
3.3	LULC map of 5km radius from the proposed project site	32
3.4	Drainage map of 5 km radius from the proposed project site	33
3.5	Toposheet showing soil sampling location within 5 km radius around the proposed project site	35
3.6	Toposheet showing water sampling locations within 5 km radius around the proposed project site	39
3.7	Open well static groundwater elevation map showing the direction of groundwater flow during pre-monsoon season	44
3.8	Open well static groundwater elevation map showing the direction of groundwater flow during post-monsoon season	45
3.9	Borewell static groundwater elevation map showing the direction of groundwater flow during pre-monsoon season	46
3.10	Borewell static groundwater elevation map showing the direction of groundwater flow during post-monsoon season	47
3.11	<b>Graph showing occurrence of water bearing fracture zones at the depth range of 60 m below ground level in proposed project</b>	49
3.12	<b>Long-term monthly average rainfall vs monthly rainfall</b>	51



3.13	Windrose Diagram for 2018 and 2019 (October to February)	52
3.13(A)	Windrose Diagram for 2020 and 2021 (October to February)	53
3.14	Onsite Wind Rose Diagram	54
3.15	Toposheet showing ambient air quality monitoring station locations around 5 km radius from the proposed project site	57
3.16	Bar chart showing maximum, minimum, and the average concentrations of PM <sub>2.5</sub> measured from the nine air quality monitoring stations within 5 km radius	58
3.17	Bar chart showing maximum, minimum, and the average concentrations of PM <sub>10</sub> measured from the nine air quality monitoring stations within 5km radius	59
3.18	Bar chart showing maximum, minimum, and the average concentrations of SO <sub>2</sub> measured from the nine air quality monitoring stations within 5 km radius	59
3.19	Bar chart showing maximum, minimum, and the average concentrations of NO <sub>2</sub> measured from the nine air quality monitoring stations within 5km radius	60
3.20	Bar chart showing maximum, minimum, and the average concentrations of pollutants in the atmosphere within 5km radius	60
3.21	Bar chart showing day time noise levels measured in core and buffer zones	62
3.22	Bar chart showing day time noise levels measured in core and buffer zones	62
3.23	Toposheet showing noise level monitoring station locations around 5 km radius from the proposed project site	63
3.24	Quadrates sampling methods of flora	64
3.25	Floral diversity species Richness (Index) in buffer zone and 300m radius	77
3.26	Flora in Core and buffer Area	80
3.27	Traffic Density Map	92

3.28	Field Photographs Showing Baseline Data Collection	94
4.1	Predicted incremental concentration of PM <sub>2.5</sub>	100
4.2	Predicted incremental concentration of PM <sub>10</sub>	101
4.3	Predicted incremental concentration of SO <sub>2</sub>	102
4.4	Predicted incremental concentration of NO <sub>x</sub>	103
4.5	Green Development Photos	111
6.1	Proposed environmental monitoring chart	124
7.1	Disaster management team layout for proposed project	132
10.1	Personal protective equipment to the mine workers	154

### **LIST OF ANNEXURES**

<b>Annexure No.</b>	<b>Contents</b>	<b>Page No.</b>
I	Copy of ToR letter	183-204
II	Copy of 500 m radius letter	205-211
III	Approved mining plan along with mining plan AD/DD letter/original mining plan plates	212-305
IV	VAO 300m radius letter	306
V	Copy of DFO Letter	307
V	NABET certificate of EIA consultant	308

# CHAPTER I

## INTRODUCTION

### 1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14<sup>th</sup> September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14<sup>th</sup> August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided in to B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category 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 B2 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 Letter No. SEIAA-TN/F.No.9654/SEAC/ToR-1394/2022 dated 16.02.2023. This EIA report is prepared for the project proponent, M/s.Dahlia Granites Private Limited applied for Multi-colour Granite quarry lease in the patta land falling in S.F.No.417/2, 417/5 ,417/7(P) & 454/2 over an extent of 2.65.0 K.Pitchampatti Village, Karur Taluk, Karur District and Tamil Nadu. considering cumulative load of all the multi-colour granite quarry projects including one proposed quarry known as P1 and four existing quarries E1,E2,E3 and E4 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 12.02.5 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 **December 2022 – February 2023** according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015.

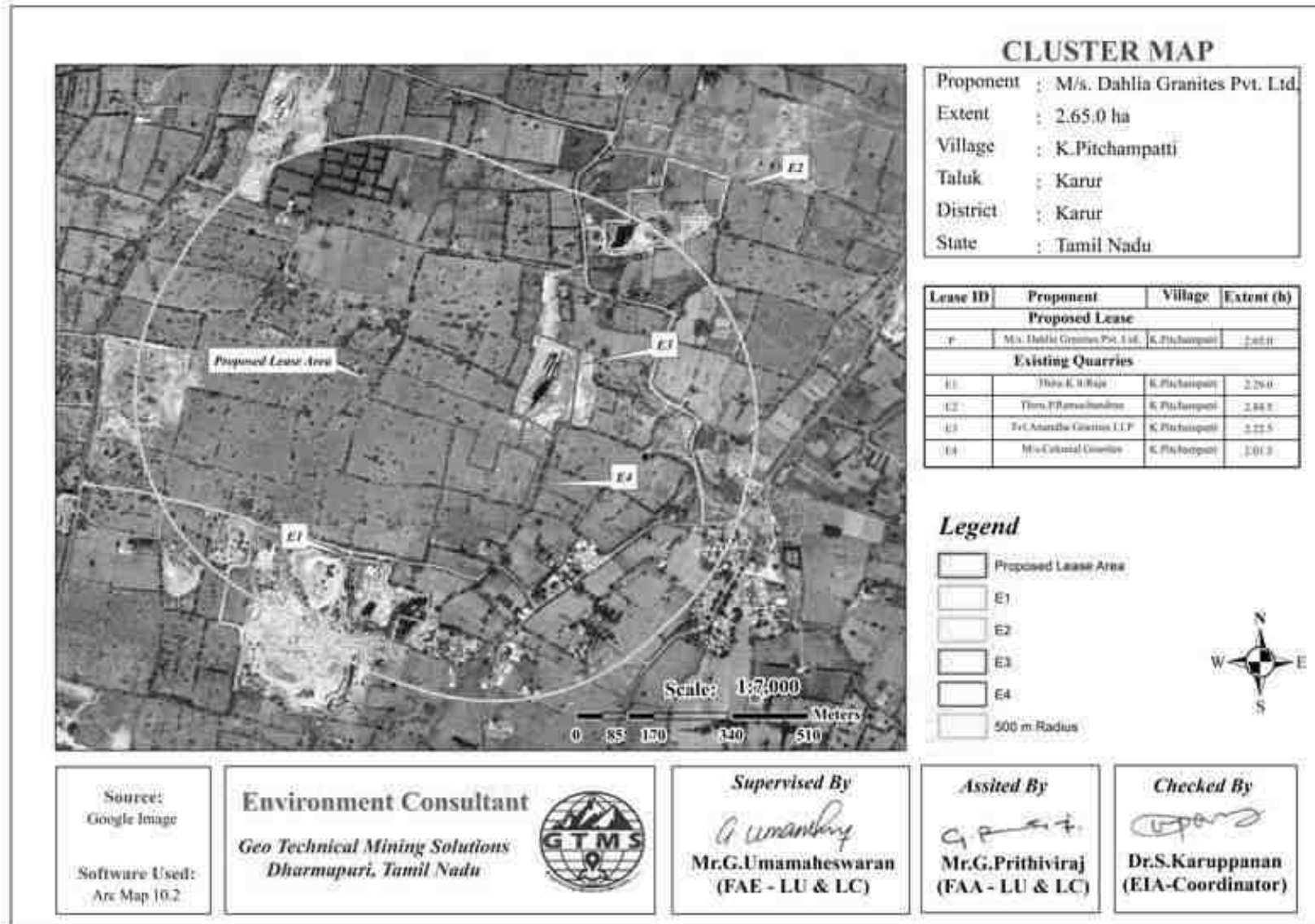
**Table 1.1 Details of Quarries within the Cluster Area of 500 m Radius**

<b>Proposed Quarry</b>				
<b>Code</b>	<b>Name of the Lessee</b>	<b>Village / S.F.No</b>	<b>Extent in (ha)</b>	<b>Lease Period</b>
<b>P1</b>	M/s. Dahlia Granites Pvt ltd	417/2, 417/5, 417/7 (P), 454/2 K.Pitchampatti	2.65.0	Proposed Area
<b>Existing Quarry</b>				
<b>E1</b>	Thiru.K.S.Raja	423/17, 423/3, 423/4, 423/5, 423/6, 423/7B, 452/15, 452/16, 452/17, 452/22B K.Pitchampatti	2.29.0	14.06.2010 to 13.06.2030
<b>E2</b>	Thiru. P.Ramachandran.	407/1, 407/2, 407/3, 407/4, 408/3, 408/4 K.Pitchampatti	2.84.5	05.08.2016 to 04.08.2036
<b>E3</b>	Tvl. Ananta Granites LLP	468/1B, 417/8, 468/2 K.Pitchampatti	2.22.5	21.08.2017 to 20.08.2037
<b>E4</b>	M/s. Colonial Granites	417/3, 417/4(P) 417/6(P) K.Pitchampatti	2.01.5	13.06.2022 to 12.06.2042
<b>Total Cluster Extent</b>			<b>12.02.5</b>	---

**Source:**

*DD Letter – Rc.No.135/Mines/2021, Dated: 05.12.2022*

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



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

## **1.2 ENVIRONMENTAL CLEARANCE**

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

These stages are given below:

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

### ***Screening***

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No.SIA/TN/MIN/410301/2022 dated:12.12.2022) and decided whether the project requires detailed environmental studies for the preparation of EIA report or not.

### ***Scoping***

During scoping, the SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued ToR to the proponent vide Letter No. SEIAA-TN/F.No.9654/SEAC/ToR-1394/2022 dated 16.02.2023 for the preparation of an EIA report.

### ***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 and their opinions will be recorded.

### ***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)**

Compliance to ToR issued vide ToR Letter No. SEIAA-TN/F.No.9654/SEAC/ToR-1394/2022 dated 16.02.2023.

#### 1.4 POST ENVIRONMENT CLEARANCE MONITORING

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

#### 1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

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

#### 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**

<b>Name of the Project Proponent</b>	<b>M/s. Dahlia Granites Private Limited</b>
Address	S.F.No.468/1A, R.Vellagoundanpatti, K.Pitchampatti, Karur - 639118
Status	Proprietor

#### 1.7 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of multi-colour granite which is primarily used in construction projects. The method adopted for multi-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 K. Pitchampatti Village, Karur Taluk, Karur 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. Dahlia Granites Private Limited
Type of Project	Multi colour granite
S.F. No.	417/2, 454/2, 417/5, 417/7(P)
Type of Land	Patta land
Extent	2.65.0
Lease period	20 years

Mining Plan Period	5 Years	
Existing Depth	Nil	
Proposed Depth for five years plan period	15 m BGL	
Ultimate Depth	The ultimate depth of quarrying is about 25 m	
Toposheet No.	58-J/1	
Latitude between	10°46'32.82782"N to 10°46'40.35742"N	
Longitude between	78°03'49.61142"E to 78°04'0.85412"E	
Highest Elevation	205 m above mean sea level	
Topography	Flat Topography	
Method of Mining	Open Cast Semi Mechanized Mining	
Blasting Method	It is an Eco-Friendly quarry operation; no blasting is proposed	
Machinery proposed	Jack Hammer	4
	Compressor	2
	Tippers	2
Manpower deployment	27	
Project cost	Rs.1,15,19,290/-	
CER cost	Rs 10,00,000/-	
Proposed Water Requirement	3.3 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 **December 2022 -February 2023** for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.



## 1.9 REFERENCES

The report has been prepared using the following references:

- ❖ Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010
- ❖ EIA Notification, 14th September, 2006
- ❖ Terms of Reference (ToR) issued by SEIAA
- ❖ Approved Mining Plan of this project
- ❖ In addition, other relevant standards for individual activities such as sampling and testing of environmental attributes.

## **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. Dahlia Granites Private Limited 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 18.03.2021 to extract granite and produce dimension stones. The precise area communication letter was issued by Industries (MME.2) Department, Secretariat Chennai Rc.no.2934330/MMB.2/2022-1, dated.10.10.2022. 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.5764/MM2/2021, dated:22.11.2022). The overall view of the project site is shown in Figure 2.1.



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

## **2.2 LOCATION AND ACCESSIBILITY**

The proposed project area is K. Pitchampatti Village, Karur Taluk, Karur District as shown in Figures 2.2 and 2.3. The project area is marked in the survey of India's toposheet (Toposheet No.58-J/1), as shown in Figure 2.4. The area is located between a latitude of 10°46'32.82782"N to 10°46'40.35742"N and a longitude of 78°03'49.61142"E to 78°04'0.85412"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 Village	Alamarathupatty	1.76 km	N
	Kollapatti	2.7 km	S
	R.Vellagoundanpatti	0.27 km	E
	Kalapatti	4.2 km	W
Nearest Railway Station	Vellianai	8.8 km	NE
Nearest Town	Vellianai	10.18km	NE
Nearest Airport	Trichy	69.7km	E
Nearest Port	Thoothukudi	221.5 km	SE

## **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 forestland involved in the proposed area and is devoid of major vegetation and trees.

### ***Corner Coordinates***

The extent of the proposed project site is **2.65.0 ha**. The boundary corner coordinates are given in Table 2.2 and shown in Figure 2.5.

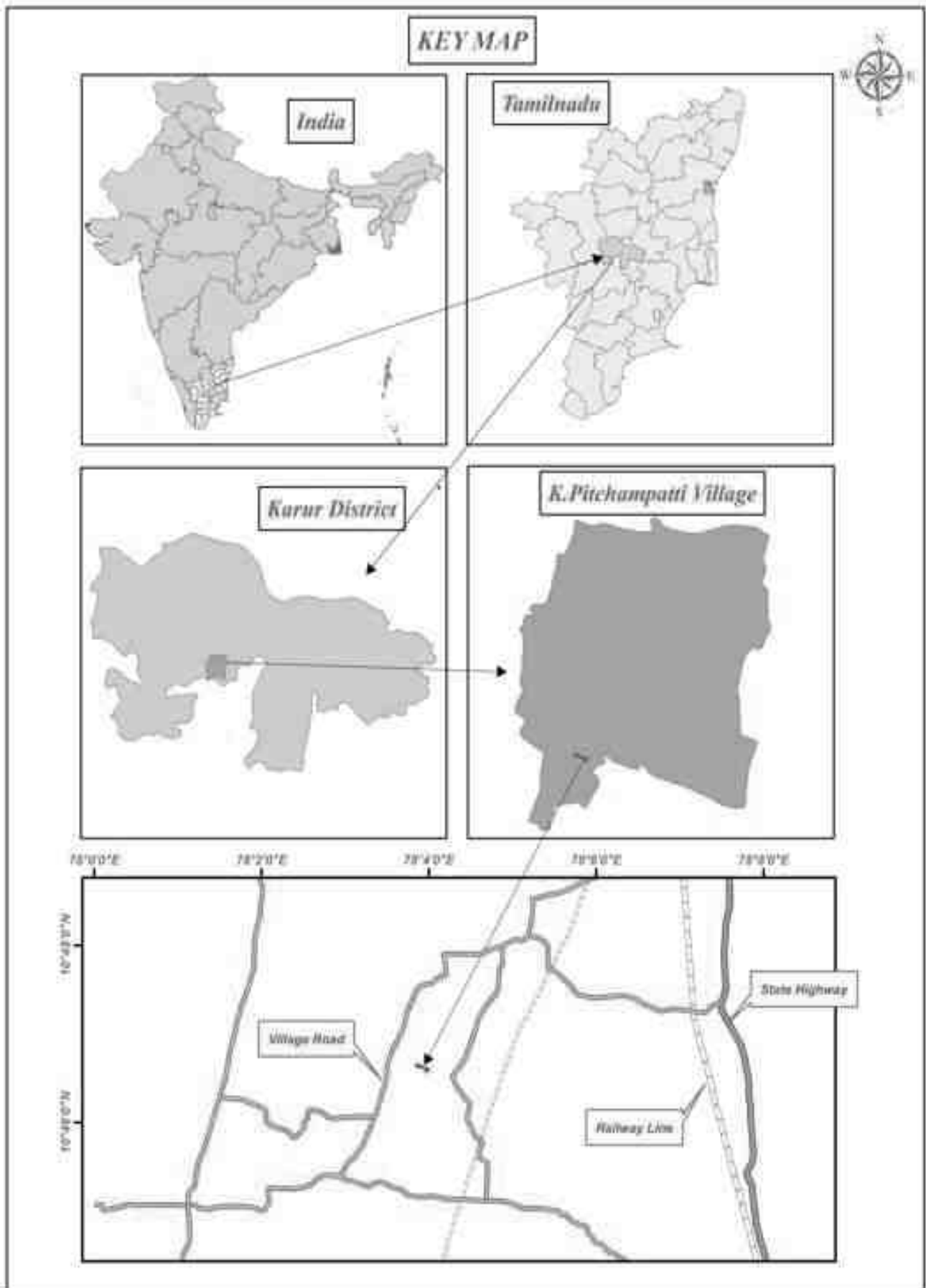


Figure 2.2 Key Map Showing Location of the Project Site

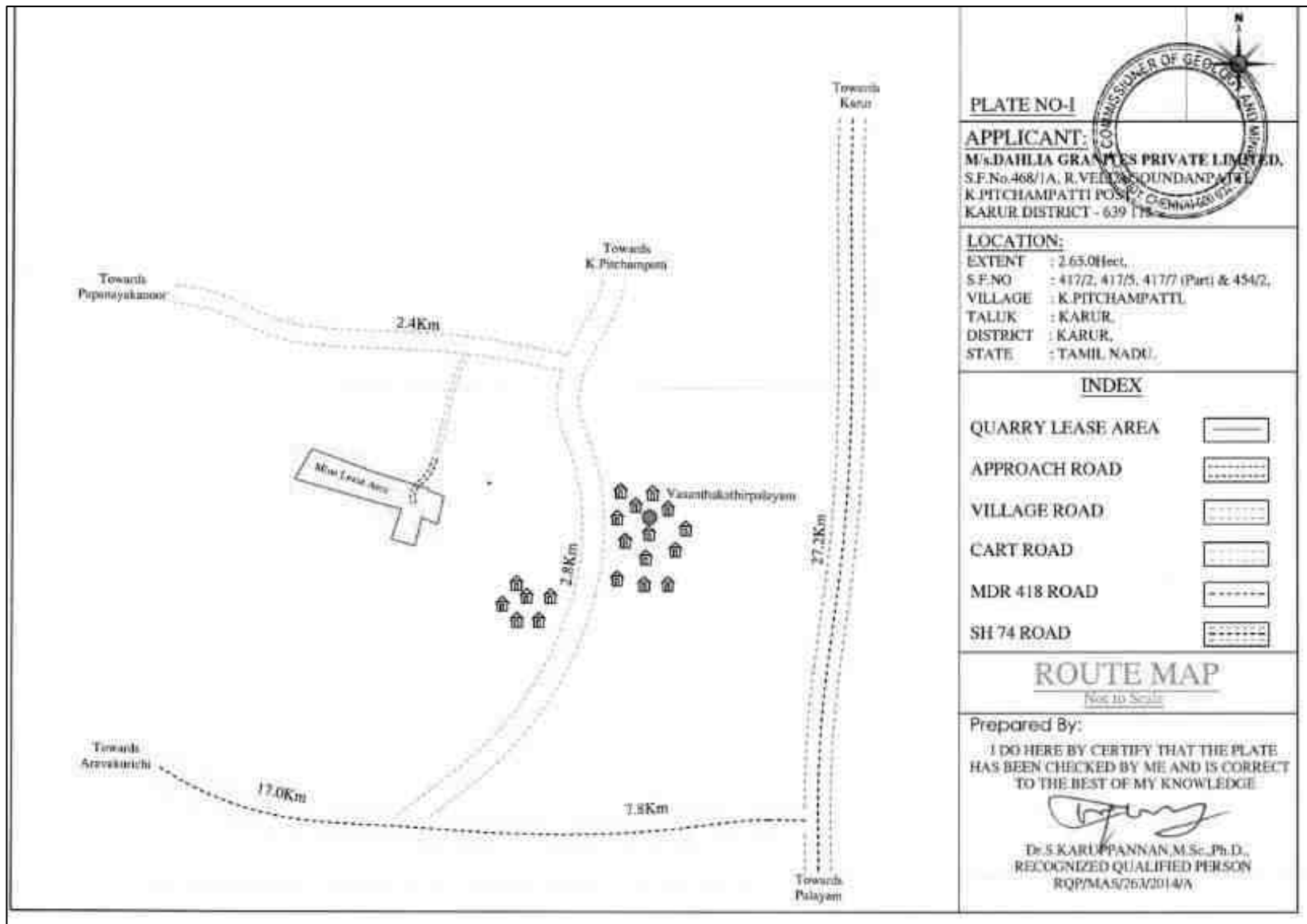


Figure 2.3 Route Map Showing Location of the Project Site

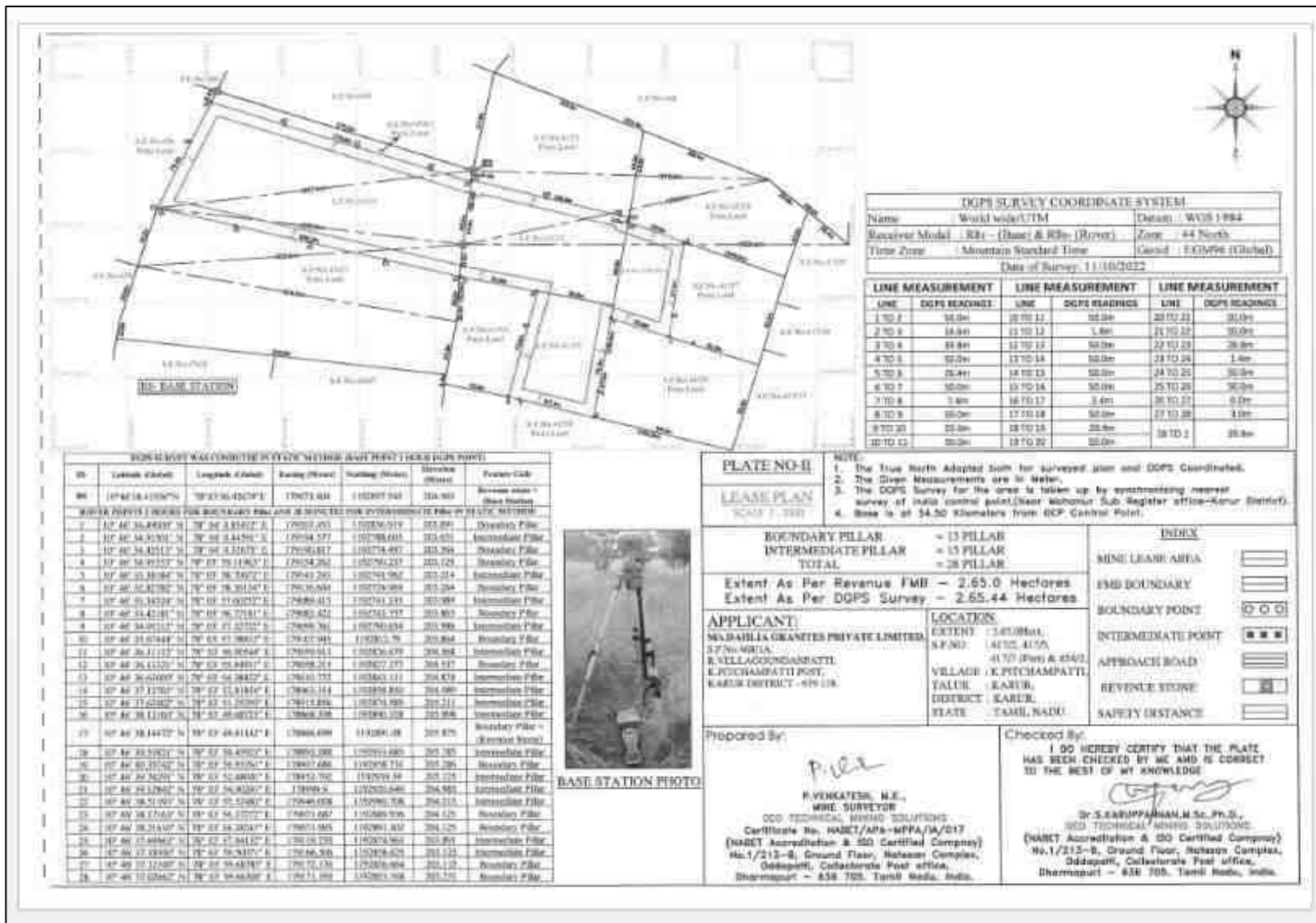


Figure 2.4 Lease Plan

**Table 2.2 Corner Coordinates of Proposed Project**

<b>Pillar ID</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Pillar ID</b>	<b>Latitude</b>	<b>Longitude</b>
1	10°46'36.49000" N	78° 04' 0.85412"E	15	10°46'37.62402" N	78°03'51.25293"E
2	10°46'34.91501"N	78°04'0.44591"E	16	10°46'38.12100" N	78°03'49.68725"E
3	10°46'34.45513"N	78°04'0.32675"E	17	10°46'38.14472" N	78°03'49.61142"E
4	10°46'34.95553"N	78°03'59.11963"E	18	10°46'39.53821"N	78°03'50.45923"E
5	10°46'33.38184"N	78°03'58.70672"E	19	10°46'40.35742" N	78°03'50.95761"E
6	10°46'32.82782"N	78°03'58.56134"E	20	10°46'39.74291" N	78°03'52.48001"E
7	10°46'33.34524"N	78°03'57.00252"E	21	10°46'39.12842" N	78°03'54.00241"E
8	10°46'33.42181"N	78°03'56.77181"E	22	10°46'38.51393" N	78°03'55.52483"E
9	10°46'34.95212" N	78°03'57.32722" E	23	10°46'38.17163" N	78°03'56.37272"E
10	10°46'35.67444" N	78°03'57.58933"E	24	10°46'38.21610"N	78°03'56.38241"E
11	10°46'36.11112" N	78°03'56.00544" E	25	10°46'37.69963" N	78°03'57.94152"E
12	10°46'36.13321" N	78°03'55.94931"E	26	10°46'37.18300" N	78°03'59.50071"E
13	10°46'36.63000" N	78°03'54.38422"E	27	10°46'37.12100" N	78°03'59.68783"E
14	10°46'37.12701" N	78°03'52.81854"E	28	10°46'37.02662" N	78°03'59.66300" E

*Source: Approved Mining plan*

## **2.4 GEOLOGY AND GEOMORPHOLOGY**

The lease area geologically composed of granite, as shown in Figure 2.6. In addition, the lease area geomorphologically occurs over pediment pediplain complex.

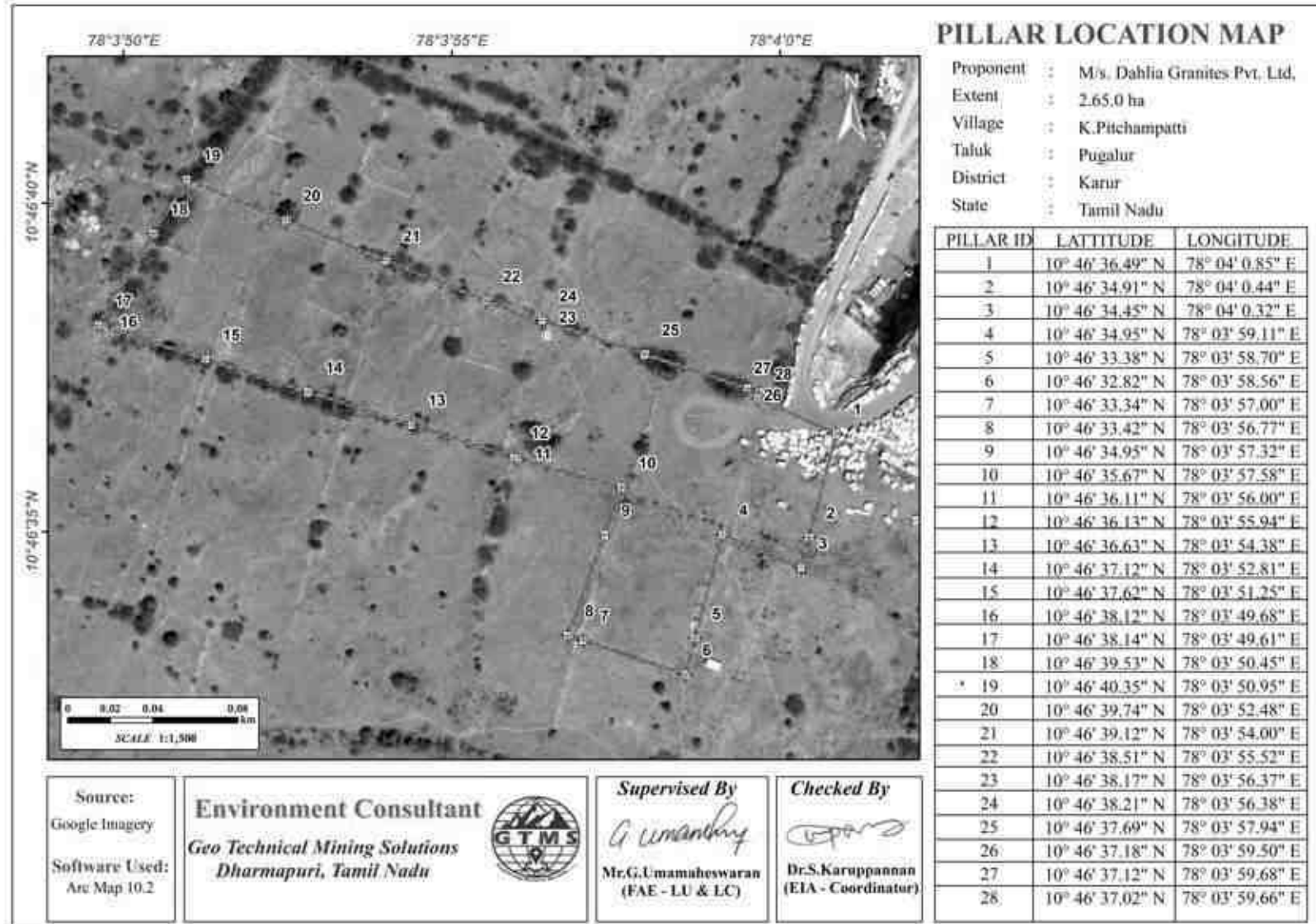


Figure 2.5 Map Showing Pillars of the Proposed Project Site



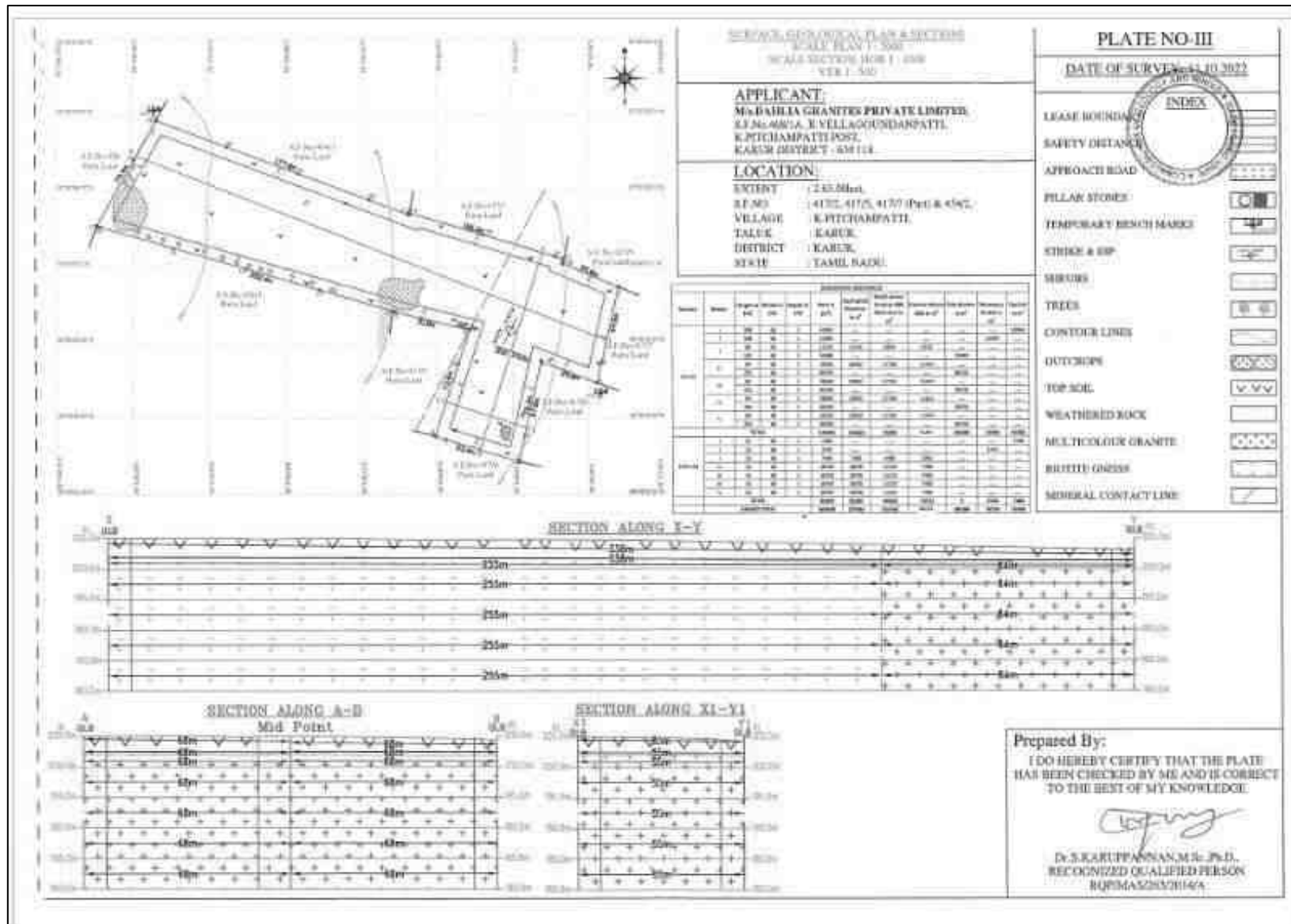


Figure 2.6 Surface and Geological Plan & Sections

## 2.5 RESOURCES AND RESERVES

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

**Table 2.3 Estimated Resources and Reserves of the Project**

Description	ROM in (m <sup>3</sup> )	Granite recovery @ 60% (m <sup>3</sup> )	Granite waste @ 40% recovery(m <sup>3</sup> )	Top Soil (m <sup>3</sup> )	Weathered Rock (m <sup>3</sup> )
Geological Resources	669596	124766	83178	53448	26724
Mineable Reserves	133775	55303	36869	17202	8601

### *Year-Wise Production*

On the basis of year-wise development plan and its sections, as shown in Figures 2.7 and year-wise production details are given in Table 2.4.

**Table 2.4 Year wise Production Details**

Year	ROM in m <sup>3</sup>	Granite Recovery @ 60 % in m <sup>3</sup>	Granite Waste @ 40 % in m <sup>3</sup>	Topsoil in m <sup>3</sup>	Weathered Rock in m <sup>3</sup>
I	4704	2822	1882	2244	1122
II	4605	2763	1842	1530	765
III	4605	2763	1842	1530	765
IV	4623	2774	1849	918	459
V	4495	2697	1798	---	---
<b>Total</b>	<b>23032</b>	<b>13819</b>	<b>9213</b>	<b>6222</b>	<b>3111</b>

*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 5 m 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 0.3 m, burden of 2.3 m, and the depth of 2.3m 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.

### 2.6.1 Magnitude of Operation

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

**Table 2.5 Operational Details for Proposed Project**

	<b>Granite Recovery @ 60%</b>	<b>Granite Waste @ 40%</b>
Proposed production for 5 years	13819	6222
Number of Working Days /Annum	270	270
Production of /Day (m <sup>3</sup> )	10	6
No. of Lorry Loads	2	1

### 2.6.2 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.6.

**Table 2.6 Machinery Details**

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

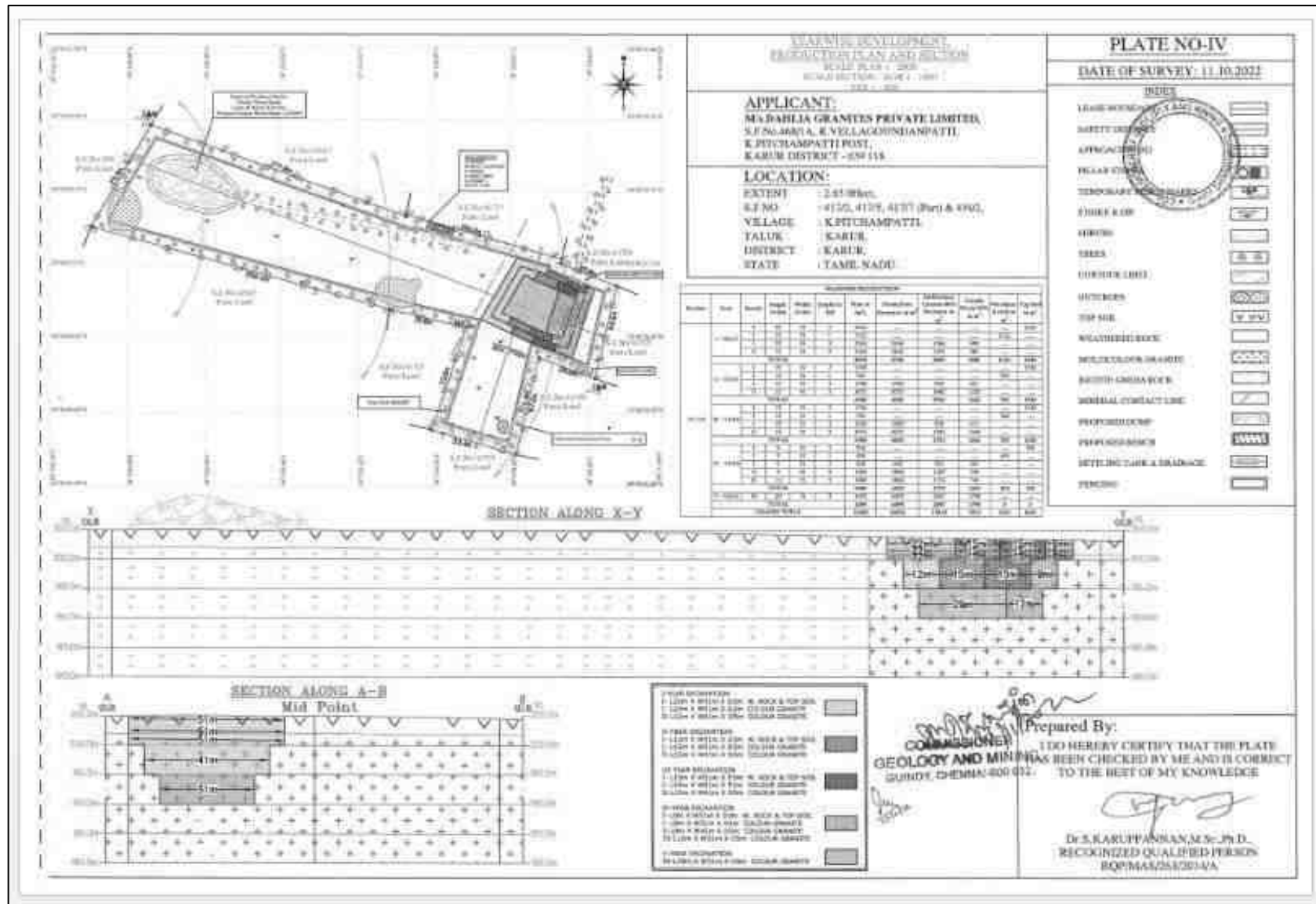


Figure 2.7 Year-Wise Development Production Plan & Sections

### ***Stacking of Granite Rejects and Disposal of Waste***

There is generation of topsoil is about 6222 m<sup>3</sup> for the during this five-year mining plan period. The top soil will be preserved all along the safety barrier and utilized for construction of bund and afforestation purpose. The total waste to be produced during this mining scheme period is around 12324m<sup>3</sup> (Granite waste). The same will be temporarily dumped on the northwest side with dimensions of 62 m (L) x 35 m (W) x 5.6 m (H). Dumps are properly terraced systematically by multi-level dumping. As and when there is accumulation of waste, the same is loaded into the tipper by loading machines and dumped in the respective places earmarked for the purpose.

### ***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 2.65.0 ha of land would have been utilized for quarrying, 0.21.7 ha of land for waste dump, 0.02.0 ha for infrastructures, 0.07.0 ha for roads, 0.70.0 ha for green belt development, and the remaining 1.25.0 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**

<b>Description</b>	<b>Present Land Use Area (ha)</b>	<b>Land Use Area at the end of mine life (ha)</b>
Area under quarry	Nil	0.30.0
Infrastructure	Nil	0.02.0
Roads	Nil	0.07.0
Unutilized	2.53.5	1.25.0
Waste Dump	Nil	0.21.7
Green Belt	0.11.5	0.70.0
Drainage & Settling tank	--	0.09.3
<b>Total</b>	<b>2.65.0</b>	<b>2.65.0</b>

### ***Conceptual Mining Plan***

On the basis of conceptual plan and its sections, as shown in Figures 2.10 and the Ultimate Pit dimension of the quarry is 101 m in length, 61 m in width, and 25 m in depth.

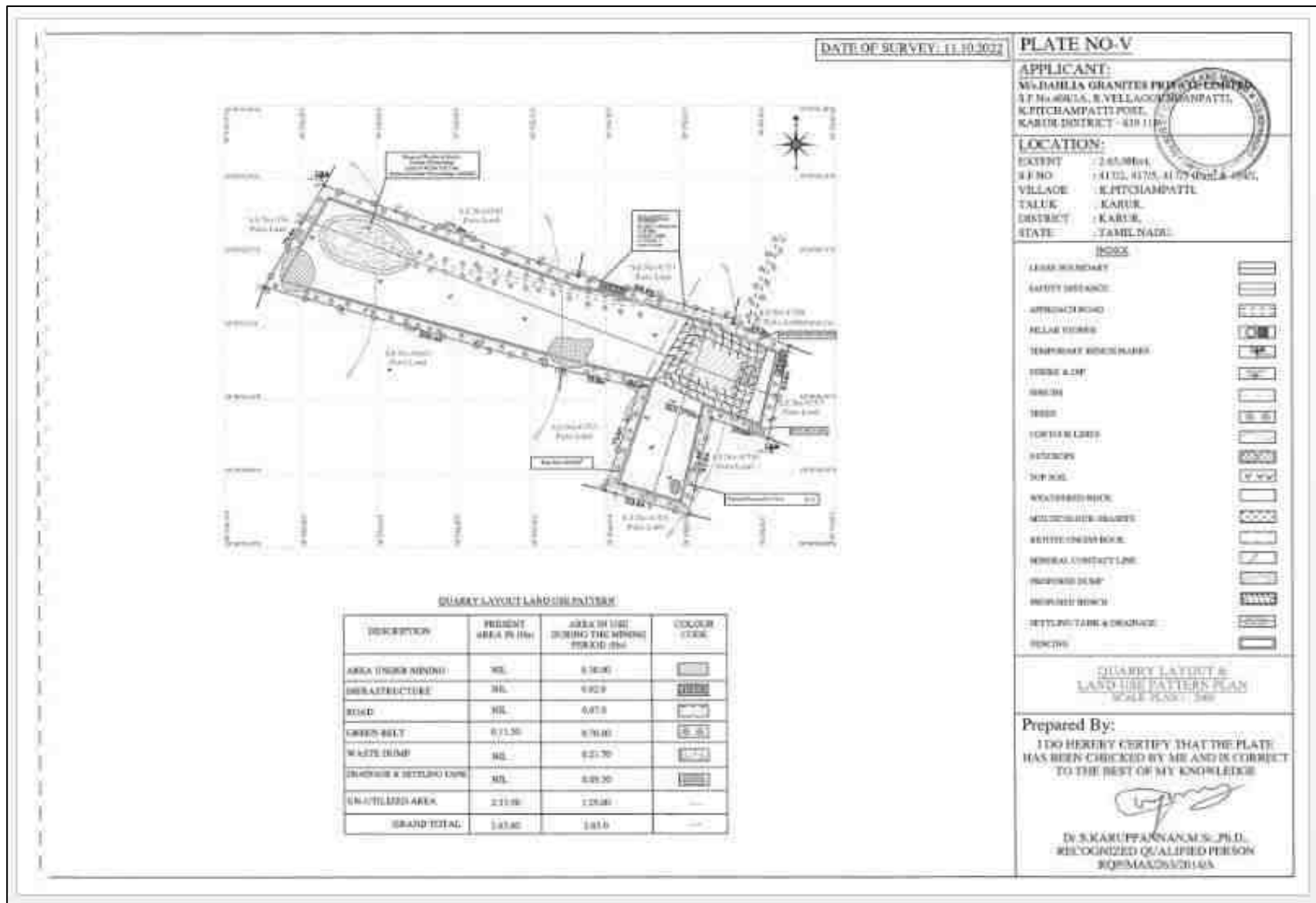
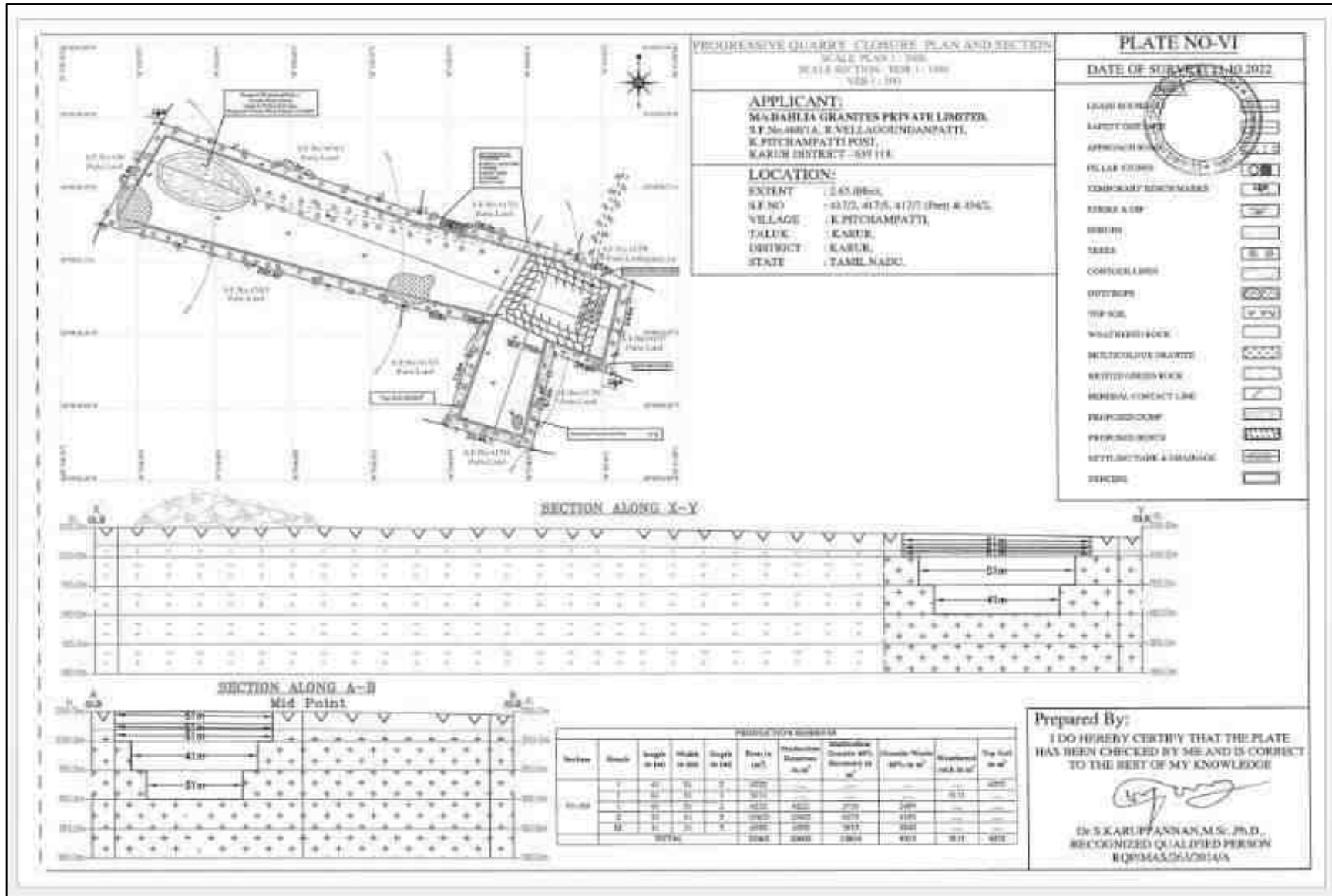


Figure 2.8 Quarry Layout & Land Use Pattern Plan



**Figure 2.9 Progressive Quarry Closure Plan and Section**

### **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, as shown in Figures 2.8 and 2.9 for the scheme period, the progressive mine closure cost is given in Table 2.8.

**Table 2.8 Progressive Mine Closure Budget**

<b>Activity</b>	<b>Capital Cost</b>	<b>Recurring Cost/Annum</b>
530 plants inside the lease area	106000	15900
795 plants outside the lease area	238500	23850
Wire Fencing	530000	26500
Garland Drain	26500	13250
<b>Total</b>	<b>901000</b>	<b>79500</b>

*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 KLD is given in Table 2.9.

**Table 2.9 Water Requirement for the Project**

<b>Purpose</b>	<b>Quantity Required (KLD)</b>	<b>Source</b>
Domestic & Drinking	1.3	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	1.0	
Green Belt	1.0	
<b>Total</b>	<b>3.3</b>	

*Source: Prefeasibility Report*



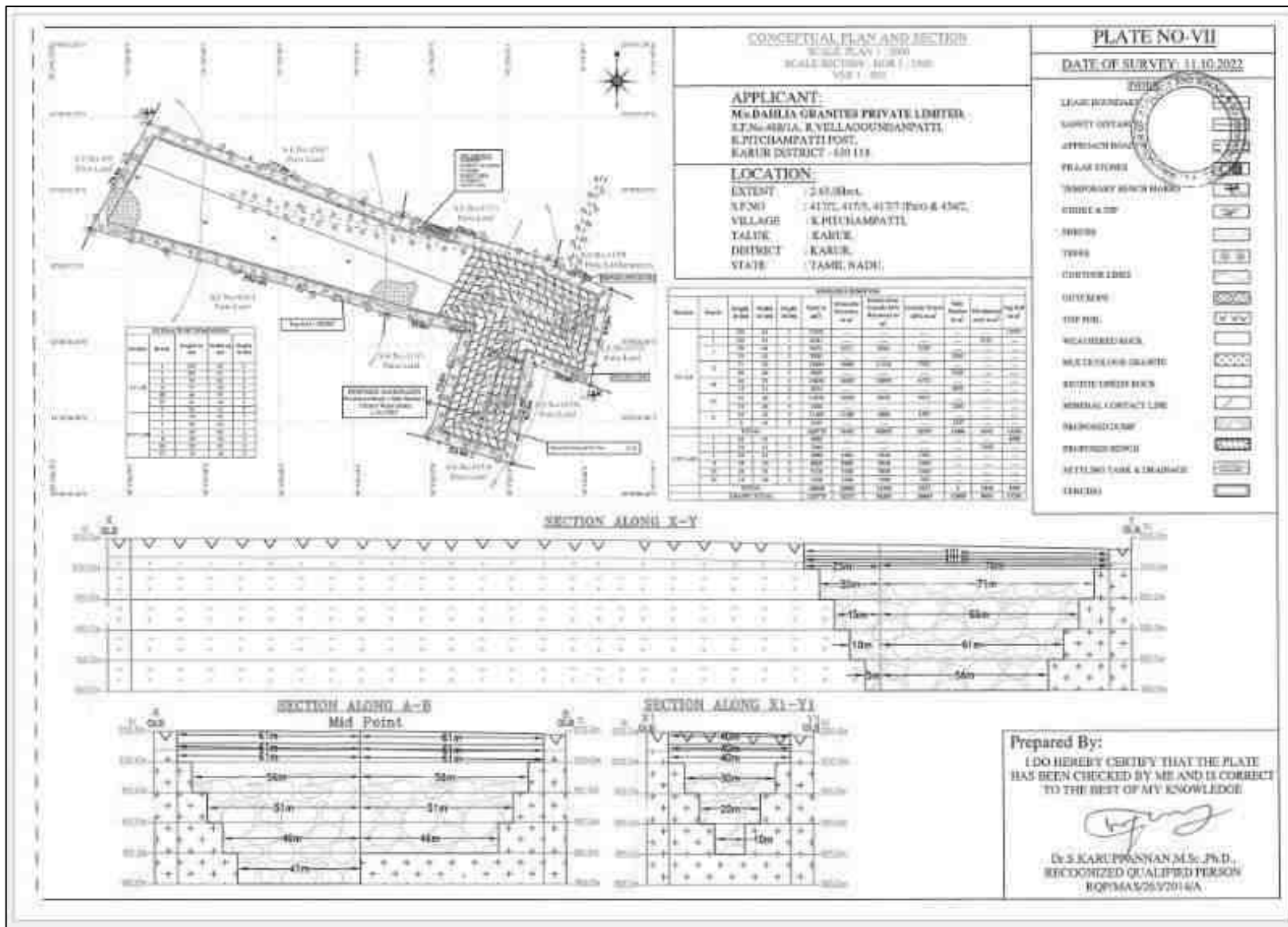


Figure 2.10 Conceptual Plan and Sections

**Table 2.10 Fuel Requirement Details**

<b>Fuel Requirement for Excavator</b>					
<b>Details</b>	<b>Granite Recovery @60% (13819 m<sup>3</sup>)</b>	<b>Granite Recovery @40% (9213 m<sup>3</sup>)</b>	<b>Weathered Rock in m<sup>3</sup> (3111m<sup>3</sup>)</b>	<b>Top Soil (6222 m<sup>3</sup>)</b>	<b>Total Diesel (litre)</b>
Average Rate of Fuel Consumption (l/hr)	16	16	16	10	---
Working Capacity (m <sup>3</sup> /hr)	20	20	20	60	---
Time Required (hours)	691	461	1556	104	---
Total Diesel Consumption for 5 years (litre)	11055	7370	24889	1037	<b>44351</b>
<b>Fuel Requirement for Compressor</b>					
Average Rate of Fuel Consumption/hole (litre)	0.6	--	--	---	---
Number of Drillholes/day	21	--	--	---	---
Total Diesel Consumption for 5 years (litre)	17010	--	--	---	<b>17010</b>
<b>Fuel Requirement for Tipper</b>					
Average Rate of Fuel Consumption/Trip (litre)	20	20	20	--	---
Carrying Capacity in m <sup>3</sup>	6	6	6	--	---
Number of Trips / days	2	1	4	--	---
Number of Trips / 5 years	2303	1536	5185	--	---
Total Diesel Consumption for 5 years (litre)	46063	30710	103703	--	<b>180476</b>
<b>Total Diesel Consumption by Excavator, Compressor and Tipper</b>					<b>241837</b>

## 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 74128 litres High Speed Diesel (HSD) will be used for granite recovery @60%, 38080 litres of HSD will be used for granite waste of 40%, around 1037 litres of HSD will be used for topsoil and around 128592 litres of HSD will be used for weathered rock. It will be brought to the site from nearby diesel pumps. Details on the estimation of fuel requirements are provided in Table 2.10.

## 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	-
		Driver	2
		Mechanic	1
		Blaster/Mat	--
3.	Semi-Skilled	Helpers/Greasers	1
4.	Unskilled	Musdoor/Labours	19
		Cleaners	--
		Attendants	1
<b>Total</b>			<b>27</b>

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	28,32,290
2	Machinery Cost	30,00,000
3	Expenditure Cost	56,87,000
<b>Total Project Cost</b>		<b>1,15,19,290/-</b>

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 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
1	Environmental Clearance						
2	Consent to Establish						
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 **December-2022 to February-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**

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

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

### 3.1 LAND ENVIRONMENT

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

#### 3.1.1 Geology and Geomorphology

Study area is mainly composed of migmatite, khondalite, charnockite and pegmatite rocks, as shown in Figure 3.1.

Among the geomorphic units, pediment pediplain complex covers major part of the study area, as shown in Figure 3.2.

#### 3.1.2 Land Use/ Land Cover

Land Use and Land Cover (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 16.97 ha accounting for 0.22, of which lease area of 2.56.0 ha contributes only about 0.033%. This small percentage of mining activities shall not have any significant impact on the land environment.

**Table 3.2 LULC Statistics of the Study Area**

<b>S. No</b>	<b>Classification</b>	<b>Area (ha)</b>	<b>Area (%)</b>
1	Barren Rocky/Stone Waste	141.45	1.81
2	Crop Land	2488.23	31.89
3	Fallow Land	4761.88	61.03
4	Land with or without scrub	283.74	3.64
5	Mining / Industrial lands	16.97	0.22
6	Plantations	20.35	0.26
7	Settlements	89.72	1.15
<b>Total</b>		<b>7802.33</b>	<b>100.0</b>

*Source: Sentinel II Satellite Imagery*

### **3.1.3 Topography**

The applied lease area exhibits flat topography 0-2 m. The highest elevation observed in Western of the lease area is 205 m AMSL, whereas the lowest elevation in east is 203 m AMSL. The slope is towards eastern side and falls in Toposheet no.58-J/1

### **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.

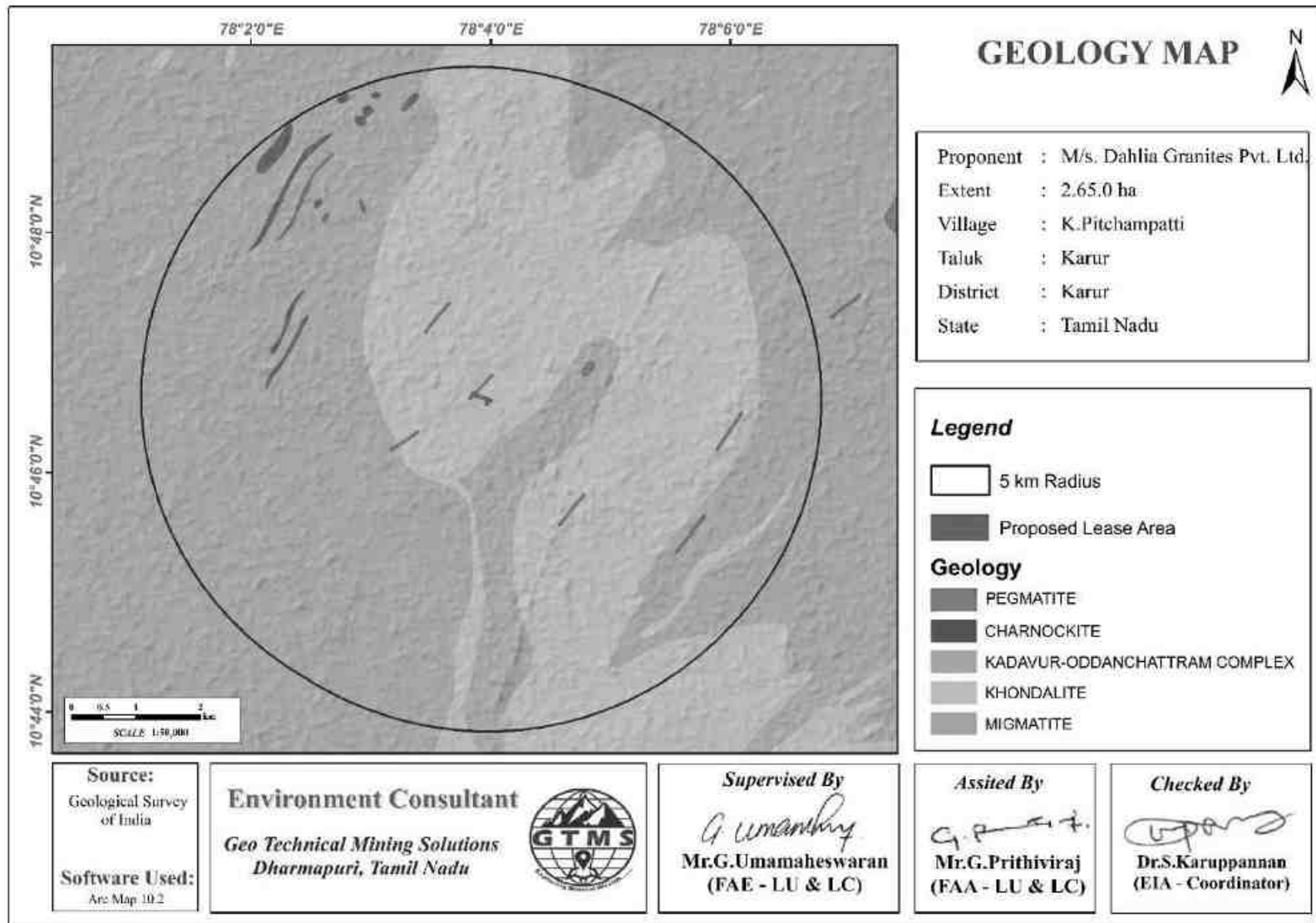


Figure 3.1 Geology Map of the Proposed Project Site



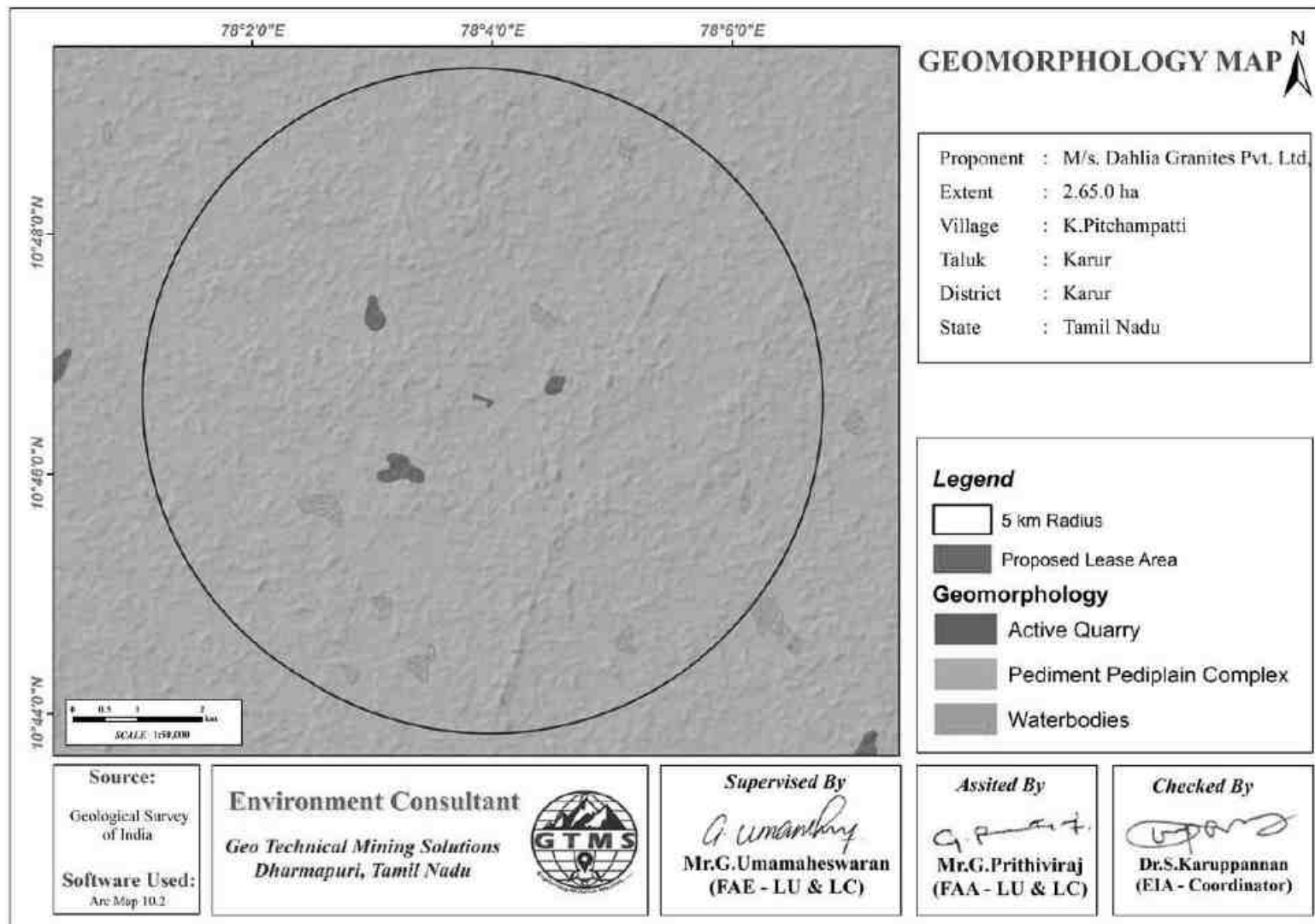


Figure 3.2 Geomorphology Map of the Proposed Project Site

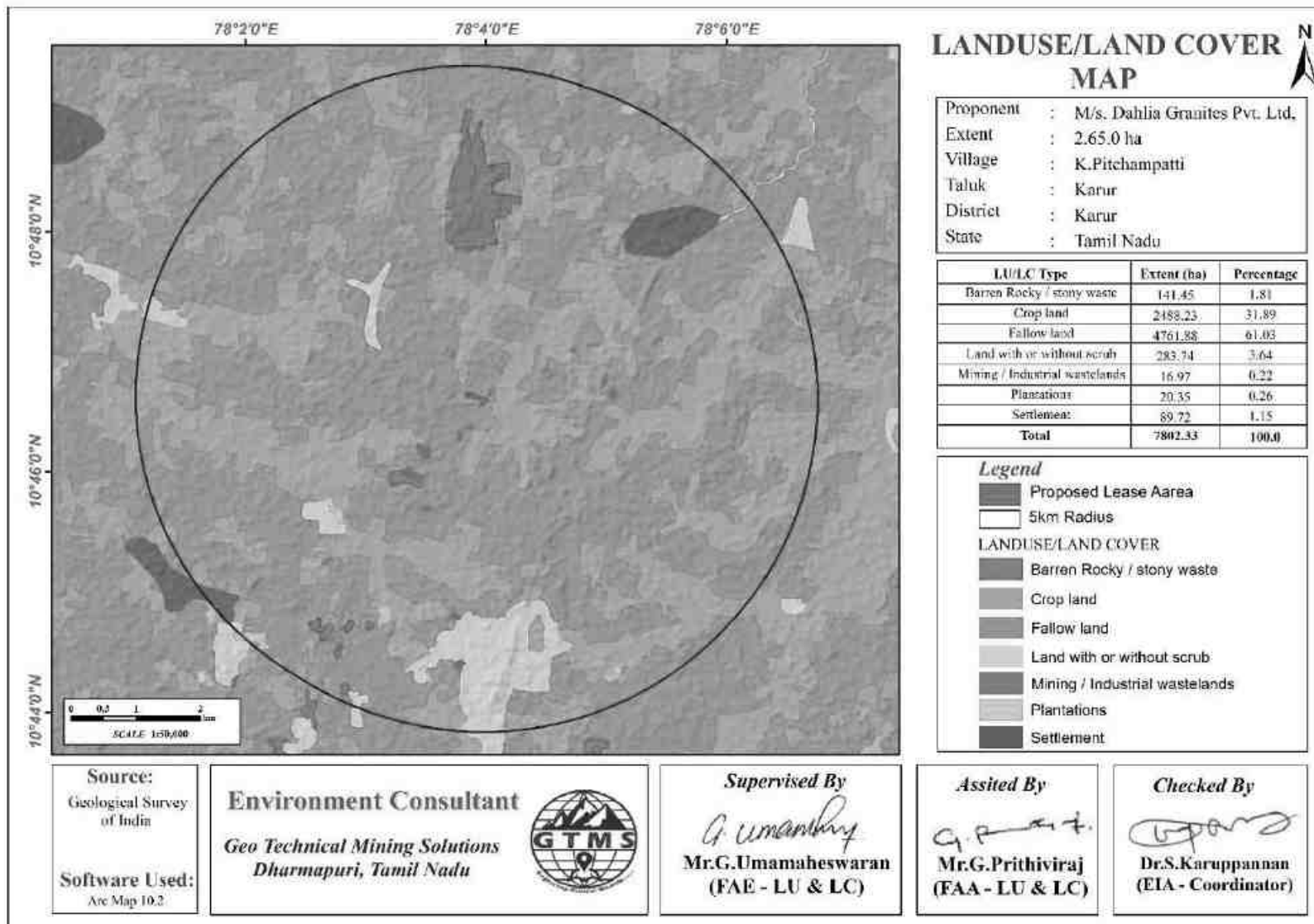
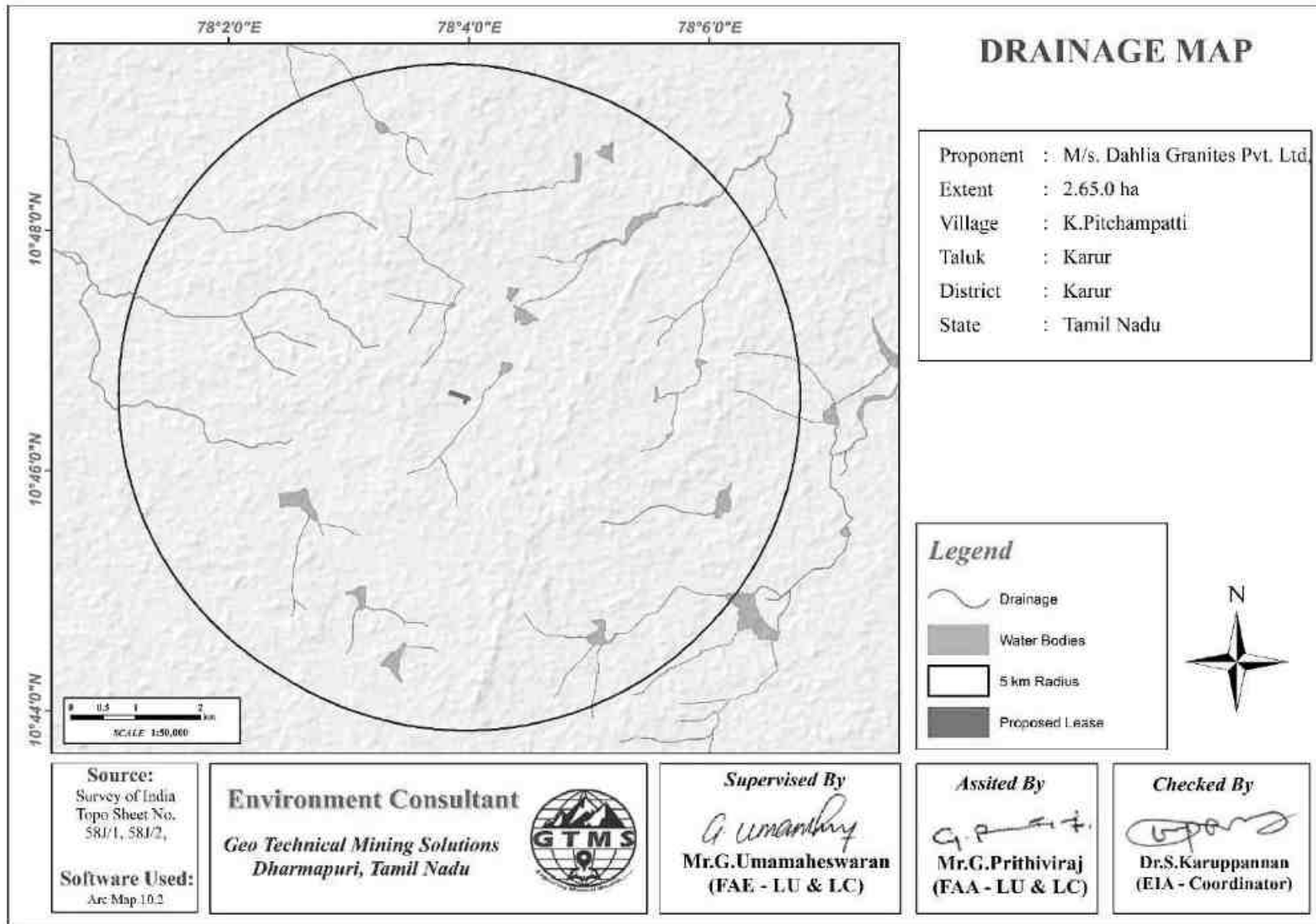


Figure 3.3 LULC Map of 5 km Radius from the Proposed Project Site



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

### 3.1.6.1 Methodology

Seven locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.5. The samples thus collected were analysed for physical and chemical characteristics as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

**Table 3.3 Soil Sampling Locations**

S. No.	Sampling ID	Monitoring Locations	Distance (km)	Direction	Coordinates
1	S01	Core	---	---	10°46'38.09"N 78°3'52.64"E
2	S02	Rakkeyagoundanpudur	3.19	NE	10°48'17.02"N 78°4'26.85"E
3	S03	Venjamangudalur	3.61	NW	10°47'37.06"N 78°2'6.83"E
4	S04	Seelinayakanpatti	3.78	SW	10°44'31.59"N 78°3'46.05"E
5	S05	Kumaranpatti	3.36	SE	10°45'47.53"N 78°5'39.75"E
6	S06	Vellagoundanpatti	0.24	SE	10°46'26.71"N 78°4'3.56"E
7	S07	Edayapatti	3.64	SW	10°45'40.24"N 78°2'6.01"E

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

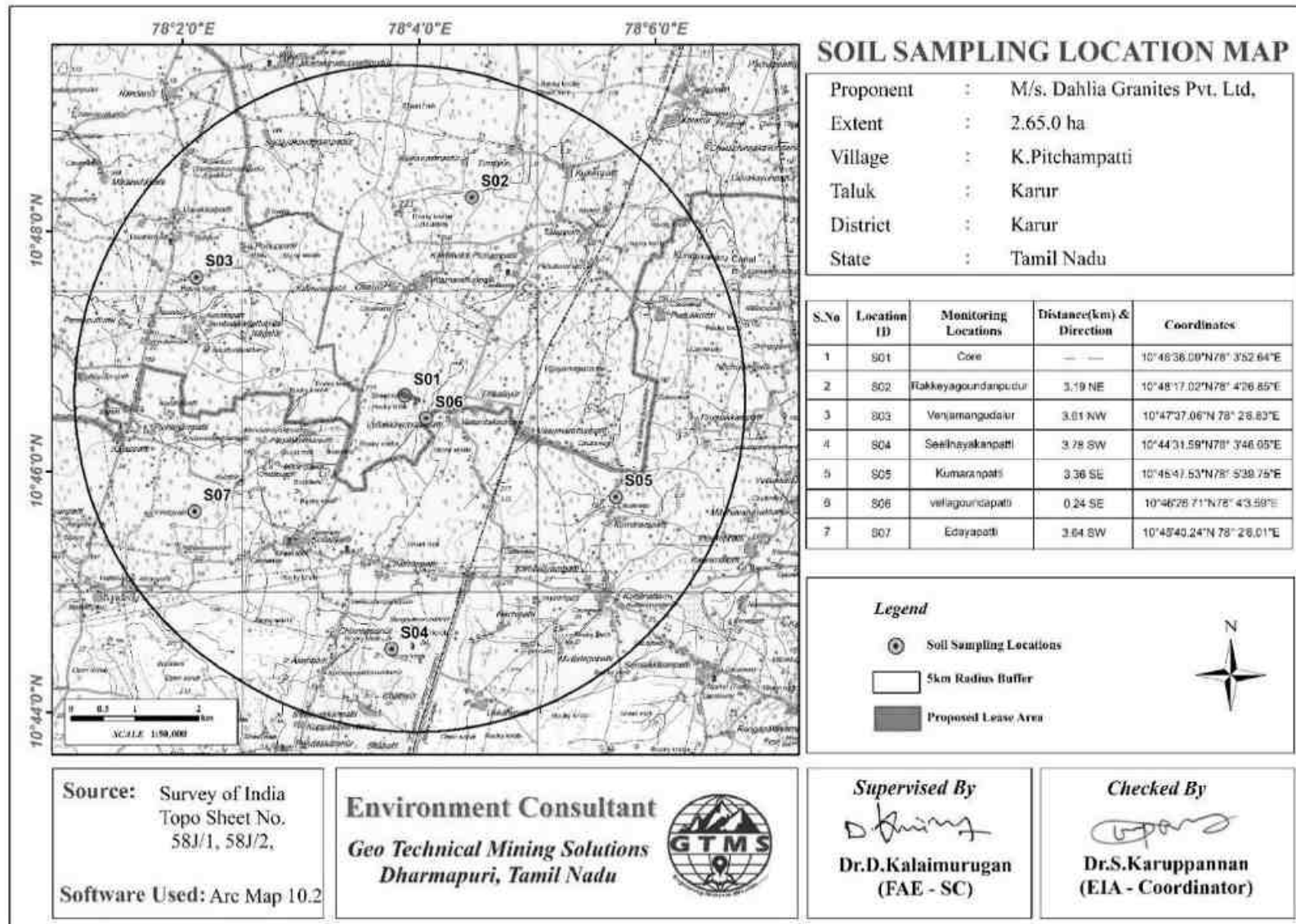
### 3.1.6.2 Results and Discussion

#### *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 6.4 to 7.5 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 426 to 1188  $\mu\text{s}/\text{cm}$ . Bulk density ranges between 1.4 and 5.7  $\text{g}/\text{cm}^3$ .

#### *Chemical Characteristics*

Nitrogen ranges between 0.87 and 1.7 %. Phosphate ranges between 0.63 and 2.6 %. Potassium ranges between 0.104 and 0.253 % Chloride ranges between 189 and 473  $\text{mg}/\text{kg}$ . Organic matter content ranges between 1.5 and 4.2 %.



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

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

S.No.	Parameters	Unit	S1	S2	S3	S4	S5	S6	S7
1	Bulk Density	g/cm <sup>3</sup>	1.8	2.0	5.7	1.4	3.4	2.6	3.2
2	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	CEC	%	<1.0	95	15	<1.0	92	6.4	2.5
4	Chromium (Cr)	mg/kg	28	16	20	9.7	21	15	18
5	Copper (Cu)	mg/kg	45	9.9	9.3	9.2	13	11	20
6	Iron (Fe)	mg/kg	36581	102661	26085	9469	13599	11848	22435
7	Lead (Pb)	mg/kg	13	7.7	<1.0	<1.0	8.5	2.9	8.6
8	Manganese (Mn)	mg/kg	581	123	169	75	110	126	222
9	Nitrogen (N)	%	1.1	1.1	1.4	0.87	1.1	1.7	1.7
10	Organic Matter @ 155°C	%	1.5	1.6	3.0	3.8	4.2	2.2	2.1
11	pH value @ 25°C	---	6.4	7.4	7.1	7.5	7.4	7.5	7.1
12	Phosphate (P)	%	2.6	0.70	0.99	1.2	2.0	1.3	0.63
13	Potassium (K)	%	0.175	0.185	0.104	0.210	0.253	0.182	0.228
14	EC @ 25°C	µS/cm	426	524	546	614	1188	603	753
15	Total Carbon	%	2.5	2.1	1.0	1.0	2.9	1.9	2.9
16	Sulphates (SO <sub>4</sub> )	%	0.35	0.25	0.39	0.75	0.45	0.36	0.44
17	Zinc (Zn)	mg/kg	29	33	23	18	33	25	36
18	Boron (B)	mg/kg	64	99	62	84	85	66	74
29	Calcium (Ca)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20	Chlorides (Cl)	mg/kg	473	189	394	379	333	254	554
21	Magnesium (Mg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
22	Texture	-	Sandy Loam	Silty Loam	Sandy Loam	Sandy Loam	Sandy Loam	Sandy Loam	Silty Clay

Source: Sampling Results Excellence Laboratory, 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	Monitoring Locations	Distance (km)	Direction	Coordinates
1	SW01	Pond near K. Pichampatti	0.34	E	10°46'36.60"N 78° 4'12.00"E
2	OW01	P.Kullampatti	3.97	NE	10°48'33.79"N 78°4'56.50"E
3	OW02	Vasukumaranapatti	2.27	SE	10°46'6.28"N 78°5'8.52"E
4	BW01	R.Vellagoundanpatti	0.27	SE	10°46'25.91"N 78°4'4.04"E
5	BW02	Kottanatham	4.11	SE	10°44'58.05"N 78°5'34.32"E
6	BW03	Chatrapatti	2.67	S	10°45'8.67"N 78°3'38.87"E
7	BW04	Sembakkam	3.48	NW	10°48'10.40"N 78°2'41.83"E
8	BW05	Kalapatti	4.17	W	10°46'19.62"N 78°1'34.10"E

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

### 3.2.1 Surface Water Resources and Quality

K. Pichampatti pond is the prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. Surface water sample, known as SW01 was collected from a pond near K. Pichampatti to assess the baseline water quality. Table 3.6 summarizes surface water quality data of the samples.

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

### 3.2.2 Ground Water Resources and Quality

Groundwater in the study area occurs in the 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.

Seven groundwater samples, known as OW01, OW02, BW01, BW02, BW03, BW04 and BW05 were collected from open well and bore well and analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of

ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.6. Table 3.6 summarizes the minimum and maximum values of seven ground water samples.

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

### **3.2.3 Hydrogeological Studies**

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

#### **3.2.3.1 Groundwater Levels and Flow Direction**

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May, 2022 (Pre-Monsoon Season) and from October through December, 2022 (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.7 and 3.8. According to the data, average depths to the static water table in open wells range from 10.6 to 12.90 m BGL in pre monsoon and 9.37 to 11.90 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 70.53 to 75.03 m and from 71.47 to 75.40 m for the period of March through May, 2022 (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines.



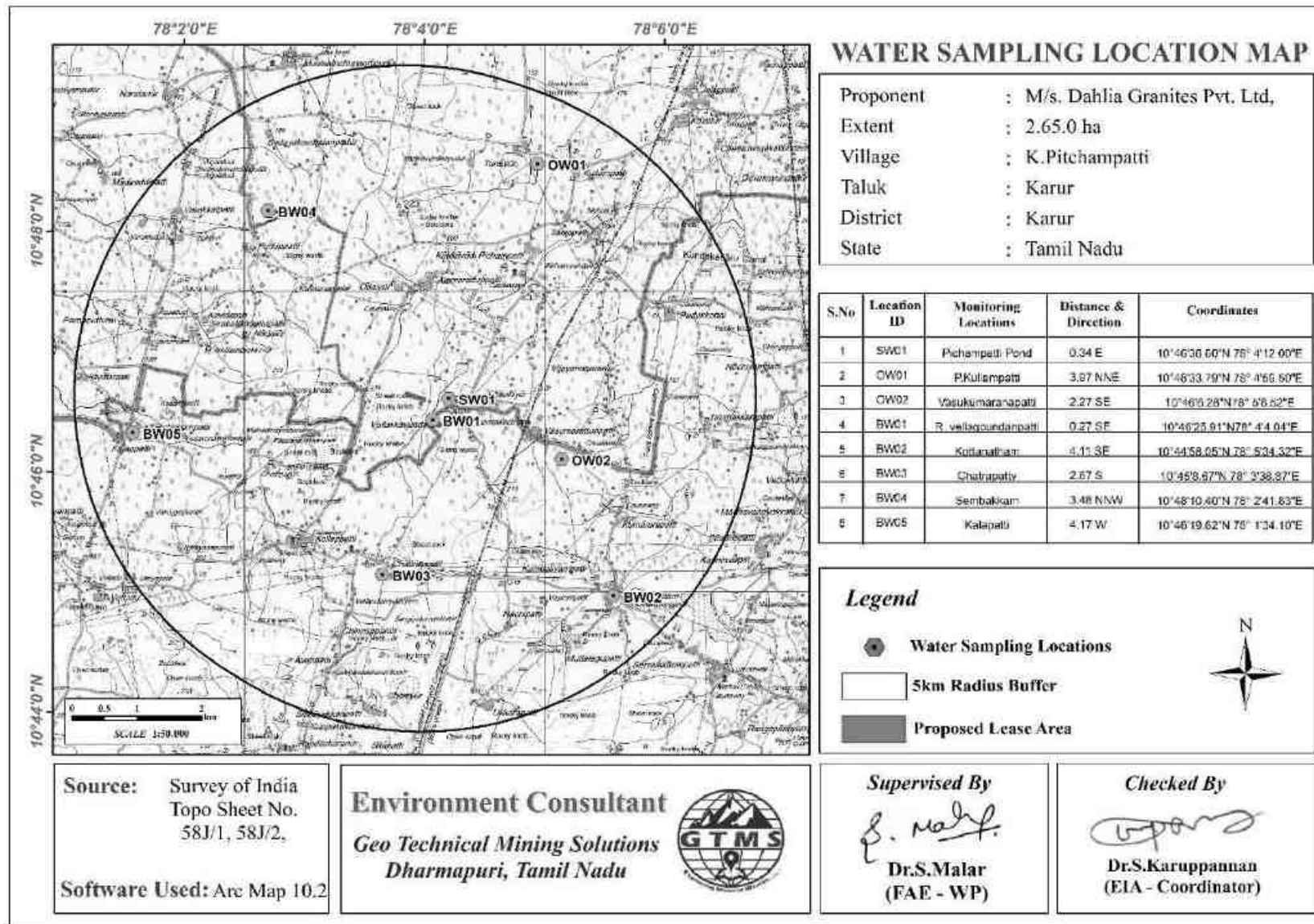


Figure 3.6 Toposheet Showing Water Sampling Locations within 5 km Radius round the proposed project site

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

S.No.	Parameters	Units	Surface Water	Ground Water		Acceptable Limit (IS:10500:2012)	Permissible Limit (IS:10500:2012)
				Minimum	Maximum		
1	Aluminium (Al)	mg /l	<0.02	<0.002	<0.002	0.03	0.2
2	Ammonia (NH <sub>3</sub> )	mg /l	<0.1	<0.1	<0.1	0.5	0.5
3	Anionic Detergents (MBAS)	mg /l	<0.01	<0.01	<0.01	0.2	1.0
4	Barium (Ba)	mg /l	<0.1	<0.1	1940	0.7	0.7
5	Boron (B)	mg /l	<0.1	<0.1	1511	0.5	1.0
6	Cadmium (Cd)	mg /l	<0.003	<0.003	<0.003	0.01	0.003
7	Calcium (Ca)	mg /l	116	80	0	75	200
8	Chloride (Cl)	mg /l	326	65	247	250	1000
9	Colour	CU	<1.	<1.0	<1.0	5	15
10	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	0.05	1.5
11	Cyanide (CN)	mg/l	<0.02	<0.02	<0.02	0.05	0.05
12	Fluoride (F)	mg/l	<0.1	<0.1	0.6	1.0	1.5
13	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	0.2	1
14	Iron (Fe)	mg/l	<0.05	<0.05	0.8	0.3	0.3
15	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	0.01	0.01
16	Magnesium (Mg)	mg/l	45	6.1	27	30	100
17	Manganese (Mn)	mg/l	<0.01	<0.01	<0.01	0.1	0.3
18	Mercury (Hg)	mg/l	0.001	<0.001	<0.001	0.001	0.001
19	Molybdenum (Mo)	mg/l	<0.05	<0.05	<0.05	0.07	0.07
20	Nitrate (NO <sub>3</sub> )	mg/l	<1.0	<1.0	22	45	45

21	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
22	pH value @ 25°C	No.	7.6	6.9	7.4	6.5-8.5	6.5-8.5
23	Phenolic Compounds (C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.001	<0.001	<0.001	0.001	0.001
24	Selenium (Se)	mg/l	<0.01	<0.01	<0.01	0.01	0.01
25	EC @ 25°C	µS/cm	1442	589	1661	--	NA
26	Sulphates (SO <sub>4</sub> )	mg/l	92	36	152	200	400
27	Sulphide (H <sub>2</sub> S)	mg/l	<0.05	<0.05	<0.05	0.05	0.05
28	Total Alkalinity (CaCO <sub>3</sub> )	mg/l	183	213	464	200	600
29	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	0.01	0.05
30	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	0.05	0.05
31	TDS	mg/l	936	383	1190	500	2000
32	TH (CaCO <sub>3</sub> )	mg/l	475	120	520	200	600
33	TSS @ 105°C	mg/l	6.2	<5.0	31	--	--
34	Turbidity	NTU	35	0.2	57	1.0	5.0
35	Zinc (Zn)	mg/l	<0.05	<0.05	1.4	5	15

**Biological Parameters**

36	Coliforms Bacteria	MPN	Present	Absent	Shall not be detected in any 100 ml sample	Shall not be detected in any 100 ml sample
37	<i>E. Coli</i>	MPN	Absent	Absent	Shall not be detected in any 100 ml sample	Shall not be detected in any 100 ml sample

Source: Sampling Results by **Excellence Laboratory**, in association with GTMS

From the maps of open well groundwater flow direction shown in Figures 3.7-3.8, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 1 located in SE direction of the proposed project site. The groundwater flow maps in Figure 3.9-3.10 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 1. It is located in north direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

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

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Mar-2022	Apr-2022	May- 2022	Average		
DW01	11.5	11.8	12.2	11.83	10°46'26.13"N	78° 4'17.69"E
DW02	11.6	11.9	12.4	11.97	10°46'17.82"N	78° 3'51.70"E
DW03	12.4	12.7	12.9	12.67	10°46'26.36"N	78° 2'59.15"E
DW04	10.2	10.9	11.2	10.77	10°45'36.22"N	78° 3'50.21"E
DW05	11.6	11.8	12.1	11.83	10°46'54.31"N	78° 3'35.03"E
DW06	11.2	11.5	11.8	11.50	10°47'3.90"N	78° 3'51.65"E
DW07	12.1	12.5	12.9	12.50	10°47'6.10"N	78° 4'27.99"E
DW08	12.6	12.9	13.2	12.90	10°47'32.63"N	78° 4'0.56"E
DW09	10.4	10.6	10.9	10.63	10°45'56.04"N	78° 4'39.77"E

*Source: Onsite monitoring data*

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

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Oct-2022	Nov-2022	Dec-2022	Average		
DW01	10.4	10.5	10.7	10.53	10°46'26.13"N	78° 4'17.69"E
DW02	10.5	10.6	10.8	10.63	10°46'17.82"N	78° 3'51.70"E
DW03	11.6	11.8	11.9	11.77	10°46'26.36"N	78° 2'59.15"E
DW04	9.1	9.4	9.6	9.37	10°45'36.22"N	78° 3'50.21"E
DW05	9.6	9.8	10	9.80	10°46'54.31"N	78° 3'35.03"E
DW06	10.6	10.8	10.9	10.77	10°47'3.90"N	78° 3'51.65"E
DW07	11.5	11.7	11.8	11.67	10°47'6.10"N	78° 4'27.99"E
DW08	11.8	11.9	12	11.90	10°47'32.63"N	78° 4'0.56"E
DW09	9.2	9.4	9.6	9.40	10°45'56.04"N	78° 4'39.77"E

*Source: Onsite monitoring data*

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

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2022	Apr-2022	May- 2022	Average		
BW01	73.6	73.8	74.1	73.83	10°46'26.56"N	78° 4'6.67"E
BW02	73.9	74.2	74.4	74.17	10°46'46.43"N	78° 4'3.05"E
BW03	73.1	73.4	73.7	73.40	10°47'1.98"N	78° 3'47.53"E
BW04	74.5	74.8	75.1	74.80	10°47'33.19"N	78° 3'57.26"E
BW05	75.3	75.4	75.5	75.40	10°47'18.86"N	78° 4'42.22"E
BW06	72.8	73.1	73.3	73.07	10°46'19.98"N	78° 4'54.84"E
BW07	71.2	71.5	71.7	71.47	10°45'41.99"N	78° 3'59.73"E
BW08	73.6	73.9	74.1	73.87	10°46'22.30"N	78° 3'15.71"E
BW09	72.8	73.1	73.3	73.07	10°46'54.34"N	78° 2'55.89"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2022	Nov-2022	Dec-2022	Average		
BW01	72.8	72.9	73.1	72.93	10°46'26.56"N	78° 4'6.67"E
BW02	73.2	73.4	73.6	73.40	10°46'46.43"N	78° 4'3.05"E
BW03	72.5	72.7	72.9	72.70	10°47'1.98"N	78° 3'47.53"E
BW04	73.6	73.9	74.2	73.90	10°47'33.19"N	78° 3'57.26"E
BW05	74.8	75.1	75.2	75.03	10°47'18.86"N	78° 4'42.22"E
BW06	71.9	72.3	72.5	72.23	10°46'19.98"N	78° 4'54.84"E
BW07	70.1	70.6	70.9	70.53	10°45'41.99"N	78° 3'59.73"E
BW08	72.7	72.9	73.2	72.93	10°46'22.30"N	78° 3'15.71"E
BW09	72.3	72.4	72.6	72.43	10°46'54.34"N	78° 2'55.89"E

Source: Onsite monitoring data

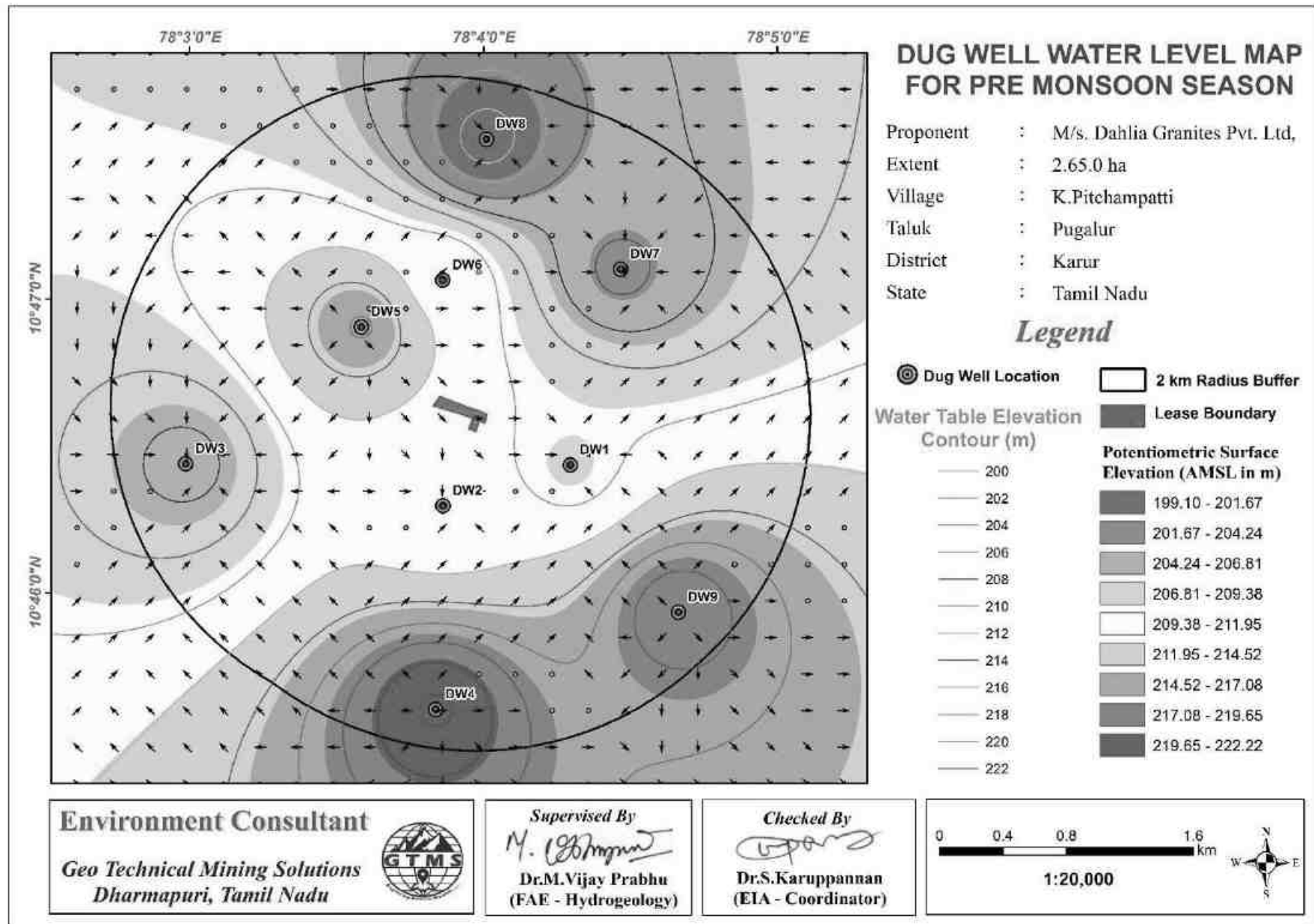


Figure 3.7 Openwell Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Pre-Monsoon Season

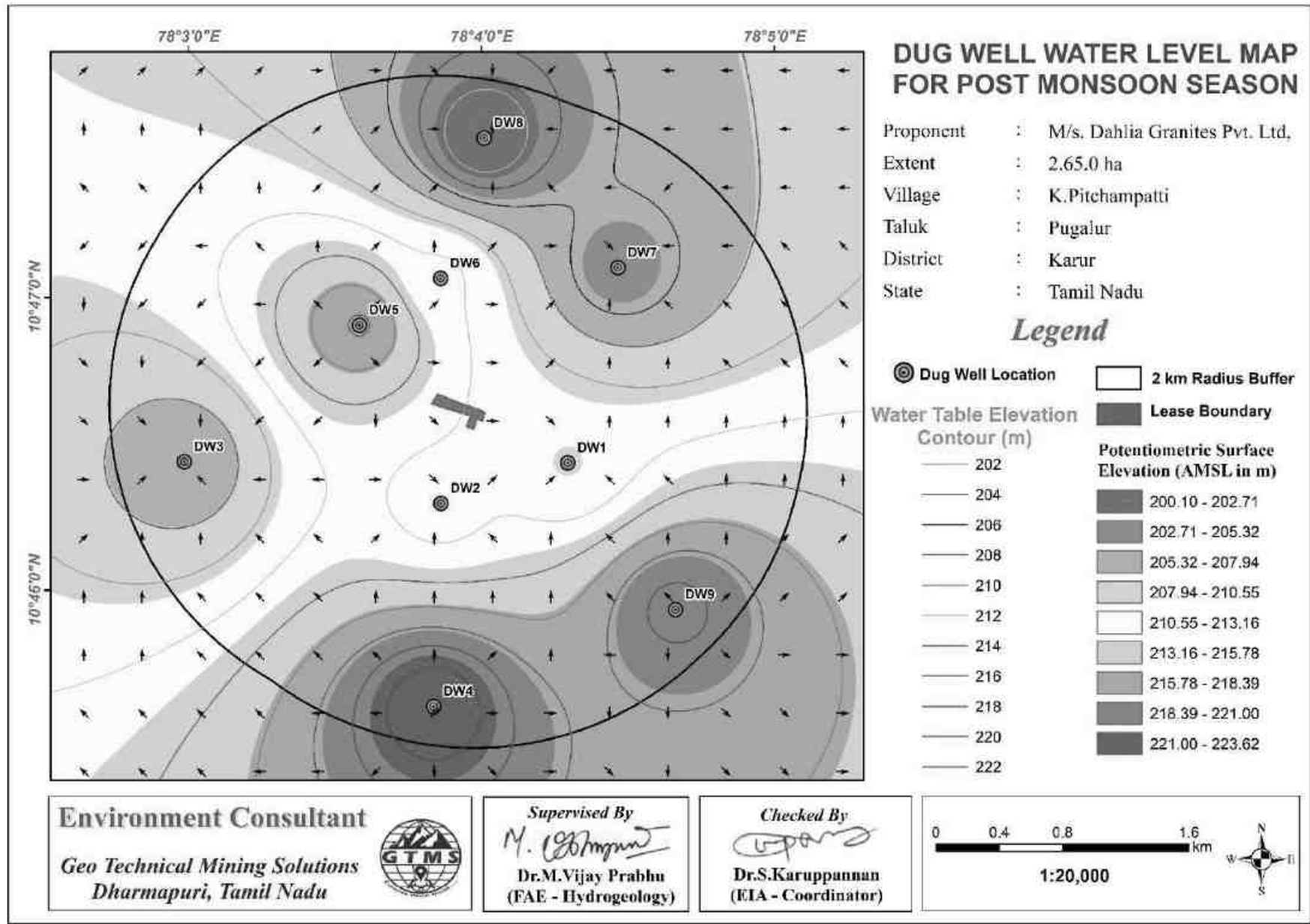


Figure 3.8 Openwell Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Post-Monsoon Season

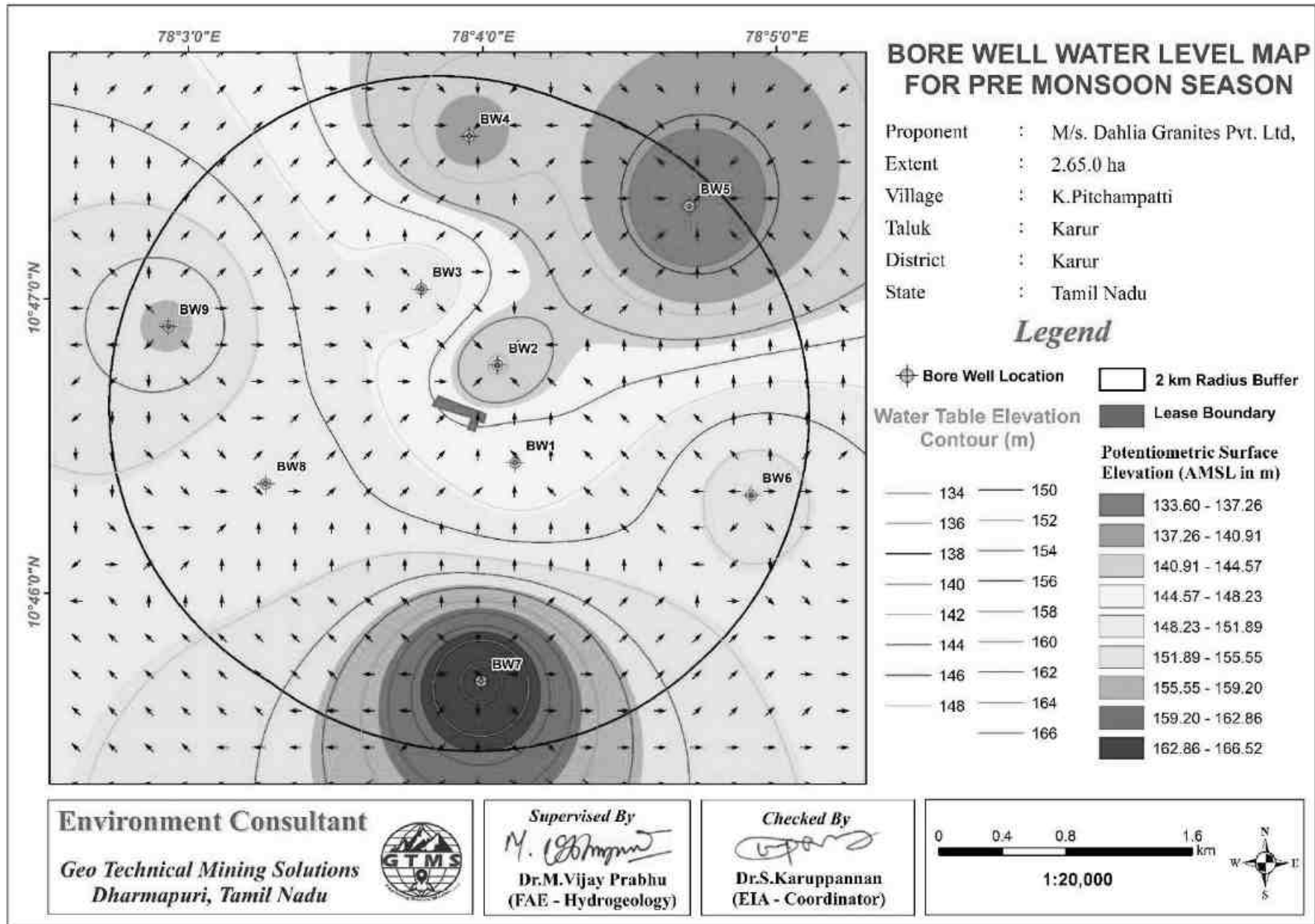


Figure 3.9 Borewell Static Groundwater Elevation Map Showing Direction Of Groundwater Flow During Pre-Monsoon Season



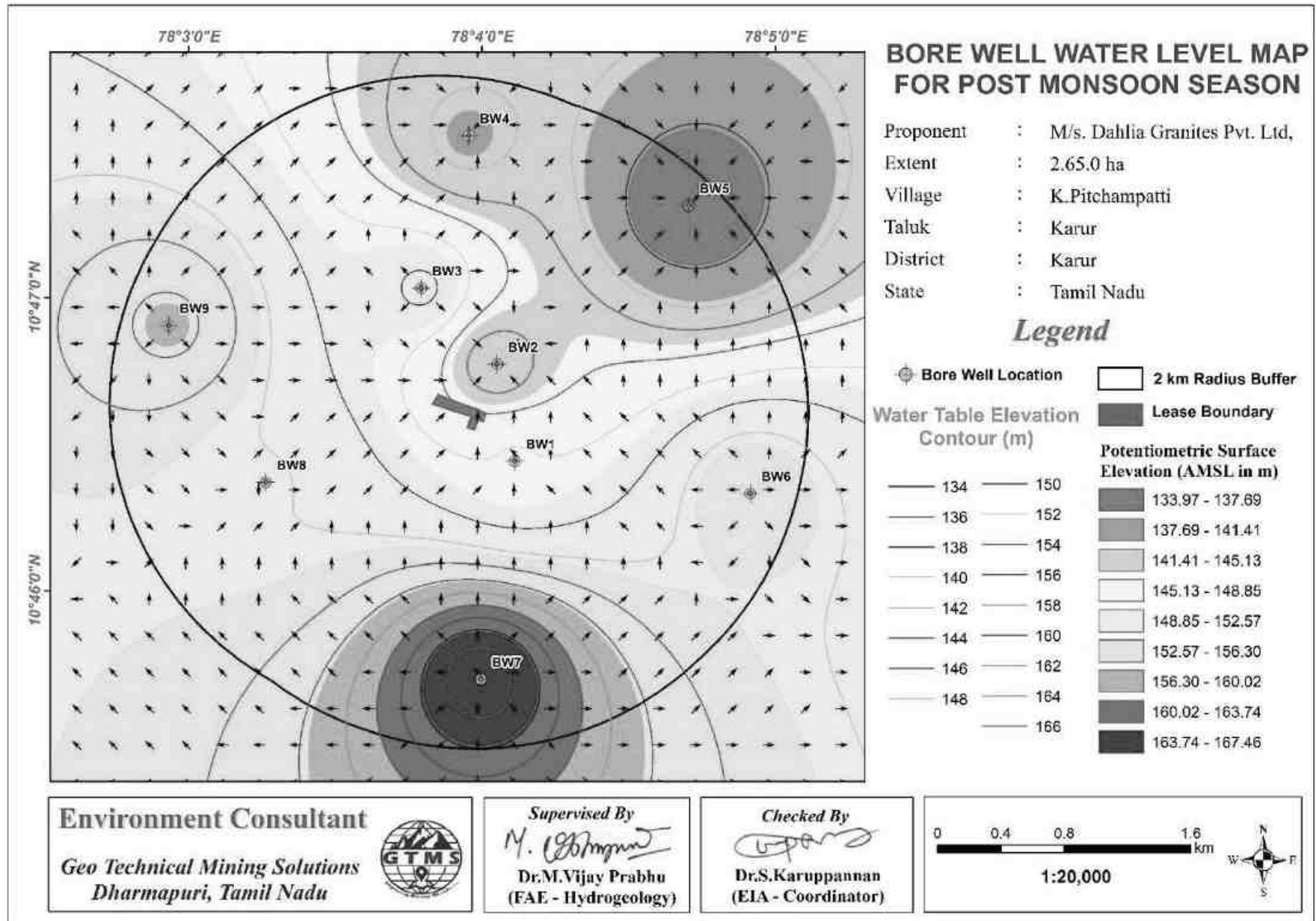


Figure 3.10 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow During Post-Monsoon Season

### 3.2.3.2 Electrical Resistivity Investigation

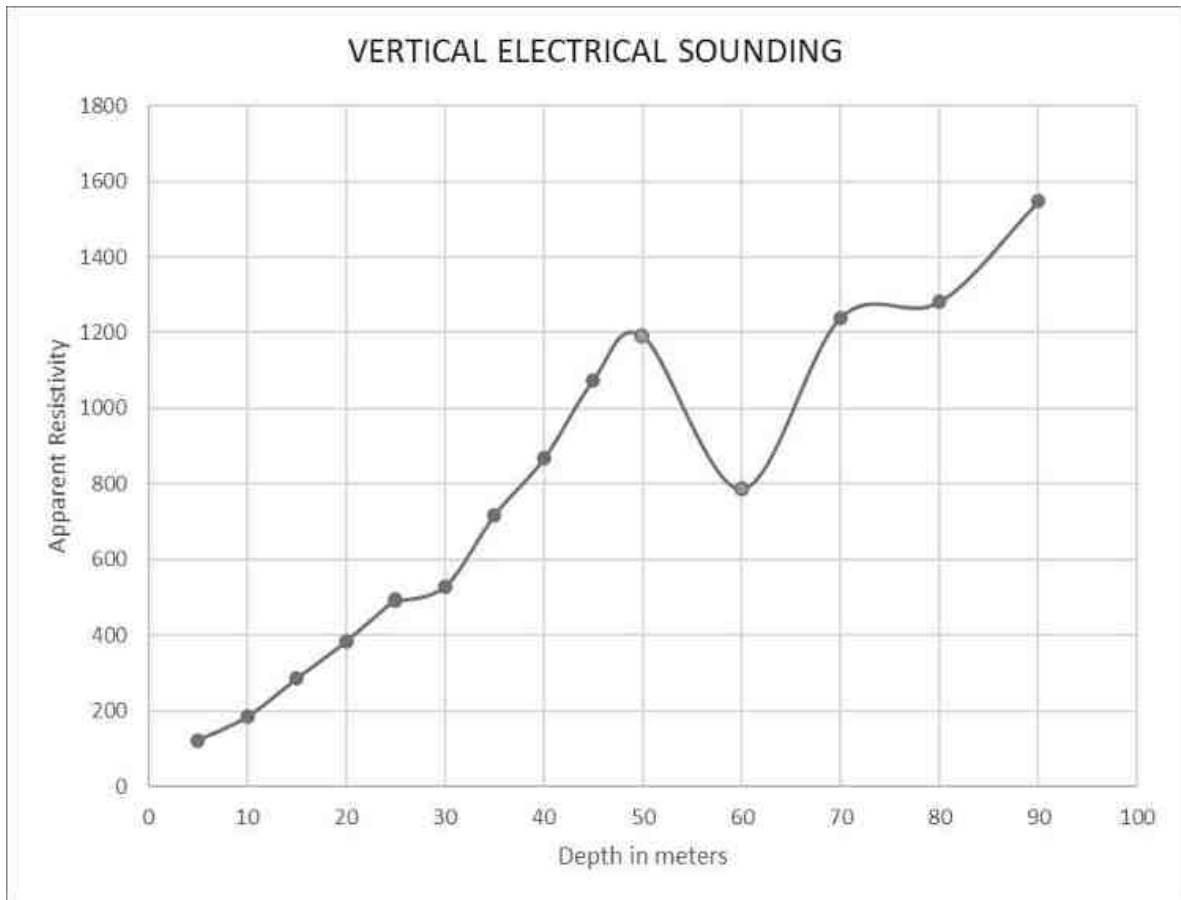
Electrical resistivity investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation uses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

#### **Result**

The Geophysical VES data obtained from the project site have been shown in Table 3.11. The field data obtained from a detailed geophysical investigation were plotted using excel spreadsheet for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.11.

**Table 3.11 Vertical Electrical Sounding Data**

Location Coordinates - 10°46'36.99"N 78°03'57.71"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	131.26
2	10	2	75.43	2.582	194.48
3	15	5	62.86	4.701	295.38
4	20	5	117.86	3.347	396.22
5	25	5	188.58	2.683	503.96
6	25	10	82.5	6.062	501.05
7	30	10	125.72	4.288	540.12
8	35	10	176.79	4.121	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	3.162	794.42
13	70	20	353.59	3.534	1246.9
14	80	20	471.45	2.735	1294.12
15	90	20	605.03	2.5769	1557.68
16	100	20	754.32	2.378	1796.32



**Figure 3.11 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 25 m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

### 3.3 AIR ENVIRONMENT

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

#### 3.3.1 Meteorology

##### 3.3.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3 m above the ground level as there are no

obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.12.

According to the onsite data, the temperature in December, 2022 varied from 17.48 to 29.5<sup>0</sup>C with the average of 23.73<sup>0</sup> C; in January, 2023 from 14.19 to 32.55<sup>0</sup>C with the average of 22.83<sup>0</sup> C; and in February, 2023 from 15.73 to 36.54<sup>0</sup>C with the average of 25.22<sup>0</sup>C. In December, 2022, relative humidity ranged from 54.44 to 100 % with the average of 85.93%; in January, 2023, from 36.62 to 100 % with the average of 77.69 %; and in February,2023, from 14.25 to 100 % with the average of 62.36 %. The wind speed in December, 2022 varied from 0.18 to 7.93 m/s with the average of 2.76 m/s; in January, 2023 from 1.11 to 5.78 m/s with the average of 2.79 m/s; and in February, 2023 from 0.44 to 6.46 m/s with the average of 3.0 m/s. In December, 2022, wind direction varied from 0.21 to 358.75 with the average of 106.57<sup>0</sup>; in January, 2023, from 0.29 to 359.63<sup>0</sup> with the average of 70.45<sup>0</sup>; and in February, 2023, from 0.37 to 358.92<sup>0</sup> with the average of 93.89<sup>0</sup>. In December,2022, surface pressure varied from 97.89 to 99.43 kPa with the average of 98.60 kPa; in January, 2023, from 98.14 to 99.32kPa with the average of 98.79 kPa; and in February, 2023, from 98.23 to 99.34 kPa with the average of 98.73 kPa

**Table 3.12 Onsite Meteorological Data**

S. No.	Parameters	DEC, 2022	JAN, 2023	FEB, 2023	
1	Temperature (°C)	Min	17.48	14.19	15.73
		Max	29.51	32.55	36.54
		Avg	23.73	22.83	25.22
2	Relative Humidity (%)	Min	54.44	36.62	14.25
		Max	100.00	100.00	100.00
		Avg	85.93	77.69	62.36
3	Wind Speed (m/s)	Min	0.18	1.11	0.44
		Max	7.93	5.78	6.46
		Avg	2.76	2.79	3.00
4	Wind Direction (degree)	Min	0.21	0.29	0.37
		Max	358.75	359.63	358.92
		Avg	106.57	70.45	93.89
5	Surface Pressure(kPa)	Min	97.89	98.14	98.23
		Max	99.43	99.32	99.34
		Avg	98.60	98.79	98.73

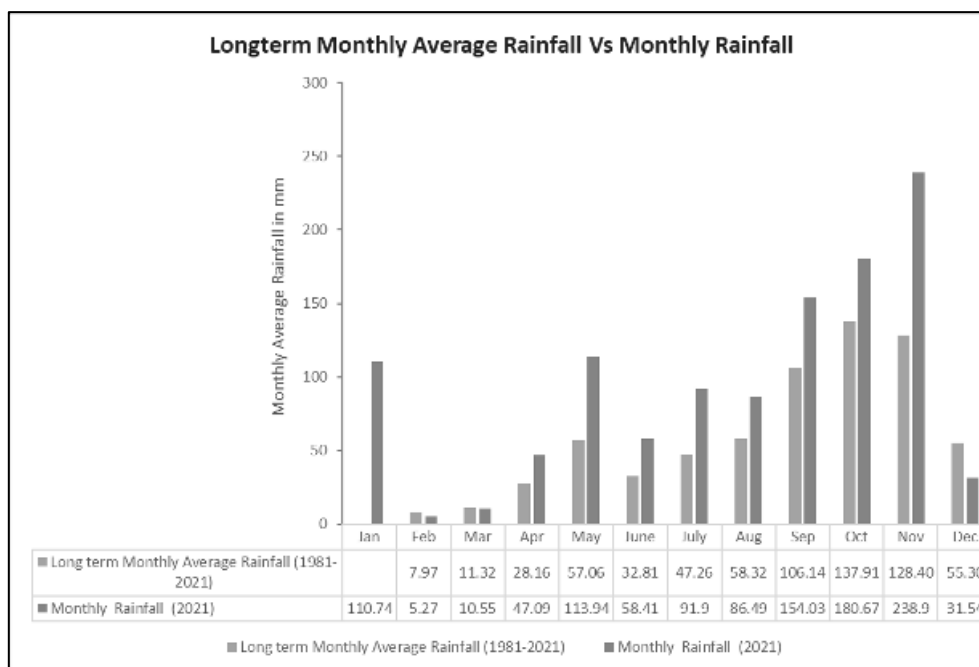
Source: On-site monitoring/sampling by **Excellence Laboratory, in association with GTMS** in association with GTMS

### 3.3.1.1 Climate

The Karur has a tropical climate. In winter, there is much less rainfall in summer in Karur. In Karur, the average annual temperature is 28.2 °C, 82.7 °F.

#### Rainfall

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



**Figure 3.12 Long-Term Monthly Average Rainfall Vs Monthly Rainfall**

### 3.3.1.2 Wind Pattern

Wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction. Two types of wind rose were generated: historical seasonal wind rose for the period of October through December of the years from 2018 to 2021 and the seasonal wind rose for the study period of October through December 2022. The wind rose diagrams thus produced are shown in Figures 3.13-3.13a. Figure 3.14 reveals that:

- ❖ The measured average wind velocity during the study period is 2.85 m/s.
- ❖ Predominant wind was dominant in the directions ranging from Northeast to southwest.

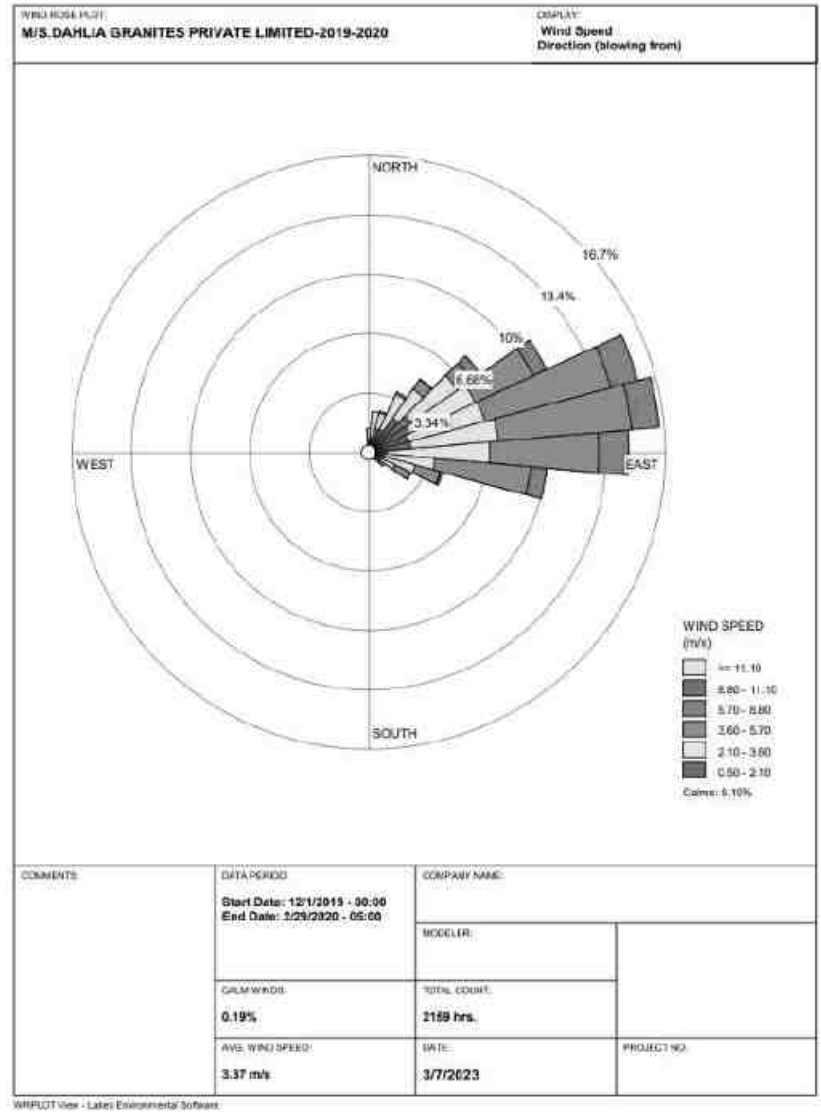
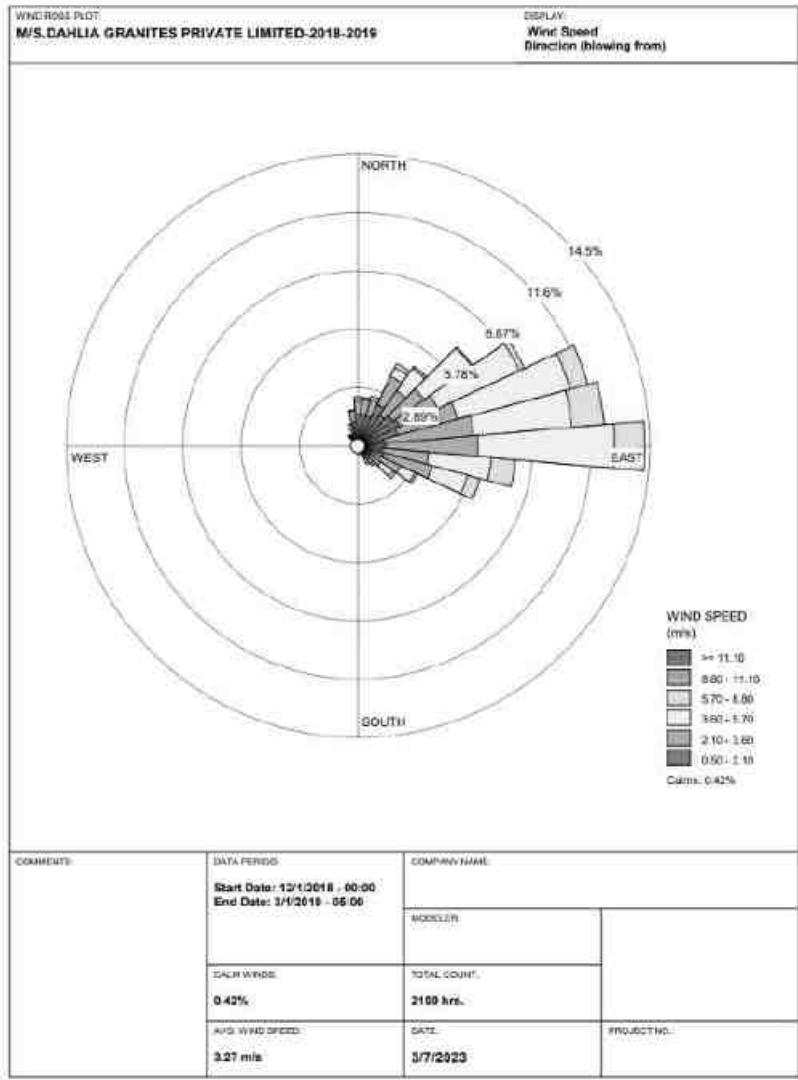


Figure 3.13 Windrose Diagram for 2018-2019 and 2019-2020 (December to February)

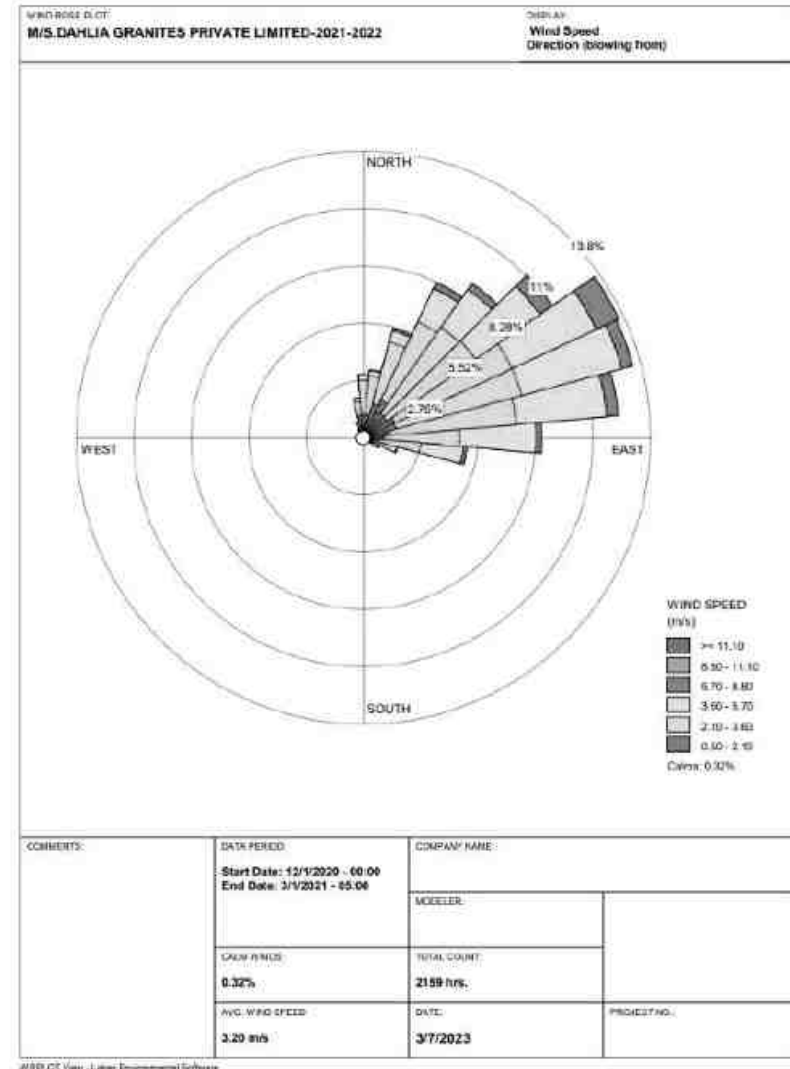
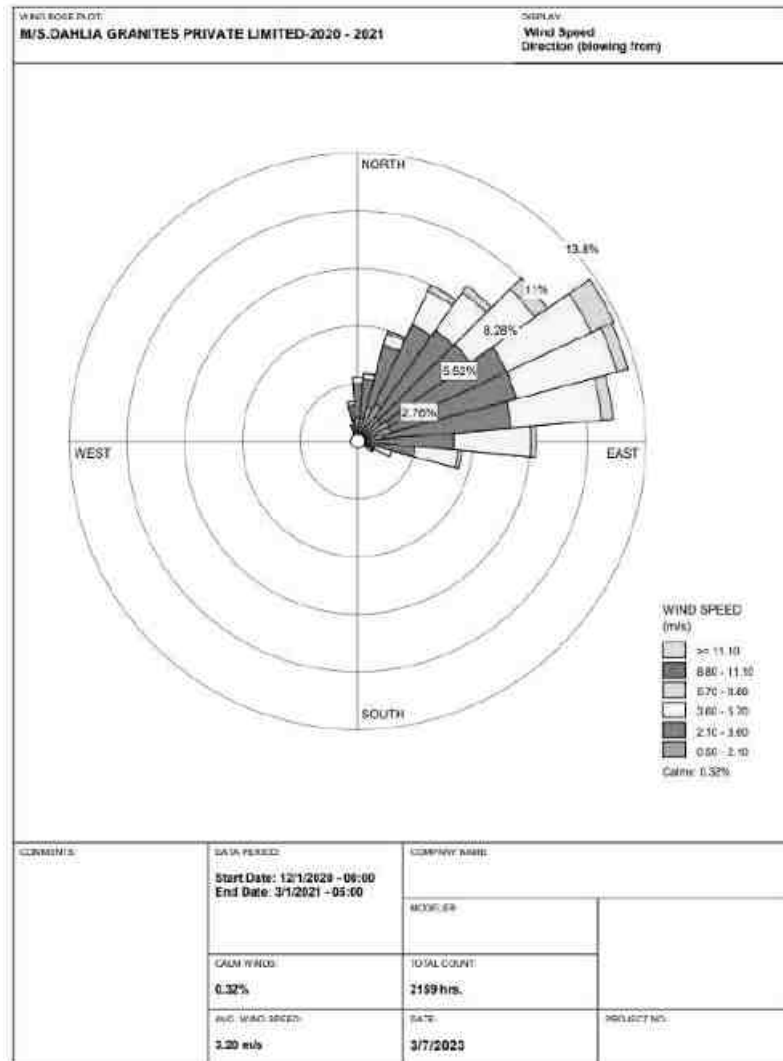
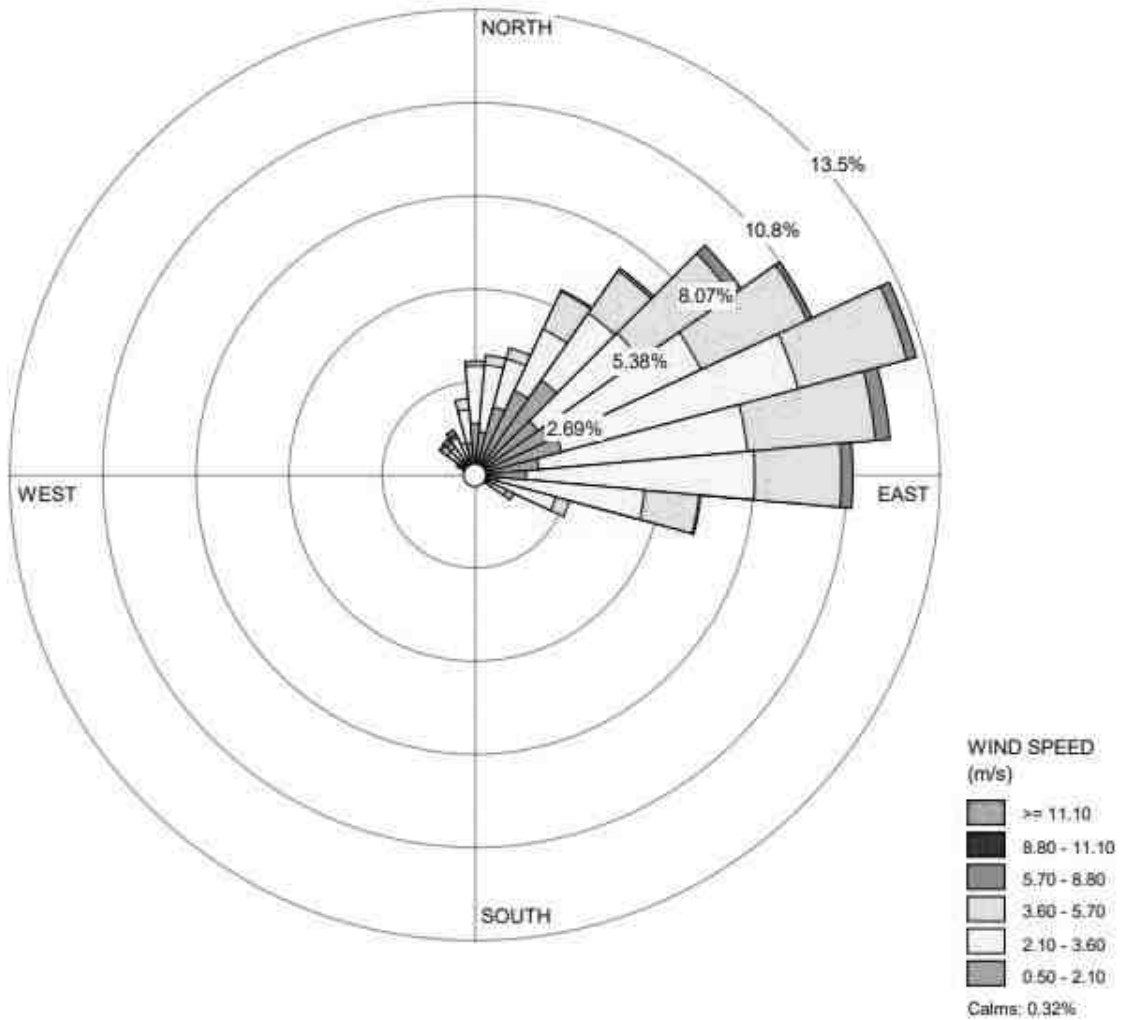


Figure 3.13 (A) Windrose Diagram for 2020-2021 and 2021-2022 (October to December)



COMMENTS:	DATA PERIOD: <b>Start Date: 12/1/2022 - 00:00          End Date: 2/28/2023 - 23:00</b>	COMPANY NAME:	
	CALM WINDS: <b>0.32%</b>	MODELER:	
	AVG. WIND SPEED: <b>2.85 m/s</b>	TOTAL COUNT: <b>2154 hrs.</b>	DATE: <b>3/7/2023</b>

WRPLOT View - Lakes Environmental Software

**Figure 3.14 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 3.13 Methodology and Instrument Used for AAQ Analysis**

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

Source: Sampling Methodology based on **Excellence Laboratory** & CPCB Notification

**Table 3.14 National Ambient Air Quality Standards**

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

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

## Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at Nine (9) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October-December, 2022 as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least  $3 \pm 0.5$  m above the ground level at each monitoring station for negating the effects of wind-blown ground dust. The equipment was placed at space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results. The baseline data of ambient air were generated for PM<sub>10</sub>, PM<sub>2.5</sub>, sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>x</sub>). The sampling locations are shown in Figure 3.15 and average concentrations of air pollutants are summarized in Tables 3.15.

**Table 3.15 Ambient Air Quality (AAQ) Monitoring Locations**

S. No	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates
1	AAQ1	Core	--	--	10°46'33.01"N, 78° 3'59.32"E
2	AAQ2	Papanayakanoor	1.56	SW	10°46'18.25"N, 78° 3'2.38"E
3	AAQ3	Kalapatti	4.06	W	10°46'21.49"N, 78° 1'37.04"E
4	AAQ4	Edayapatti	4.69	SW	10°45'7.70"N, 78° 1'45.06"E
5	AAQ5	K.Pitchampatti	2.96	NE	10°47'57.22"N, 78° 4'54.35"E
6	AAQ6	Varikappatti	4.50	NW	10°48'13.26"N, 78° 1'56.43"E
7	AAQ7	Chatrapatti	2.64	SSW	10°45'9.26"N, 78° 3'38.40"
8	AAQ8	Vasanthakathirpalayam	0.48	SE	10°46'28.23"N, 78° 4'14.70"E
9	AAQ9	Thirumakkampatti	4.34	ESE	10°46'19.31"N, 78° 6'22.58"E

Source: On-site monitoring/sampling by *on Excellence Laboratory* in association with GTMS

## Results

As per the monitoring data, PM<sub>2.5</sub> ranges from 14.6 µg/m<sup>3</sup> to 19.0 µg/m<sup>3</sup>; PM<sub>10</sub> from 32.3 µg/m<sup>3</sup> to 37.7 µg/m<sup>3</sup>; SO<sub>2</sub> from 5.7 µg/m<sup>3</sup> to 9.2 µg/m<sup>3</sup>; NO<sub>x</sub> from 12.7 µg/m<sup>3</sup> to 19.4g/m<sup>3</sup>. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

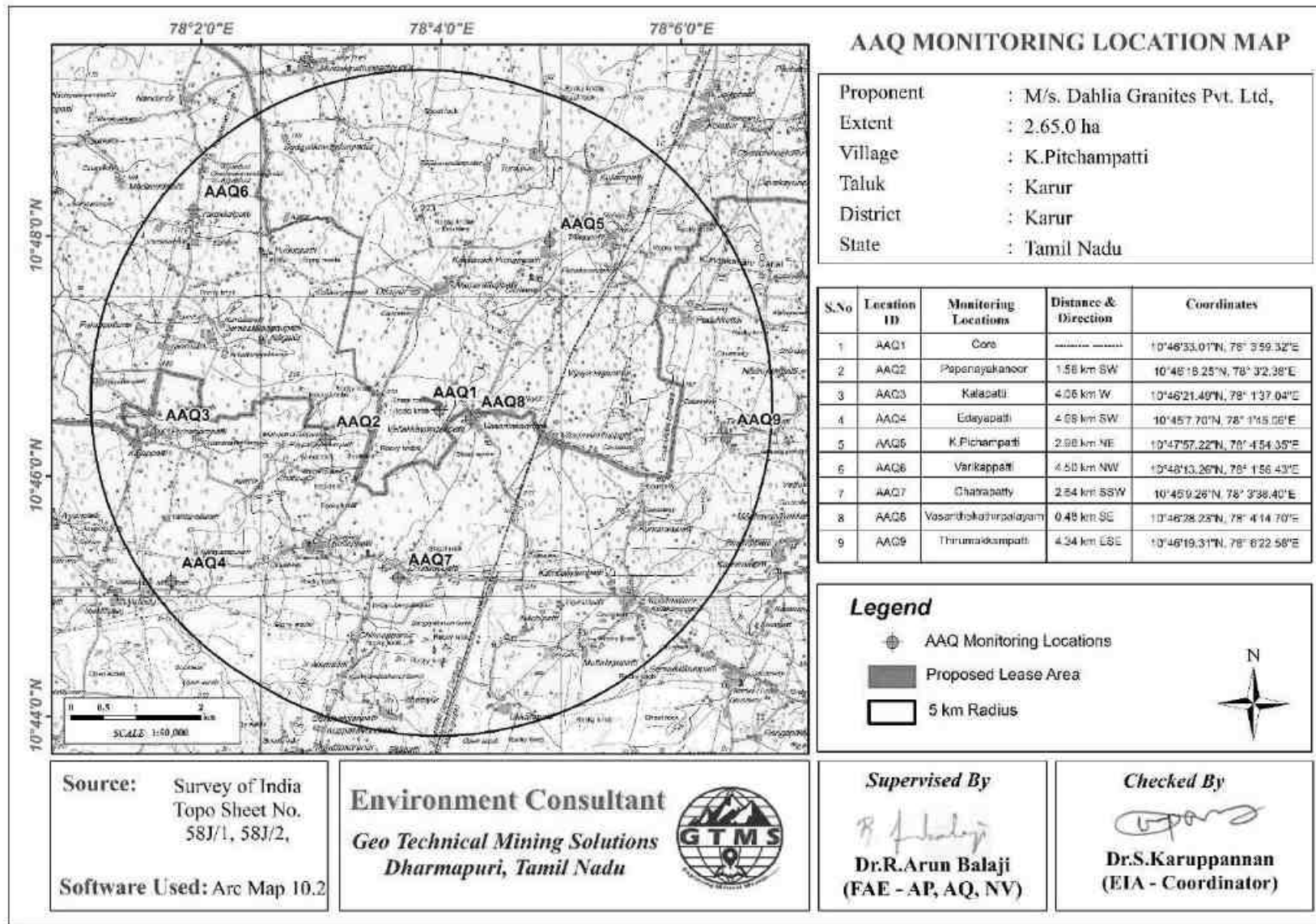
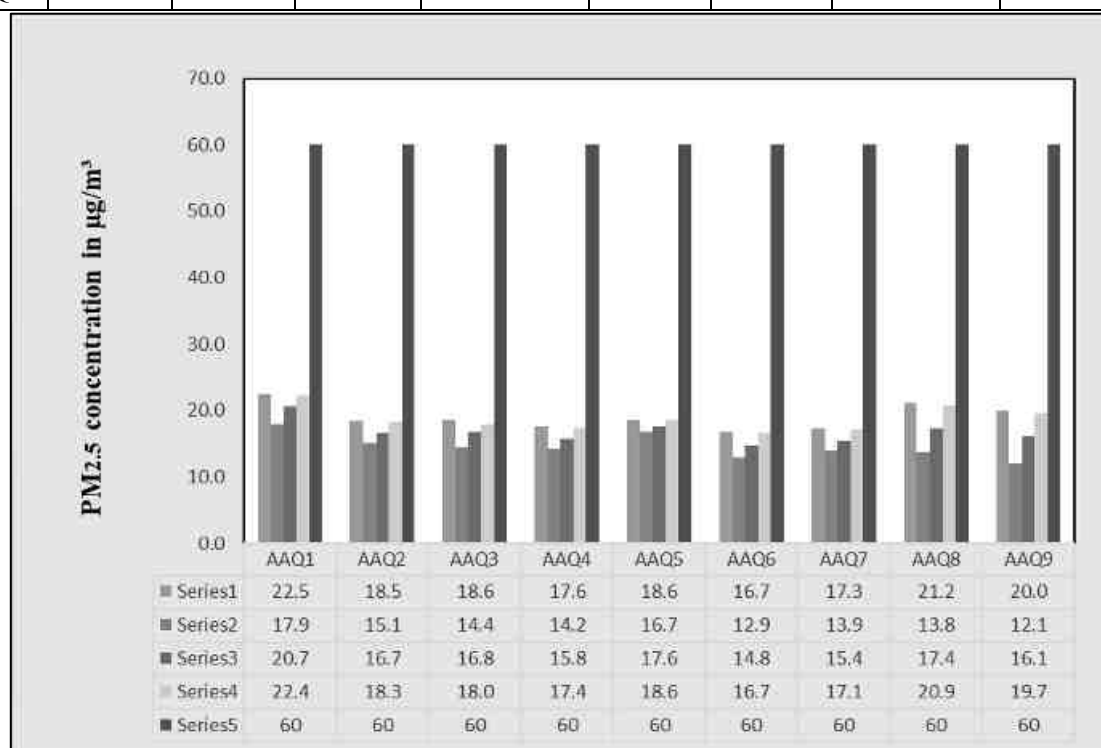


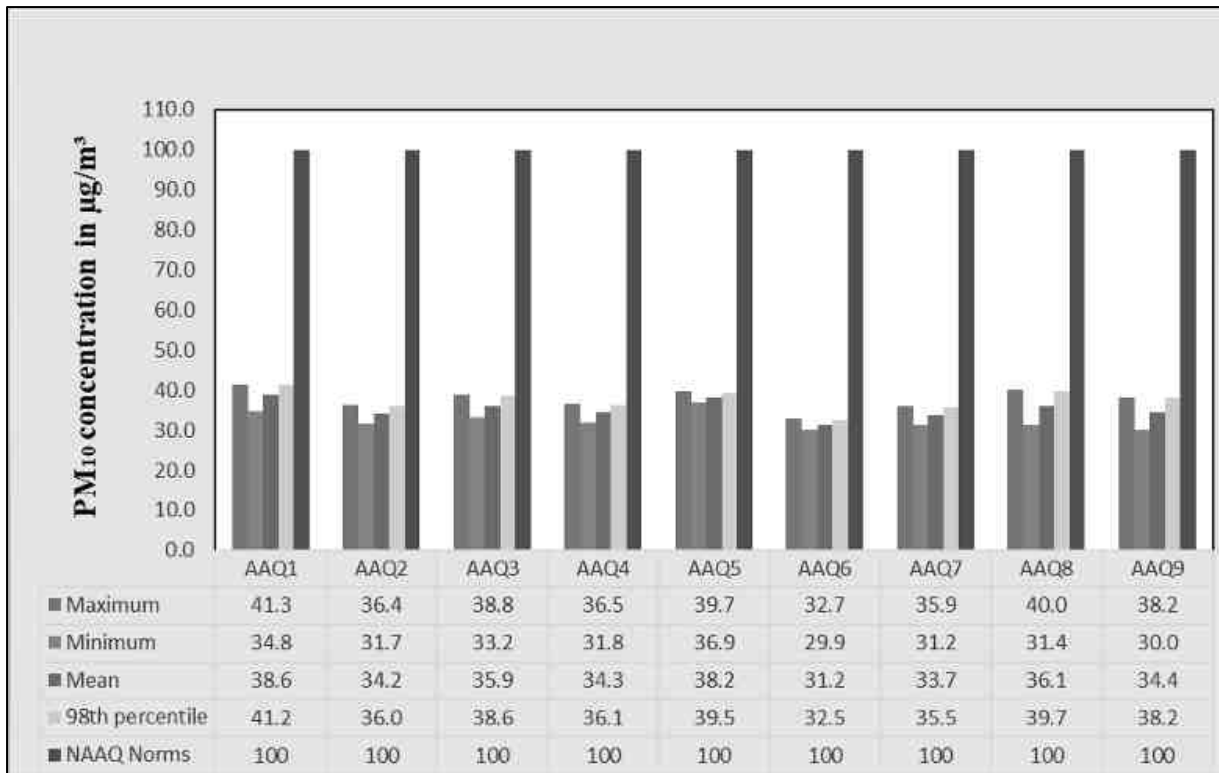
Figure 3.15 Toposheet Showing Ambient Air Quality Monitoring Station Locations around 5 km Radius from the Proposed Project Site

**Table 3.16 Summary of AAQ Result**

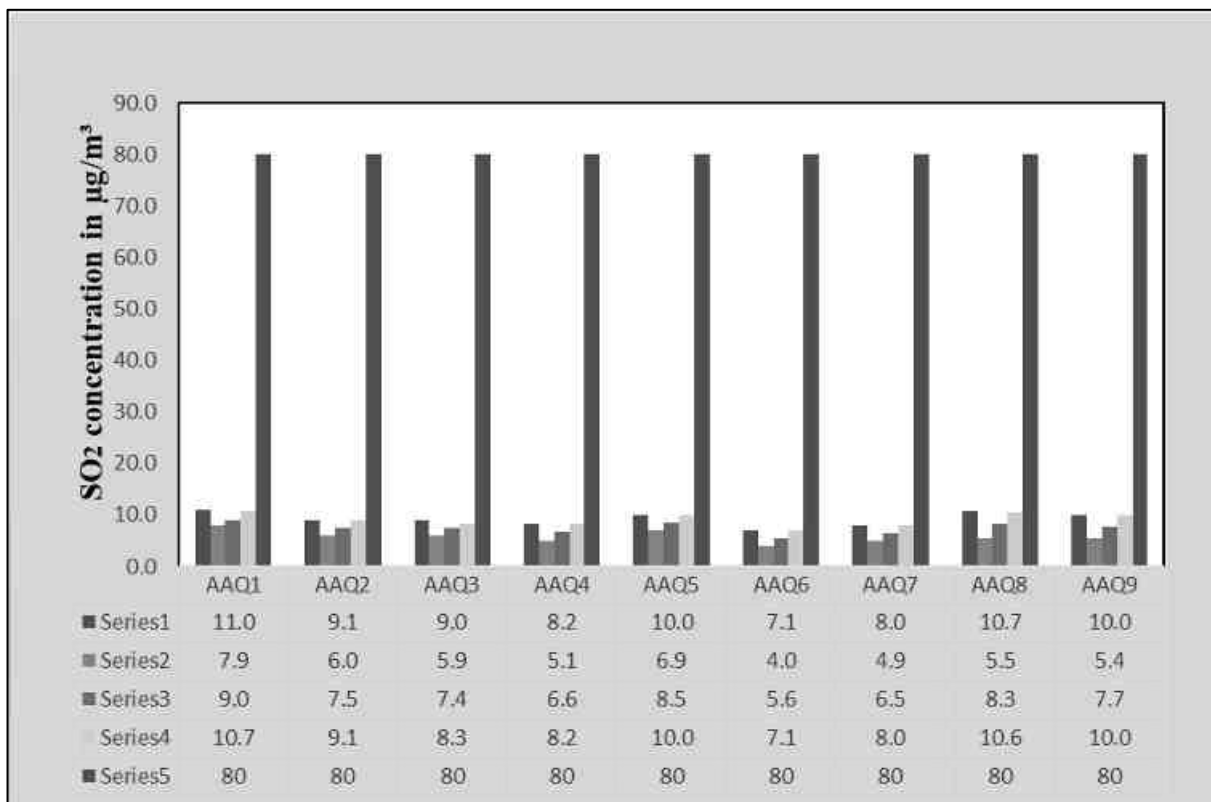
Station ID	PM <sub>2.5</sub>				PM <sub>10</sub>			
	Max	Min	Mean	98 <sup>th</sup> Percentile	Max	Min	Mean	98 <sup>th</sup> Percentile
AAQ1	22.5	17.9	20.7	22.4	41.3	34.8	38.6	41.2
AAQ2	18.5	15.1	16.7	18.3	36.4	31.7	34.2	36.0
AAQ3	18.6	14.4	16.8	18.0	38.8	33.2	35.9	38.6
AAQ4	17.6	14.2	15.8	17.4	36.5	31.8	34.3	36.1
AAQ5	18.6	16.7	17.6	18.6	39.7	36.9	38.2	39.5
AAQ6	16.7	12.9	14.8	16.7	32.7	29.9	31.2	32.5
AAQ7	17.3	13.9	15.4	17.1	35.9	31.2	33.7	35.5
AAQ8	21.2	13.8	17.4	20.9	40.0	31.4	36.1	39.7
AAQ9	20.0	12.1	16.1	19.7	38.2	30.0	34.4	38.2
SO <sub>2</sub>					NO <sub>2</sub>			
AAQ1	11.0	7.9	9.0	10.7	20.7	16.5	18.3	20.7
AAQ2	9.1	6.0	7.5	9.1	19.5	13.6	16.7	19.3
AAQ3	9.0	5.9	7.4	8.3	19.9	8.7	16.9	19.7
AAQ4	8.2	5.1	6.6	8.2	18.7	12.8	15.9	18.5
AAQ5	10.0	6.9	8.5	10.0	19.7	16.1	18.0	19.5
AAQ6	7.1	4.0	5.6	7.1	17.8	11.3	14.8	17.5
AAQ7	8.0	4.9	6.5	8.0	17.9	11.0	15.0	17.3
AAQ8	10.7	5.5	8.3	10.6	20.5	12.7	16.9	20.4
AAQ9	10.0	5.4	7.7	10.0	19.7	11.9	16.1	19.6



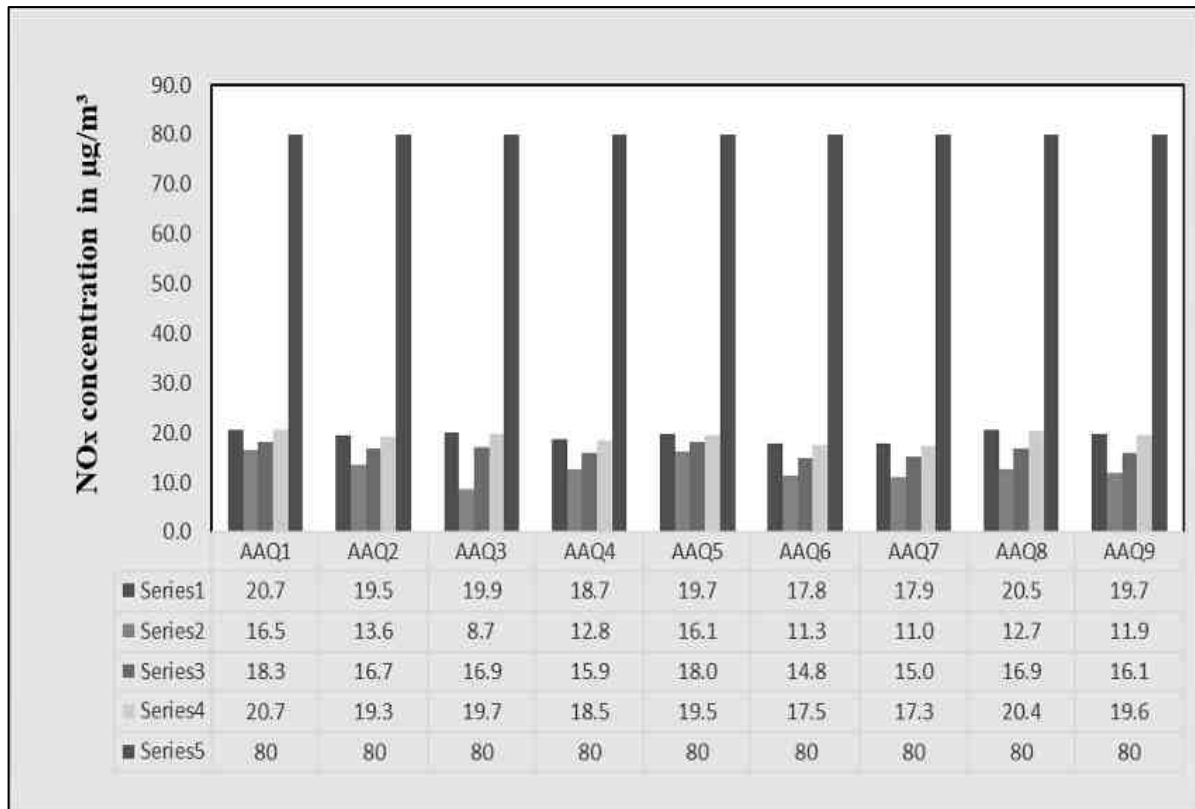
**Figure 3.16 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM<sub>2.5</sub> Measured from nine Air Quality Monitoring Stations within 5 km Radius**



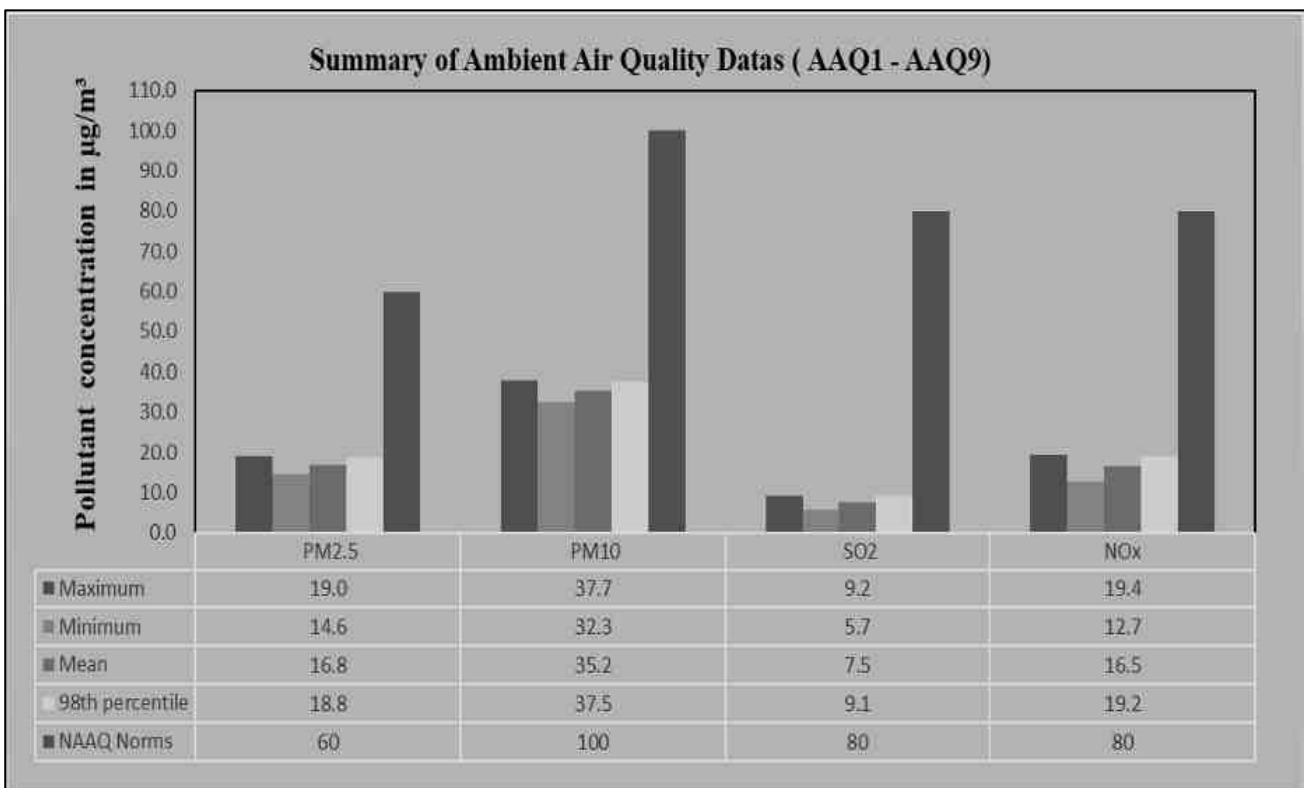
**Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM<sub>10</sub> Measured from nine Air Quality Monitoring Stations within 5 km Radius**



**Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO<sub>2</sub> Measured from nine Air Quality Monitoring Stations within 5 km Radius**



**Figure 3.19 Bar Chart Showing Maximum, Minimum, And Average Concentrations of NO<sub>x</sub> Measured from nine Air Quality Monitoring Stations within 5 km Radius**



**Figure 3.20 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 nine (9) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.17 and spatial occurrence of the locations are shown in Figure 3.23.

**Table 3.17 Noise Monitoring Locations**

S. No	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates
1	N1	Core	--	--	10°46'34.71"N, 78° 4'0.91"E
2	N2	R.Vellagoundanpatti	0.30	SE	10°46'26.41"N, 78° 4'6.26"E
3	N3	Papanayakanoor	1.58	WSW	10°46'17.90"N, 78° 3'1.62"E
4	N4	Kalapatti	4.27	WSW	10°46'17.87"N, 78° 1'30.55"E
5	N5	Edayapatti	4.74	SW	10°45'3.30"N, 78° 1'46.21"E
6	N6	K.Pitchampatti	2.98	NNE	10°47'59.07"N, 78° 4'52.36"E
7	N7	Varikappatti	4.47	NNW	10°48'11.86"N, 78° 1'56.52"E
8	N8	Chatrapatti	2.63	SSW	10°45'9.50"N, 78° 3'39.47"E
9	N9	Thirumakkampatti	4.37	ESE	10°46'19.47"N, 78° 6'23.65"E

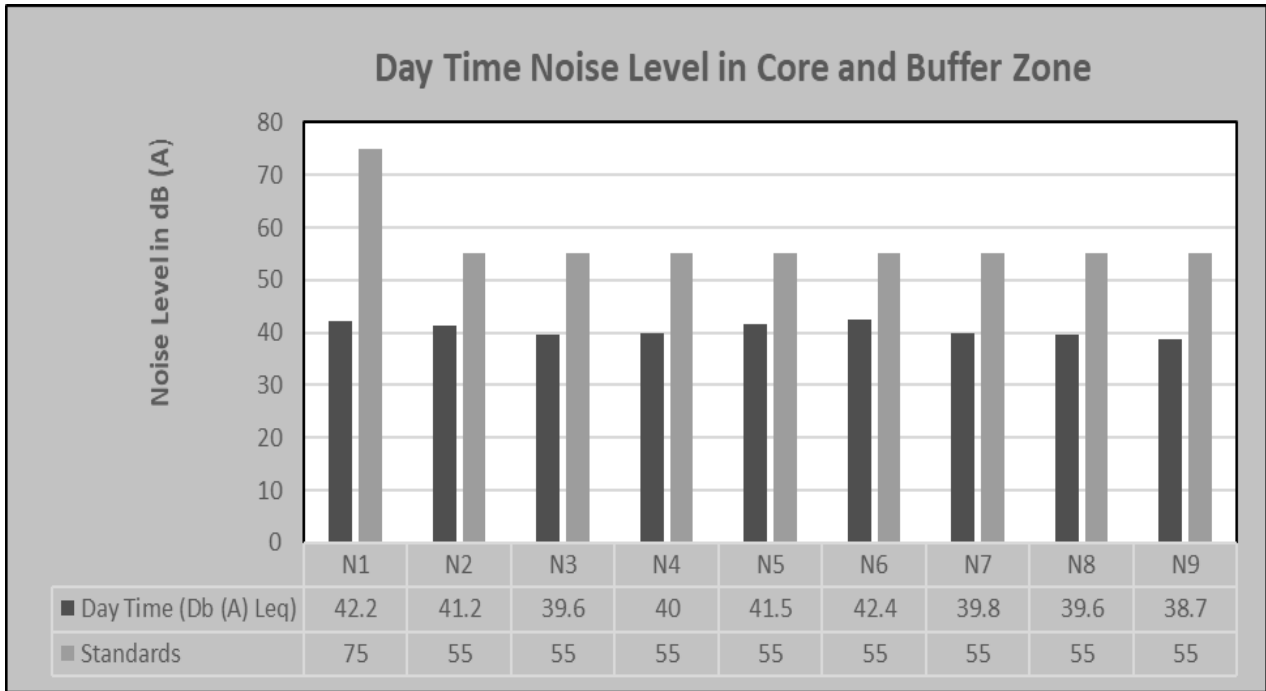
Source: On-site monitoring/sampling by *Excellence Laboratory* in association with GTMS

**Table 3.18 Ambient Noise Quality Result**

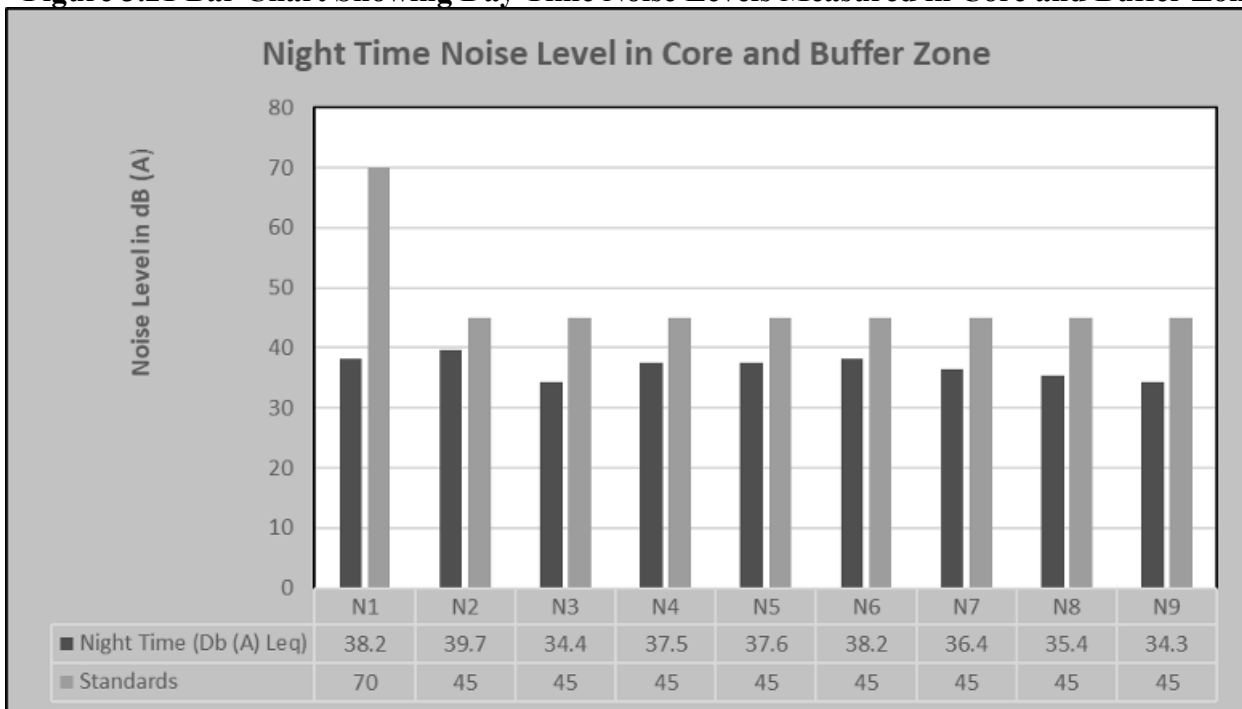
Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (L <sub>eq</sub> in dB(A))	
N1	Core	Industrial area	42.2	38.2	75	70
N2	R.Vellagoundanpatti	Residential area	41.2	39.7	55	45
N3	Papanayakanoor	Residential area	39.6	34.4	55	45
N4	Kalapatti	Residential area	40.0	37.5	55	45
N5	Edayapatti	Residential area	41.5	37.6	55	45
N6	K.Pitchampatti	Residential area	42.4	38.2	55	45
N7	Varikappatti	Residential area	39.8	36.4	55	45
N8	Chatrapatti	Residential area	39.6	35.4	55	45
N9	Thirumakkampatti	Residential area	38.7	34.3	55	45

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

The Table 3.18 shows that noise level in core zone was 42.2 dB (A) Leq during day time and 38.2 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.7 to 42.4 dB (A) Leq and during night time from 34.3 to 38.2 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 3.21 and 3.22.

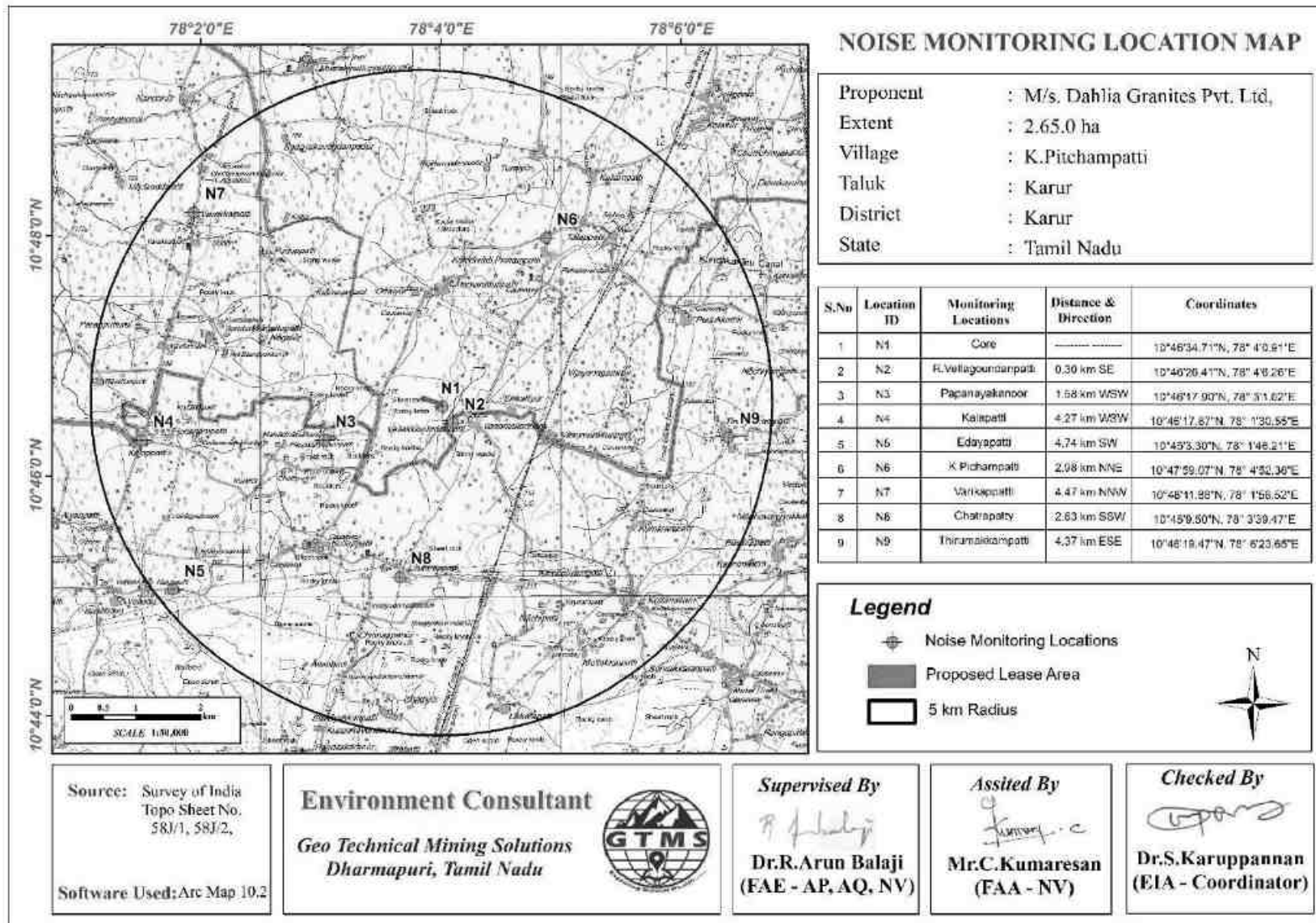


**Figure 3.21 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones**



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





**Figure 3.23 Toposheet Showing Noise Level Monitoring Station Locations around 5 km Radius from the Proposed Project Site**

### 3.5 BIOLOGICAL ENVIRONMENT

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

#### *Methodology*

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



**Figure 3.24** Quadrates Sampling Methods of Flora

#### *Phyto-Sociological Studies*

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

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

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

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

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

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

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

### **3.5.1 Flora**

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

#### ***Crop Patterns in Karur Taluk***

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

#### ***Flora in mine lease area (core zone)***

There are no trees in inside of the quarry lease area. The quarry lease area is type of dry land. *Albizia amara*, *Azadirachta indica* and *Wrightia tinctoria*, *Borassus flabellifer* are four species of trees present around the quarry lease area. These trees are barrier from any damage during quarrying as they are in a safety zone of 7.5 meters.

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

Vegetation species within mine lease area and 300 meters radius around the lease area. It is an arid landscape. There is no agricultural land nearby. It contains a total of 34 species belonging to 18 families have been recorded from the buffer zone. 6 Trees (17%), 8 Shrubs (23%) and 20 Herbs and Climbers, Creeper, Grass & Cactus (58%) were identified. Details of flora with the scientific name details and of diversity species Rich ness index were mentioned in Table 3.21-3.23 and figure 3.25. There is no threat to the Flora species in 300-meter radius.

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

Similar type of environment also in buffer area but with more flora diversity compare than core zone area. It contains a total of species belonging to 38 families have been recorded from the buffer zone. The floral (75) varieties among them 35 Trees (46%), 20 Shrubs (15%) Herbs and Climbers, Creeper, Grass & Cactus, 25 (33%) were identified. Details of flora with the scientific name details of diversity species Rich ness index were mentioned in Table 3.24-3.26 and figure 3.23

Table 3.21 Flora in 300-meter radius

S. No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
<b>Tree</b>													
1	Vealli vealan	<i>Vachellia leucophloea</i>	Babesiae	4	3	5	0.8	60.0	1.3	17.4	17.6	35.0	Least Concern
2	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	2	5	0.6	40.0	1.5	13.0	11.8	24.8	Not Listed
3	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	5	4	5	1.0	80.0	1.3	21.7	23.5	45.3	Not Listed
4	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	4	3	5	0.8	60.0	1.3	17.4	17.6	35.0	Not Listed
5	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	3	2	5	0.6	40.0	1.5	13.0	11.8	24.8	Not Listed
6	Vembu	<i>Azadirachta indica</i>	Meliaceae	4	3	5	0.8	60.0	1.3	17.4	17.6	35.0	Not Listed
<b>Shrubs</b>													
1	Avarai	<i>Senna auriculata</i>	Fabaceae	8	7	10	0.8	70.0	1.1	13.8	14.0	27.8	Not Listed
2	Unichadi	<i>Lantana camara</i>	Verbenaceae	6	5	10	0.6	50.0	1.2	10.3	10.0	20.3	Not Listed
3	suraimullu	<i>Zizyphus Oenoplia</i>	Rhamnaceae	7	6	10	0.7	60.0	1.2	12.1	12.0	24.1	Not Listed
4	Karai palam	<i>Canthium coromandelicum</i>	Rubiaceae	6	5	10	0.6	50.0	1.2	10.3	10.0	20.3	Not Listed
5	Ealanthai palam	<i>Ziziphus jujuba</i>	Rhamnaceae	8	7	10	0.8	70.0	1.1	13.8	14.0	27.8	Not Listed
6	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	7	6	10	0.7	60.0	1.2	12.1	12.0	24.1	Not Listed
7	Umaththai	<i>Datura metel</i>	Solanaceae	9	8	10	0.9	80.0	1.1	15.5	16.0	31.5	Not Listed
8	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	10	0.7	60.0	1.2	12.1	12.0	24.1	Not Listed

Herbs													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.9	3.7	7.6	Not Listed
2	Nearunji mull	<i>Tribulus zeyheri</i> Sond	Zygophyllaceae	8	7	15	0.5	46.7	1.1	5.2	5.2	10.4	
3	pill	<i>Cenchrus ciliaris</i>	Poaceae	10	9	15	0.7	60.0	1.1	6.5	6.7	13.2	Not Listed
4	pulapoo	<i>Aerva lanata</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	4.5	4.5	9.0	Not Listed
5	kapok bush	<i>Aerva javani</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.9	3.7	7.6	Not Listed
6	Rail poondu	<i>Croton bonplandianus</i>	Euphorbiaceae	7	6	15	0.5	40.0	1.2	4.5	4.5	9.0	Not Listed
7	Yanai neariji	<i>pedalium murex</i>	Pedaliaceae	8	7	15	0.5	46.7	1.1	5.2	5.2	10.4	Not Listed
8	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	5.8	6.0	11.8	Not Listed
9	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	8	7	15	0.5	46.7	1.1	5.2	5.2	10.4	Not Listed
10	Umathai	<i>Datura metel</i>	Solanaceae	7	6	15	0.5	40.0	1.2	4.5	4.5	9.0	Not Listed
11	Sethamutti	<i>Sida cordata</i>	Malvaceae	6	5	15	0.4	33.3	1.2	3.9	3.7	7.6	Not Listed
12	Annam	<i>Iva annua</i>	Asteraceae	8	7	15	0.5	46.7	1.1	5.2	5.2	10.4	Not Listed
13	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	9	8	15	0.6	53.3	1.1	5.8	6.0	11.8	Not Listed
14	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	4.5	4.5	9.0	Not Listed
15	Ishappukol Vitai	<i>Plantago coronopus</i>	Plantaginaceae	8	7	15	0.5	46.7	1.1	5.2	5.2	10.4	Not Listed
16	vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	9	8	15	0.6	53.3	1.1	5.8	6.0	11.8	Not Listed
17	Seppu nerinji	<i>Indigofera linnaei</i> Ali	Fabaceae	6	5	15	0.4	33.3	1.2	3.9	3.7	7.6	Not Listed
18	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	9	8	15	0.6	53.3	1.1	5.8	6.0	11.8	Not Listed
19	Pal kodi	<i>Cynanchum viminalis</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	4.5	4.5	9.0	Not Listed
20	Ilia perandai	<i>Cissus rotundifolia</i>	Vitaceae	9	8	15	0.6	53.3	1.1	5.8	6.0	11.8	Not Listed

**Table 3.22 Calculation of Species Diversity in 300 m radius**

S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
<b>Tree</b>						
1	Vealli vealan	<i>Vachellia leucophloea</i>	4	0.17	-1.75	-0.30
2	Unjai maram	<i>Albizia amara</i>	3	0.13	-2.04	-0.27
3	Vetpalai	<i>Wrightia tinctoria</i>	5	0.22	-1.53	-0.33
4	Karuvealan	<i>Prosopis juliflora</i>	4	0.17	-1.75	-0.30
5	Palm tree	<i>Borassus flabellifer</i>	3	0.13	-2.04	-0.27
6	Vembu	<i>Azadirachta indica</i>	4	0.17	-1.75	-0.30
H (Shannon Diversity Index) =1.78						
<b>Shrubs</b>						
1	Avarai	<i>Senna auriculata</i>	8	0.14	-1.98	-0.27
2	Unichadi	<i>Lantana camara</i>	6	0.10	-2.27	-0.23
3	suraimullu	<i>Zizyphus Oenoplia</i>	7	0.12	-2.11	-0.26
4	Karai palam	<i>Canthium coromandelicum</i>	6	0.10	-2.27	-0.23
5	Ealanthai palam	<i>Ziziphus jujuba</i>	8	0.14	-1.98	-0.27
6	Erukku	<i>Calotropis gigantea</i>	7	0.12	-2.11	-0.26
7	Uumatthai	<i>Datura metel</i>	9	0.16	-1.86	-0.29
8	Thuthi	<i>Abutilon indicum</i>	7	0.12	-2.11	-0.26
H (Shannon Diversity Index) =2.07						
<b>herbs</b>						
1	Nayuruv	<i>Achyranthes aspera</i>	6	0.04	-3.25	-0.13
2	Nearunji mull	<i>Tribulus zeyheri Sond</i>	8	0.05	-2.96	-0.15
3	pill	<i>Cenchrus ciliaris</i>	10	0.06	-2.73	-0.18
4	pulapoo	<i>Aerva lanata</i>	7	0.05	-3.09	-0.14
5	kapok bush	<i>Aerva javani</i>	6	0.04	-3.25	-0.13
6	Rail poondu	<i>Croton bonplandianus</i>	7	0.05	-3.09	-0.14
7	mookuthi poondu	<i>pedalium murex</i>	8	0.05	-2.96	-0.15
8	Perandai	<i>Cissus quadrangularis</i>	9	0.06	-2.84	-0.17
9	Thumbai chadi	<i>Leucas aspera</i>	8	0.05	-2.96	-0.15
10	Umathai	<i>Datura metel</i>	7	0.05	-3.09	-0.14

11	Sethamutti	<i>Sida cordata</i>	6	0.04	-3.25	-0.13
12	Annam	<i>Iva annua</i>	8	0.05	-2.96	-0.15
13	Kolunji	<i>Tephrosia purpurea</i>	9	0.06	-2.84	-0.17
14	Nayuruvi	<i>Achyranthes aspera</i>	7	0.05	-3.09	-0.14
15	Ishappukol Vitai	<i>Plantago coronopus</i>	8	0.05	-2.96	-0.15
16	Vealiparuthi	<i>Pergularia daemia</i>	9	0.06	-2.84	-0.17
17	Seppu nerinji	<i>Indigofera linnaei Ali</i>	6	0.04	-3.25	-0.13
18	Sapathikalli	<i>Opuntia ficus-indica</i>	9	0.06	-2.84	-0.17
19	Pal kodi	<i>Cynanchum viminale</i>	7	0.05	-3.09	-0.14
20	Ilia perandai	<i>Cissus rotundifolia</i>	9	0.06	-2.84	-0.17
H (Shannon Diversity Index) =2.98						

**Table 3.23 Species Richness (Index) in 300 m radius**

Details	H	H max	Evenness	Species Richness
<b>Tree</b>	1.78	1.79	0.99	1.59
<b>Shrubs</b>	2.07	2.08	1.00	1.72
<b>Herbs</b>	2.98	3.00	1.00	3.77



Table 3.24 Flora in Buffer Zone

S.No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
<b>TREE</b>													
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
2	Thekku	<i>Tectona grandis</i>	Verbenaceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
3	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
5	Manga	<i>Mangifera indica</i>	Anacardiaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
7	Vadanarayani	<i>Delonix elata</i>	Fabaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
8	Thenpazham	<i>Muntingia calabura</i>	Tiliaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
9	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
10	Ilanthai	<i>Ziziphus jujubha</i>	Rhamnaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
11	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
12	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
13	Arai nelli	<i>Phyllanthus acidus</i>	Euphorbiaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed

14	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
15	Sapota	<i>Manilkara zapota</i>	Sapotaceae	7	6	10	0.7	60.0	1.2	4.4	4.8	9.2	Not Listed
16	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
17	Alamaram	<i>Ficus benghalensis</i>	Moraceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
18	Vazhaimaram	<i>Musa</i>	Musaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
19	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
20	Nelli	<i>Embllica officinalis</i>	Phyllanthaceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
21	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
22	Maramalli	<i>Millingtonia hortensis</i>	Bignoniaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
23	Kuduka puli	<i>Pithecellobium dulce</i>	Mimosaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
24	Karungali	<i>Acacia sundra</i>	Legumes	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
25	Nochi	<i>Vitex negundo</i>	Lamiaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
26	Karimurungai	<i>Moringa olefera</i>	Moraginaceae	6	5	10	0.6	50.0	1.2	3.8	4.0	7.8	Not Listed
27	Pappali maram	<i>Carica papaya L</i>	Caricaceae	7	6	10	0.7	60.0	1.2	4.4	4.8	9.2	Not Listed
28	Poovarasu	<i>Thespesia populnea</i>	Malvaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
29	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
30	Vilvam	<i>Aegle marmelos</i>	Rutaceae	4	3	10	0.4	30.0	1.3	2.5	2.4	4.9	Not Listed
31	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
32	Nettilingam	<i>Polyalthia longifolia</i>	Annonaceae	3	2	10	0.3	20.0	1.5	1.9	1.6	3.5	Not Listed
33	Koyya	<i>Psidium guajava</i>	Myrtaceae	7	6	10	0.7	60.0	1.2	4.4	4.8	9.2	Not Listed
34	Seethapazham	<i>Annona reticulata</i>	Annonaceae	8	7	10	0.8	70.0	1.1	5.0	5.6	10.7	Not Listed
35	Savukku	<i>Casuarina L.</i>	Casuarinaceae	5	4	10	0.5	40.0	1.3	3.1	3.2	6.4	Not Listed
<b>SHRUBS</b>													

1	Avarai	<i>Senna auriculata</i>	Fabaceae	8	7	15	0.5	46.7	1.1	7.1	7.1	14.2	Not Listed
2	Sundaika	<i>Solanum torvum</i>	Solanaceae	9	8	15	0.6	53.3	1.1	8.0	8.2	16.1	Not Listed
3	Puramuttai	<i>Chrozophora rottleri</i>	Euphorbiaceae	7	6	15	0.5	40.0	1.2	6.2	6.1	12.3	Not Listed
4	Arali	<i>Nerium indicum</i>	Apocynaceae	9	8	15	0.6	53.3	1.1	8.0	8.2	16.1	Not Listed
5	Seemaigaththi	<i>Cassia alata</i>	Caesalpinaceae	7	6	15	0.5	40.0	1.2	6.2	6.1	12.3	Not Listed
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	9	8	15	0.6	53.3	1.1	8.0	8.2	16.1	Not Listed
7	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	6	5	15	0.4	33.3	1.2	5.3	5.1	10.4	Not Listed
8	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	7	6	15	0.5	40.0	1.2	6.2	6.1	12.3	Not Listed
9	Idlipoo	<i>xoracoc cineia</i>	Rubiaceae	8	7	15	0.5	46.7	1.1	7.1	7.1	14.2	Not Listed
10	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	15	0.5	40.0	1.2	6.2	6.1	12.3	Not Listed
11	Nithyakalyani	<i>Cathranthus roseus</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	5.3	5.1	10.4	Not Listed
12	Uumaththai	<i>Datura metel</i>	Solanaceae	8	7	15	0.5	46.7	1.1	7.1	7.1	14.2	Not Listed
13	Kundumani	<i>Abrus precatorius</i>	Fabaceae	9	8	15	0.6	53.3	1.1	8.0	8.2	16.1	Not Listed
14	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	6.2	6.1	12.3	Not Listed
15	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	6	5	15	0.4	33.3	1.2	5.3	5.1	10.4	Not Listed
<b>Herbs, Climber, Creeper &amp; Grasses</b>													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
2	Veetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
3	Mukkirattai	<i>Boerhaavia diffusa</i>	Nyctaginaceae	6	5	20	0.3	25.0	1.2	3.1	2.9	6.0	Not Listed
4	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	9	8	20	0.5	40.0	1.1	4.6	4.7	9.3	Not Listed
5	Karisilanganni	<i>Eclipta prostata</i>	Asteraceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
6	Korai	<i>Cyperus rotundus</i>	Cyperaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
7	Thumbai	<i>Leucas aspera</i>	Lamiaceae	6	5	20	0.3	25.0	1.2	3.1	2.9	6.0	Not Listed

8	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
9	Parttiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
10	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	11	10	20	0.6	50.0	1.1	5.6	5.9	11.5	Not Listed
11	Arugampul	<i>Cynodon dactylon</i>	Poaceae	12	11	20	0.6	55.0	1.1	6.2	6.5	12.6	Not Listed
12	Thoiya keerai	<i>Digeria muricata</i>	Amarantheceae	6	5	20	0.3	25.0	1.2	3.1	2.9	6.0	Not Listed
13	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
14	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	20	0.5	40.0	1.1	4.6	4.7	9.3	Not Listed
15	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
16	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
17	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	6	5	20	0.3	25.0	1.2	3.1	2.9	6.0	Not Listed
18	Sangupoo	<i>Clitoriaternatia</i>	Fabaceae	9	8	20	0.5	40.0	1.1	4.6	4.7	9.3	Not Listed
19	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
20	Sithrapaalavi	<i>Euphorbia prostrata</i>	Euphorbiaceae	6	5	20	0.3	25.0	1.2	3.1	2.9	6.0	Not Listed
21	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae	7	6	20	0.4	30.0	1.2	3.6	3.5	7.1	Not Listed
22	mookuthi poondu	<i>Wedelia trilobata</i>	Asteraceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
23	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae	9	8	20	0.5	40.0	1.1	4.6	4.7	9.3	Not Listed
24	Musthakasu	<i>Kyllinga brevifolia</i>	Cyperaceae	8	7	20	0.4	35.0	1.1	4.1	4.1	8.2	Not Listed
25	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	9	8	20	0.5	40.0	1.1	4.6	4.7	9.3	Not Listed

**Table 3.25 Calculation of Species Diversity in Buffer Zone**

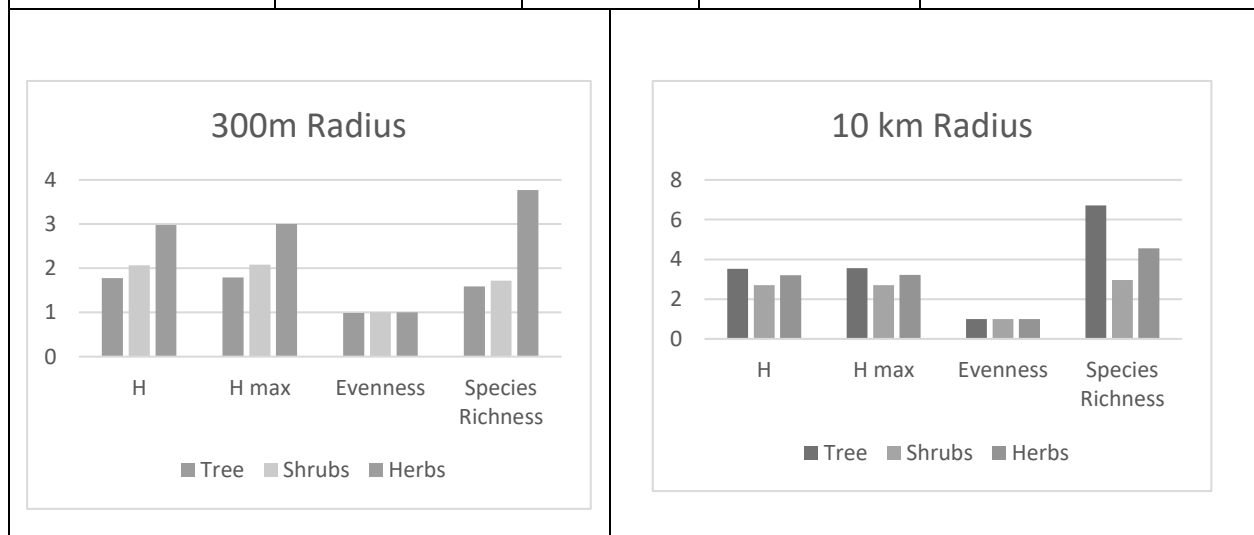
S.No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
<b>Tree</b>						
1	Vembu	<i>Azadirachta indica</i>	5	0.03	-3.46	-0.11
2	Thekku	<i>Tectona grandis</i>	3	0.02	-3.97	-0.07
3	Pongam oiltree	<i>Pongamia pinnata</i>	4	0.03	-3.68	-0.09
4	Thennai maram	<i>Cocos nucifera</i>	3	0.02	-3.97	-0.07
5	Manga	<i>Mangifera indica</i>	5	0.03	-3.46	-0.11
6	Puliyamaram	<i>Tamarindus indica</i>	3	0.02	-3.97	-0.07
7	Vadanarayani	<i>Delonix elata</i>	4	0.03	-3.68	-0.09
8	Thenpazham	<i>Muntingia calabura</i>	5	0.03	-3.46	-0.11
9	Punnai	<i>Calophyllu inophyllum</i>	4	0.03	-3.68	-0.09
10	Ilanthai	<i>Ziziphus jujubha</i>	5	0.03	-3.46	-0.11
11	Karuvelam	<i>Acacia nilotica</i>	3	0.02	-3.97	-0.07
12	Nettilinkam	<i>Polyalthia longifolia</i>	5	0.03	-3.46	-0.11
13	Arai nelli	<i>Phyllanthus acidus</i>	4	0.03	-3.68	-0.09
14	Panai maram	<i>Borassus flabellifer</i>	5	0.03	-3.46	-0.11
15	Sapota	<i>Manilkara zapota</i>	7	0.04	-3.12	-0.14
16	Navalmaram	<i>Syzygium cumini</i>	5	0.03	-3.46	-0.11
17	Alamaram	<i>Ficus benghalensis</i>	3	0.02	-3.97	-0.07
18	Vazhaimaram	<i>Musa</i>	4	0.03	-3.68	-0.09
19	Karuvelam maram	<i>Vachellia nilotica</i>	5	0.03	-3.46	-0.11
20	Nelli	<i>Embllica officinalis</i>	3	0.02	-3.97	-0.07
21	Eucalyptus	<i>Eucalyptus globules</i>	4	0.03	-3.68	-0.09
22	Maramalli	<i>Millingtonia hortensis</i>	5	0.03	-3.46	-0.11
23	Kuduka puli	<i>Pithecellobium dulce</i>	4	0.03	-3.68	-0.09
24	Karungali	<i>Acacia sundra</i>	3	0.02	-3.97	-0.07
25	Nochi	<i>Vitex negundo</i>	5	0.03	-3.46	-0.11
26	Karimurungai	<i>Moringa olefera</i>	6	0.04	-3.28	-0.12
27	Pappali maram	<i>Carica papaya L</i>	7	0.04	-3.12	-0.14
28	Poovarasu	<i>Thespesia populnea</i>	5	0.03	-3.46	-0.11
29	Arasanmaram	<i>Ficus religiosa</i>	3	0.02	-3.97	-0.07
30	Vilvam	<i>Aegle marmelos</i>	4	0.03	-3.68	-0.09
31	Nuna maram	<i>Morinda citrifolia</i>	5	0.03	-3.46	-0.11

32	Nettilingam	<i>Polyalthia longifolia</i>	3	0.02	-3.97	-0.07
33	Koyya	<i>Psidium guajava</i>	7	0.04	-3.12	-0.14
34	Seethapazham	<i>Annona reticulata</i>	8	0.05	-2.99	-0.15
35	Savukku	<i>Casuarina L.</i>	5	0.03	-3.46	-0.11
H (Shannon Diversity Index) =3.52						
<b>Shrubs</b>						
1	Avarai	<i>Senna auriculata</i>	8	0.07	-2.65	-0.19
2	Sundaika	<i>Solanum torvum</i>	9	0.08	-2.53	-0.20
3	Puramuttai	<i>Chrozophora rottleri</i>	7	0.06	-2.78	-0.17
4	Arali	<i>Nerium indicum</i>	9	0.08	-2.53	-0.20
5	Seemaigaththi	<i>Cassia alata</i>	7	0.06	-2.78	-0.17
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	9	0.08	-2.53	-0.20
7	Kattamanakku	<i>Jatropha curcas</i>	6	0.05	-2.94	-0.16
8	Chaturakalli	<i>Euphorbia antiquorum</i>	7	0.06	-2.78	-0.17
9	Idlipoo	<i>xoracoc cineo</i>	8	0.07	-2.65	-0.19
10	Thuthi	<i>Abutilon indicum</i>	7	0.06	-2.78	-0.17
11	Nithyakalyani	<i>Cathranthus roseus</i>	6	0.05	-2.94	-0.16
12	Uumatthai	<i>Datura metel</i>	8	0.07	-2.65	-0.19
13	Kundumani	<i>Abrus precatorius</i>	9	0.08	-2.53	-0.20
14	Erukku	<i>Calotropis gigantea</i>	7	0.06	-2.78	-0.17
15	Neermulli	<i>Hydrophila auriculata</i>	6	0.05	-2.94	-0.16
H (Shannon Diversity Index) =2.70						
<b>Herbs,Climber,Creeper &amp; Grasses</b>						
1	Nayuruv	<i>Achyranthes aspera</i>	7	0.04	-3.33	-0.12
2	Veetukaayapoondur	<i>Tridax procumbens</i>	8	0.04	-3.19	-0.13
3	Mukkirattai	<i>Boerhaavia diffusa</i>	6	0.03	-3.48	-0.11
4	Kuppaimeni	<i>Acalypha indica</i>	9	0.05	-3.08	-0.14
5	Karisilanganni	<i>Eclipta prostrata</i>	8	0.04	-3.19	-0.13
6	Korai	<i>Cyperus rotundus</i>	7	0.04	-3.33	-0.12
7	Thumbai	<i>Leucas aspera</i>	6	0.03	-3.48	-0.11
8	Nai kadugu	<i>Celome viscosa</i>	7	0.04	-3.33	-0.12
9	Parttiniyam	<i>Parthenium hysterophorus</i>	8	0.04	-3.19	-0.13
10	Thulasi	<i>Ocimum tenuiflorum</i>	11	0.06	-2.88	-0.16
11	Arugampul	<i>Cynodon dactylon</i>	12	0.06	-2.79	-0.17

12	Thoiya keerai	<i>Digeria muricata</i>	6	0.03	-3.48	-0.11
13	Kovai	<i>Coccinia grandis</i>	7	0.04	-3.33	-0.12
14	Perandai	<i>Cissus quadrangularis</i>	9	0.05	-3.08	-0.14
15	Mudakkotan	<i>Cardiospermum helicacabum</i>	7	0.04	-3.33	-0.12
16	Karkakartum	<i>Clitoria ternatea</i>	8	0.04	-3.19	-0.13
17	Kovakkai	<i>Trichosanthes dioica</i>	6	0.03	-3.48	-0.11
18	Sangupoo	<i>Clitoriaternatia</i>	9	0.05	-3.08	-0.14
19	Siru puladi	<i>Desmodium triflorum</i>	7	0.04	-3.33	-0.12
20	Sithrapaalavi	<i>Euphorbia prostrata</i>	6	0.03	-3.48	-0.11
21	Thumattikai	<i>Cucumis callosus</i>	7	0.04	-3.33	-0.12
22	mookuthi poondu	<i>Wedelia trilobata</i>	8	0.04	-3.19	-0.13
23	Kattu kanchippul	<i>Apluda mutica</i>	9	0.05	-3.08	-0.14
24	Musthakasu	<i>Kyllinga brevifolia</i>	8	0.04	-3.19	-0.13
25	Nagathali	<i>Opuntia dillenii</i>	9	0.05	-3.08	-0.14
H (Shannon Diversity Index) =3.20						

**Table 3.26 Species Richness (Index) in Buffer Zone**

Details	H	H max	Evenness	Species Richness
<b>Tree</b>	3.52	3.56	0.99	6.71
<b>Shrubs</b>	2.70	2.71	1.00	2.96
<b>Herbs</b>	3.20	3.22	0.99	4.55



**Figure 3.25 Floral Diversity Species Richness (Index) in Buffer Zone and 300 m Radius**



*Azadirachta indica*



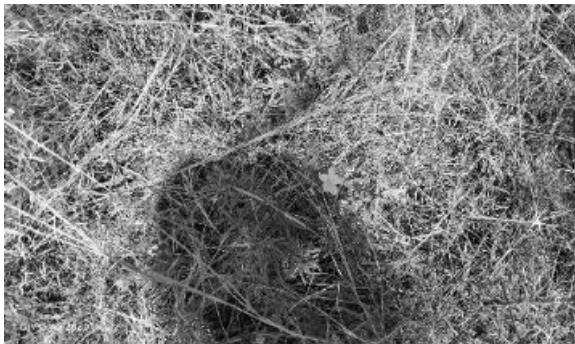
*Albizia amara*



*Prosopis juliflora*



*Vachellia leucophloea*



*Barleria prionitis*



*Canthium coromandelicum*

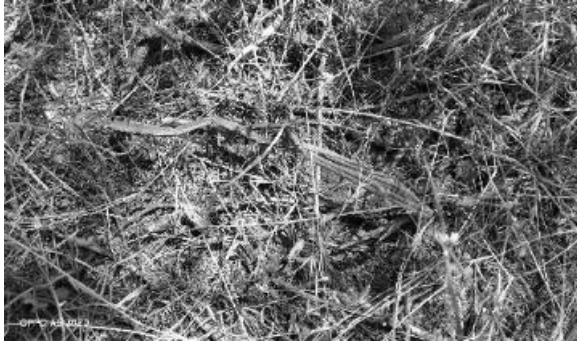


*Solanum torvum*



*Achyranthes aspera*





*Cissus quadrangularis*



*Senna auriculata*



*Wrightia tinctoria*



*Borassus flabellifer*



*Ziziphus jujuba*



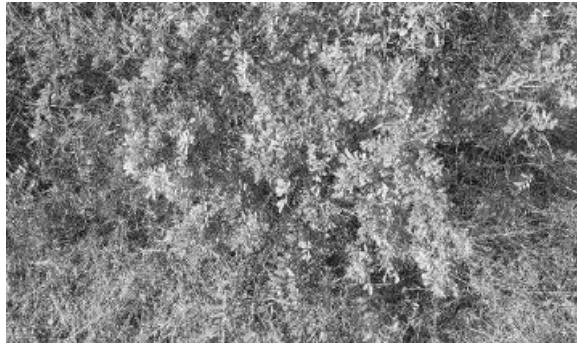
*Cardiospermum halicacabum*



*Coccinia grandis*



*Calotropis gigantea*



*Tephrosia purpurea*



*Aerva javanica*



*Leucas aspera*



*Tribulus Terrestris*

**Figure 3.26 Flora photos 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 3.27

**Table 3.27 Aquatic Vegetation**

<b>S.No.</b>	<b>Scientific name</b>	<b>Common Name</b>	<b>IUCN Red List of Threatened Species</b>
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

\*LC- Least Concern, NA-Not yet assessed

### ***Forest Vegetation***

There are no biosphere reserves or Reserve Forest or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. The area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive.

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

There 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.

#### **3.5.2 Fauna**

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

#### ***Survey Methodology***

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

#### ***Survey and Monitoring of Mammals***

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

#### ***Survey and Monitoring of Birds***

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

### ***Survey and monitoring of reptiles***

Several survey techniques such as standard walk transect visual encounter survey methods were used to sampling reptiles in each and every habitat of the study area. While doing this survey, photographs were taken for identification of species. Species identification was done by using standard field guides in consultation with village people expert. The butterfly was enumerated by 2 linear transects of 10 × 100 m were laid within each quartile at minimum interval of 1 km. Further, amphibians and fishes documented in existing literature and secondary information in consultation with local people and wildlife experts.

### ***Fauna in Core Zone***

The 19 varieties of species observed in the core zone. Among them numbers of Insects 7 (41%), Reptiles 3 (14%), Mammals 1 (4%) and Avian 8 (41%). A total of 19 species belonging to 15 families have been recorded from the core mining lease area. Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and eight species are under schedule IV according to Indian wild life Act 1972. A total eight species of birds were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table. 3.28.

**Table 3.28 Fauna in Core Zone**

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

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

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

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

A total of 47 species belonging to 34 families were recorded in the buffer zone. Based on habitat classification the majority of species were Birds 18 (40%), followed by Insects 15 (31%), Reptiles 7 (15%), 4 Mammals (8%) and amphibians 3 (6%). There are 4 schedule II species and 27 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.29.

**Table 3.29 Fauna in Buffer Zone**

S. No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
<b>INSECTS</b>					
1	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	Schedule IV	LC
2	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
3	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
4	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
5	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
8	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
9	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
10	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
11	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
12	Praying mantis	Mantidae	<i>Mantis religiosa</i>	NL	NL
13	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
14	Lesser grass blue	Lycaenidae	<i>Zizina otis indica</i>	Schedule IV	LC
15	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
<b>REPTILES</b>					
16	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
17	Olive keelback water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
18	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
19	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
20	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC

21	Indian chameleon	Chamaeleonidae	<i>Chamaeleo zeylanicus</i>	Sch II (Part I)	LC
22	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
<b>MAMMALS</b>					
23	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
24	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC
25	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
26	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
<b>AVES</b>					
27	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
28	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
29	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
30	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
31	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
32	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
33	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
28	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
29	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
30	Red-breasted parakeet	Psittaculidae	<i>Psittacula alexandri</i>	NL	LC
31	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameria</i>	NL	LC
32	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
33	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
34	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
35	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC

36	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
37	Brahminy starling	Sturnidae	<i>Sturnia pagodarum</i>	Schedule IV	LC
38	Indian golden oriole	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC
<b>AMPHIBIANS</b>					
45	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
46	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
47	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	Schedule IV	LC

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

### **Results**

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

### **3.6 SOCIO 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 analyse 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 7 villages including Mookanankurichi, Paganatham, K. Pitchampatti, Vellianai (south), Venjamangudalur (East), Venjamangudalur (West) and Gudalur (West). As K. Pitchampatti is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 3.30 and for other 6 villages in Tables 3.31-3.33.

**Table 3.30 K. Pitchampatti Village Population Facts**

<b>K. Pitchampatti village</b>	
Number of Households	1093
Population	3,808
Male Population	1,889
Female Population	1,919
Children Population	301
Sex-ratio	4109
Literacy	66.84%
Male Literacy	79.76%
Female Literacy	54.27%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	823%
Total Workers	2,408
Main Worker	2,354
Marginal Worker	54

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

**Table 3.31 Population and Literacy Data of Study Area**

Village Name	Total Population Person	Total Population Male	Total Population Female	Population in the age group 0-6 Male	Population in the age group 0-6 Female	Scheduled Castes population Person	Scheduled Tribes population Person	Literates Population Person	Illiterate Persons
Mookanankurichi	7406	3641	3765	364	343	1667	0	4485	2921
Paganatham	4074	2028	2046	182	143	681	0	2497	1577
K.Pichampatti	3808	1889	1919	160	141	823	0	2344	1464
Vellianai (south)	5413	2653	2760	246	226	1390	0	3548	1865
Venjamangudalur (East)	3816	1896	1920	198	164	798	0	2024	1792
Venjamangudalur (West)	2367	1198	1169	76	68	491	0	1514	853
Gudalur (West)	2082	986	1096	54	80	637	0	1237	845

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

Village Name	Govt Primary School	Govt Vocational Training School/ITI	Primary Health Sub Centre (Numbers)	Tap Water Untreated	Total Sanitation Campaign (TSC)?	Telephone (landlines)	Public Bus Service	Gravel (kuchha) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Nutritional Centres-Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Gudalur (West)	1	2	1	1	1	1	1	1	1	2	1	1	1	2
Venjamangudalur (East)	1	2	1	1	2	1	1	1	1	2	2	1	1	2
Venjamangudalur (West)	1	2	1	1	2	2	1	1	1	2	1	1	1	1
Mookanankurichi	1	2	1	1	2	1	1	1	1	2	1	1	1	1
Paganatham	1	2	1	1	2	1	1	1	1	2	1	1	1	1
K. Pichampatti	1	2	1	1	2	2	1	1	1	2	1	1	1	1
Vellianai (south)	1	2	1	1	2	2	1	1	1	2	2	1	1	1

**Table 3.33 Other Facilities in the Study Area**

<b>Village Name</b>	<b>Tractors</b>	<b>Carts Driven by Animals</b>	<b>Black Topped (pucca) Road</b>	<b>ATM</b>	<b>Commercial Bank</b>	<b>Cooperative Bank</b>	<b>Agricultural Credit Societies</b>	<b>Public Distribution System</b>	<b>Mandis/Regular Market</b>	<b>Weekly Haat</b>	<b>Power Supply for Agriculture</b>	<b>Power Supply for Commercial</b>	<b>Agricultural Commodities (First)</b>	<b>Manufacturers Commodities (First)</b>	<b>Handicrafts Commodities (First)</b>	<b>Net Area Sown (in Hectares)</b>
Mookanankurichi	2	2	1	2	2	2	1	1	2	1	1	2	PADDY	--	--	1566.1 2
Paganatham	2	2	1	2	2	2	2	1	2	2	1	1	CORN	POULTRY PRODUCTS	--	642.66
K.Pichampatti	2	2	1	2	2	2	1	1	2	1	1	1	CORN	--	--	273.53
Vellianai(south)	2	2	1	2	2	2	1	1	2	2	1	1	GROUND NUT	--	--	1521.3 7
Venjamangudalur(East)	2	2	1	2	2	2	1	1	2	2	1	1	PEARL MILLET	--	--	675.41
Venjamangudalur(West)	2	2	1	2	2	2	1	1	2	2	1	1	CORN	MILK PRODUCTS	--	678.37
Gudalur (West)	2	2	1	2	2	2	2	1	2	1	1	2	GROUND NUT	THREAD	POTTER Y	1301.8 6

### **3.6.4 Recommendation and Suggestion**

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

### **3.6.5 Summary & Conclusion**

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

### **3.7 TRAFFIC DENSITY**

The traffic survey conducted based on the transportation route of material, the Granite is proposed to be transported mainly through Village Road and Karur-Dindigul (SH74) as shown in Table 3.34 and in Figure 3.27. Traffic density measurements were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station. During each shift one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

**Table 3.34 Traffic Survey Locations**

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	2.9 Km-SSE	Village Road
TS2	Village Road	3.0 Km-NNE	Village Road
TS3	Karur-Dindigul (SH74)	6.4 km-ENE	Karur-Dindigul (SH74)

Source: On-site monitoring by GTMS FAE & TM

**Table 3.35 Existing Traffic Volume**

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	38	114	47	47	75	38	199
TS2	42	126	55	55	90	45	226
TS3	102	306	60	60	110	55	421

Source: On-site monitoring by GTMS FAE & TM

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

**Table 3.36 Granite Transportation Requirement**

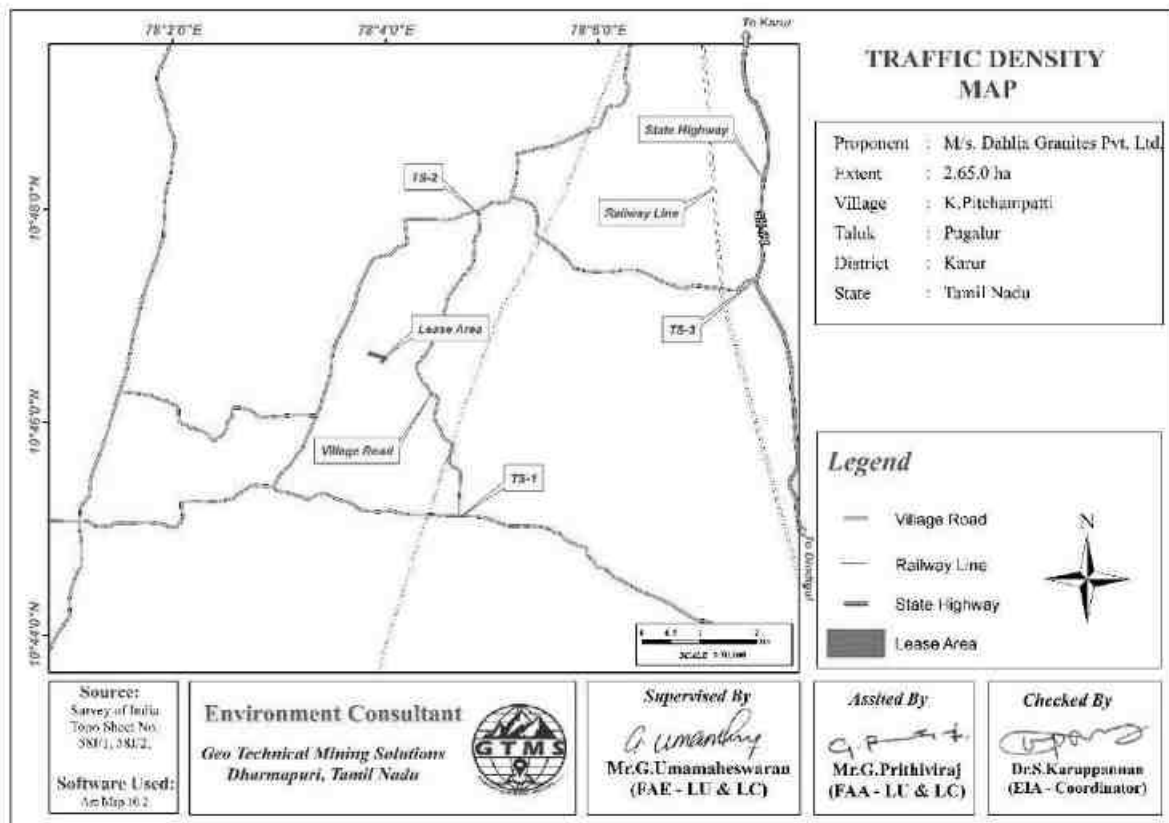
Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	3	9

Source: Approved Mining Plan

**Table 3.37 Summary of Traffic Volume**

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Village Road	199	9	208	1200
Village Road	226	9	235	1200
Karur-Dindigul (SH74)	421	9	430	1500

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



**Figure 3.27 Traffic Density Map**

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

### 3.8 SITE SPECIFIC FEATURES

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

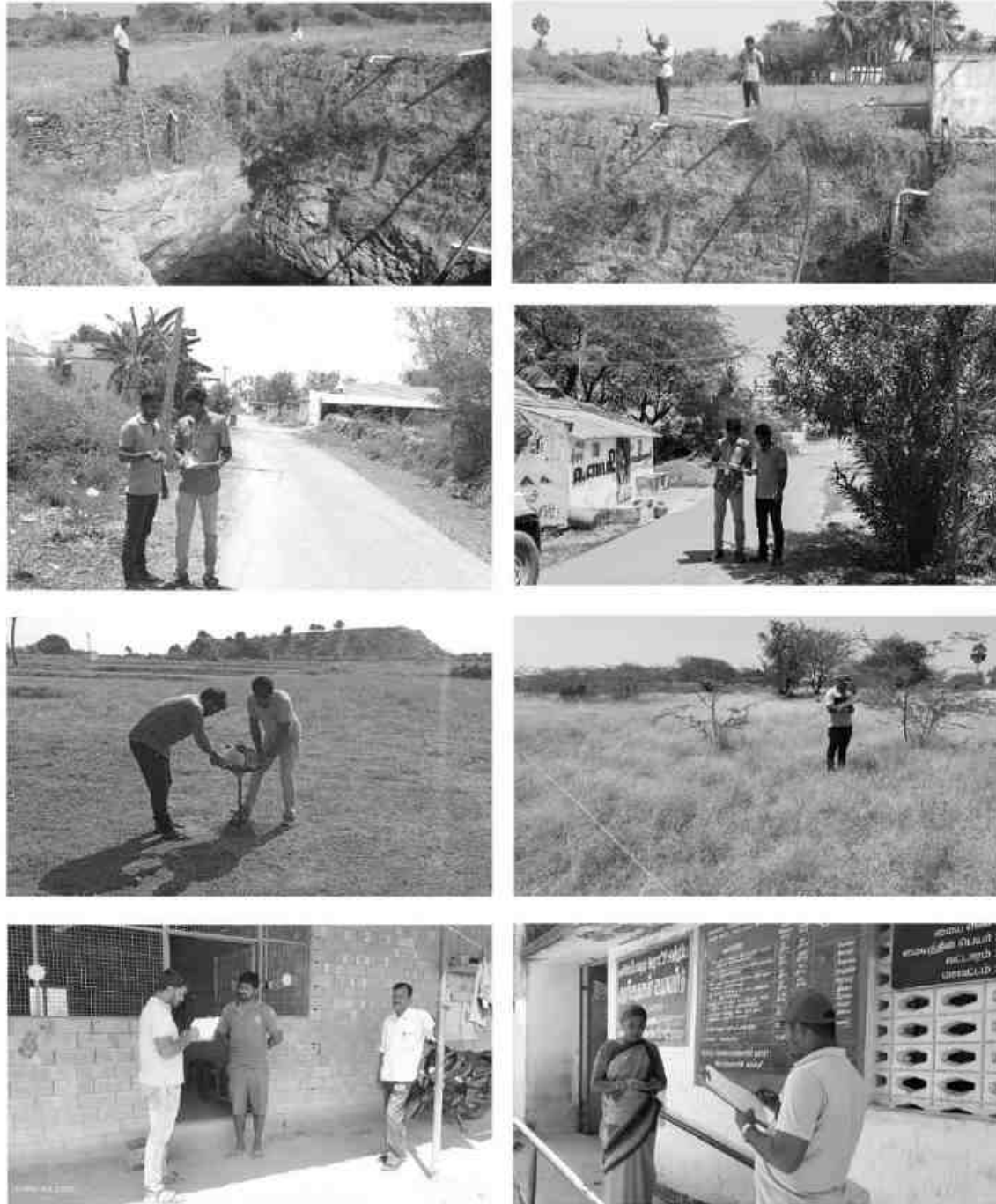
**Table 3.38 Details of Environmentally Sensitive Ecological Features in the Study Area**

S. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
		None	Nil within 10 km radius
2	Reserve Forest	Panai RF	1.2 SW
		Panai RF	2.1 SE
		Javalagiri RF	5.7 W
		Noganur RF	4.1 NE

3	Lakes/Reservoirs/ Dams/Streams/Rivers	Karamadapalli	1.83 NNE
		Kundukottai	4.23 SE
		Dandimappan Gudi	3.80 NNW
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 3.28 Field Photographs Showing Baseline Data Collection**



## CHAPTER IV

### ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post-operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development. In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction. The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail: land, soil, water, air, noise, biological and socio-economic environments. Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

#### 4.1 LAND ENVIRONMENT

##### 4.1.1 Anticipated Impact

The proposed project would result in:

- ❖ Destruction of unique geological resources to the extent of about 124766 m<sup>3</sup> of multi coloured granite, 26724 m<sup>3</sup> of weathered rock and 53448 m<sup>3</sup> of topsoil in the five years.
- ❖ Substantial change to topographic features or significant change in surface relief
- ❖ Permanent or temporary change on land use and land cover.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season
- ❖ Siltation of water course due to wash off from the exposed working area

##### 4.1.2 Common Mitigation Measures for the Proposed Project

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

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

## **4.2 SOIL ENVIRONMENT**

### **4.2.1 Impact on Soil Environment**

- ❖ The proposed project would cause loss of about 53448 m<sup>3</sup> of topsoil from the lease area in the five years. The topsoil removal will affect the soil structure and its productivity even if it is stockpiled and reused after reclamation.
- ❖ As the proposed project produces solid waste in the form of granite waste and weathered rock, the topsoil in the site allocated for dumps will be removed. As there is neither a toxic effluent nor solid waste from the mine, quality of soil around the project area is not expected to be adversely affected.

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

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

## **4.3 WATER ENVIRONMENT**

### **4.3.1 Anticipated Impact**

- ❖ As the water required for the mining operations, as given in Table 2.10 is obtained from the approved water supplying agency, the project does not develop any abstraction

structures in the lease area. Therefore, no impact responsible for the water table declination is anticipated.

- ❖ Surface and ground water resources may be contaminated due to mine pit water discharge, domestic sewage, waste water from vehicle washing, washouts from surface exposure or working areas, discharge of oil & grease, and suspended solids due to waste from washing of machineries. To address this impact, some of the important mitigation measures is provided as below.

#### **4.3.2 Common Mitigation Measures for the Proposed Project**

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

- ❖ Regular monitoring (once every 6 months) and analysing the quality of water in open well, bore wells and surface water

#### 4.4 AIR ENVIRONMENT

##### 4.4.1 Anticipated Impact from Proposed Project

- ❖ Emission of air pollutants such as particular matter (PM), gases such as sulphur dioxide, oxides of nitrogen at various stages of activities such as excavation, drilling and transportation of materials. The rate of emission and the incremental concentration of pollutants is estimated in the following sections before providing mitigation measures.

##### 4.4.1.1 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chaulya et al.,2001. The equations used for SPM, SO<sub>2</sub>, and NO<sub>x</sub> emission estimation have been given in Table 4.1

**Table 4.1 Empirical Formula for Emission Rate from Overall Mine**

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 <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); E = Emission rate(g/s).
Overall Mine	SO <sub>2</sub>	Area	$E = a^{0.14} \{u / (1.83 + 0.93u)\} [ \{p / (0.48 + 0.57p)\} + \{b / (14.37 + 1.15b)\} ]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); E = Emission rate(g/s).
Overall Mine	NO <sub>x</sub>	Area	$E = a^{0.25} \{u / (4.3 + 32.5u)\} [1.5p + \{b / (0.06 + 0.08b)\}]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm <sup>3</sup> /yr); a = Lease area(km <sup>2</sup> ); E = Emission rate(g/s).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. As the SPM emission calculation for overall mine is not

considering pollution control measures, one-third of the SPM value is taken for derivation of PM<sub>10</sub> keeping in mind that proper control measures are followed. It is important to note that PM<sub>10</sub> emission rate is derived from the SPM estimation in the background that PM<sub>10</sub> constitutes 52% of SPM emission. The PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission results have been given in Table 4.2.

**Table 4.2 Estimated Emission Rate**

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m <sup>2</sup>	Calculated Value (g/s/m <sup>2</sup> )
Overall Mine	PM <sub>2.5</sub>	0.015069740535	25000	6.0279E-07
Overall Mine	PM <sub>10</sub>	0.025139481071	25000	1.0056E-06
Overall Mine	SO <sub>2</sub>	0.013555835046	25000	5.4223E-07
Overall Mine	NO <sub>x</sub>	0.013137801154	25000	5.2551E-07

#### 4.4.1.2 Frame work of Computation & Model details

By using the above-mentioned inputs, Ground Level Concentrations (GLC) due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The model was used to predict the impact on the ambient air environment at each receptor at various localities within 5 km radius around the project site and the maximum incremental GLC at the project site. All the prediction models in Figures 4.1- 4.4 shows the maximum concentrations of PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub>, close to the proposed project site due to low to moderate wind speeds.

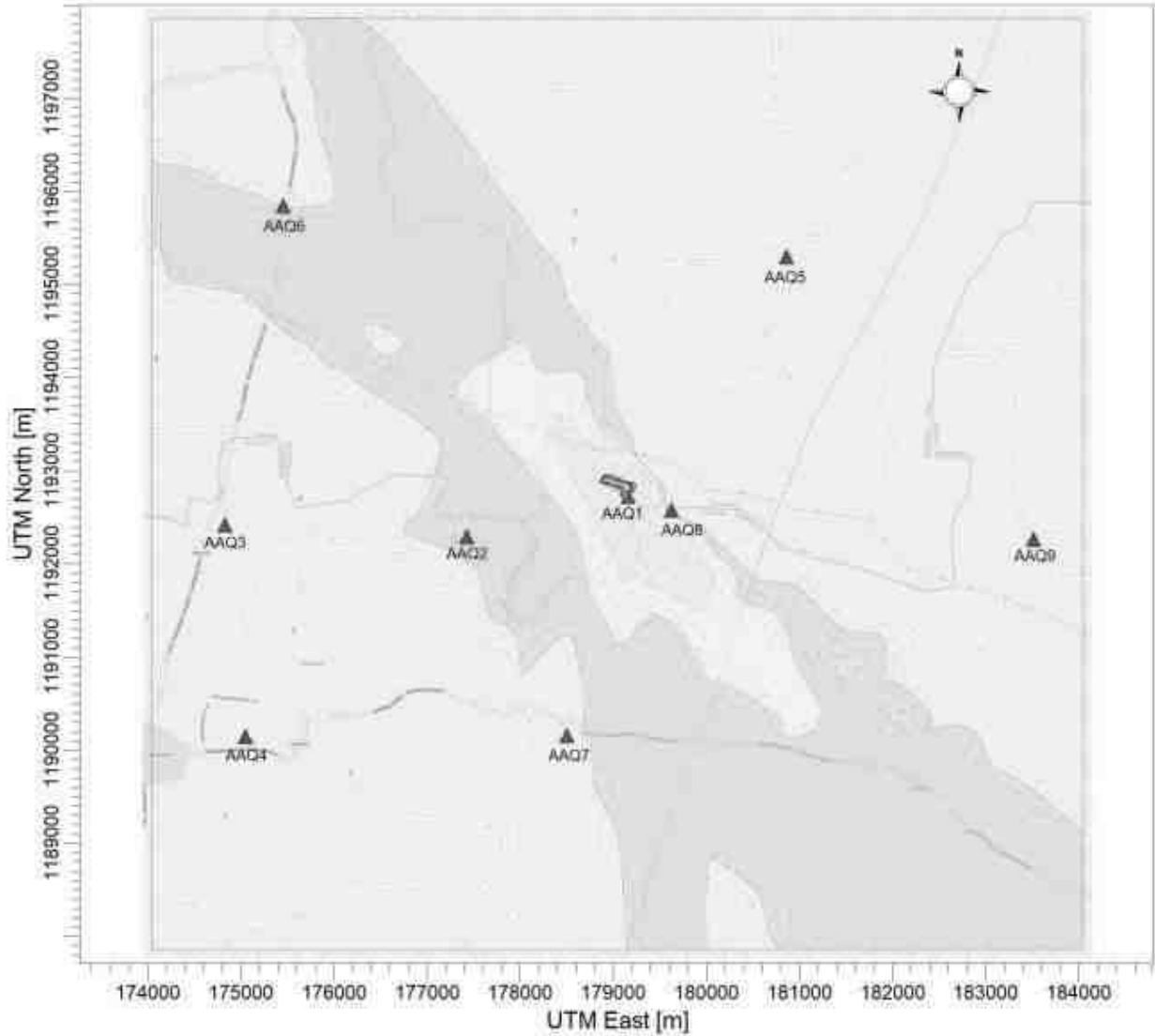
#### 4.4.1.3 Modelling of Incremental Concentration

The air borne particulate matter such as PM<sub>10</sub> and PM<sub>2.5</sub> generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions of sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) due to excavation and loading equipment and vehicles plying on haul roads are the significant air pollutants arising from mining operation, leading to an adverse impact on the ambient air environment in and around the project area. Anticipated incremental concentration and net increase in emissions due to quarrying activities is predicted by AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants.

#### 4.4.1.4 Model Results

The post project Resultant Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> & NO<sub>x</sub> (GLC) is given in the table shown below:

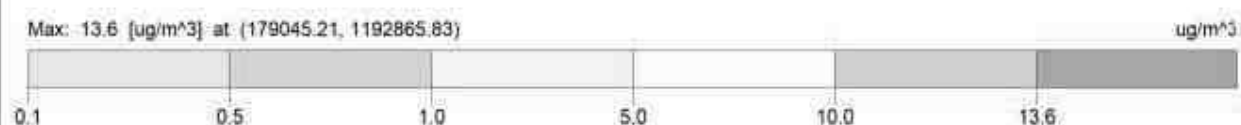
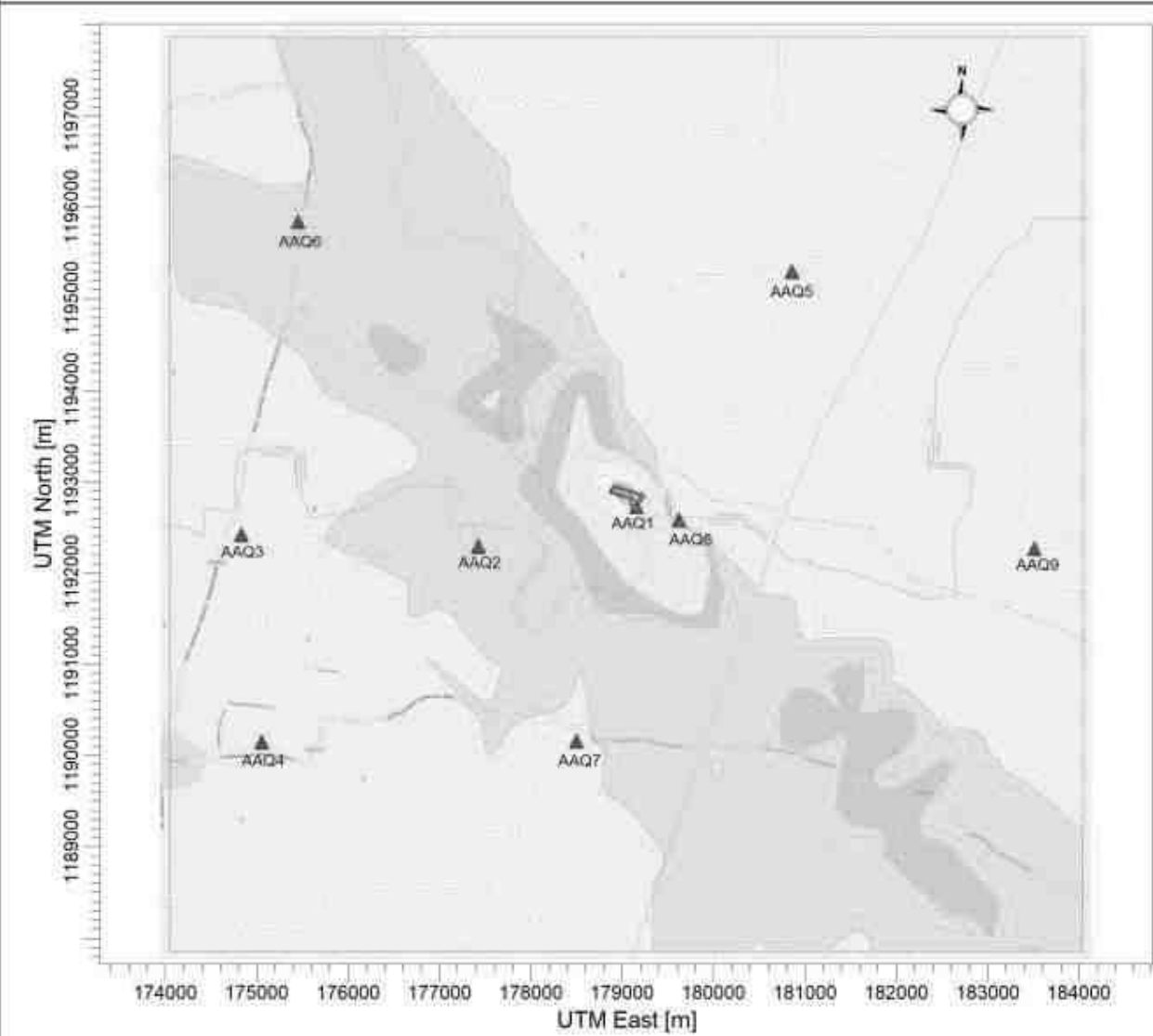
PROJECT TITLE:  
**M/S.DAHLIA GRANITES PRIVATE LIMITED-PM2.5**




COMMENTS:	SOURCES: <b>1</b>	COMPANY NAME:	
	RECEPTORS: <b>450</b>	MODELER:	
	OUTPUT TYPE: <b>Concentration</b>	SCALE: 1:72,547 	
	MAX: <b>6.20 ug/m<sup>3</sup></b>	DATE: <b>3/8/2023</b>	PROJECT NO.:

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

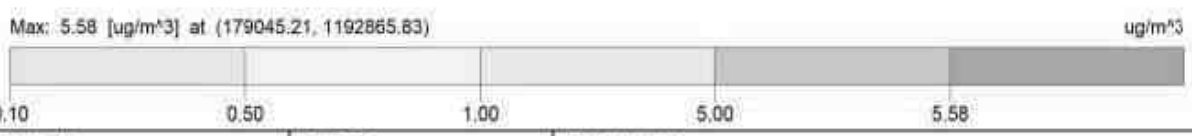
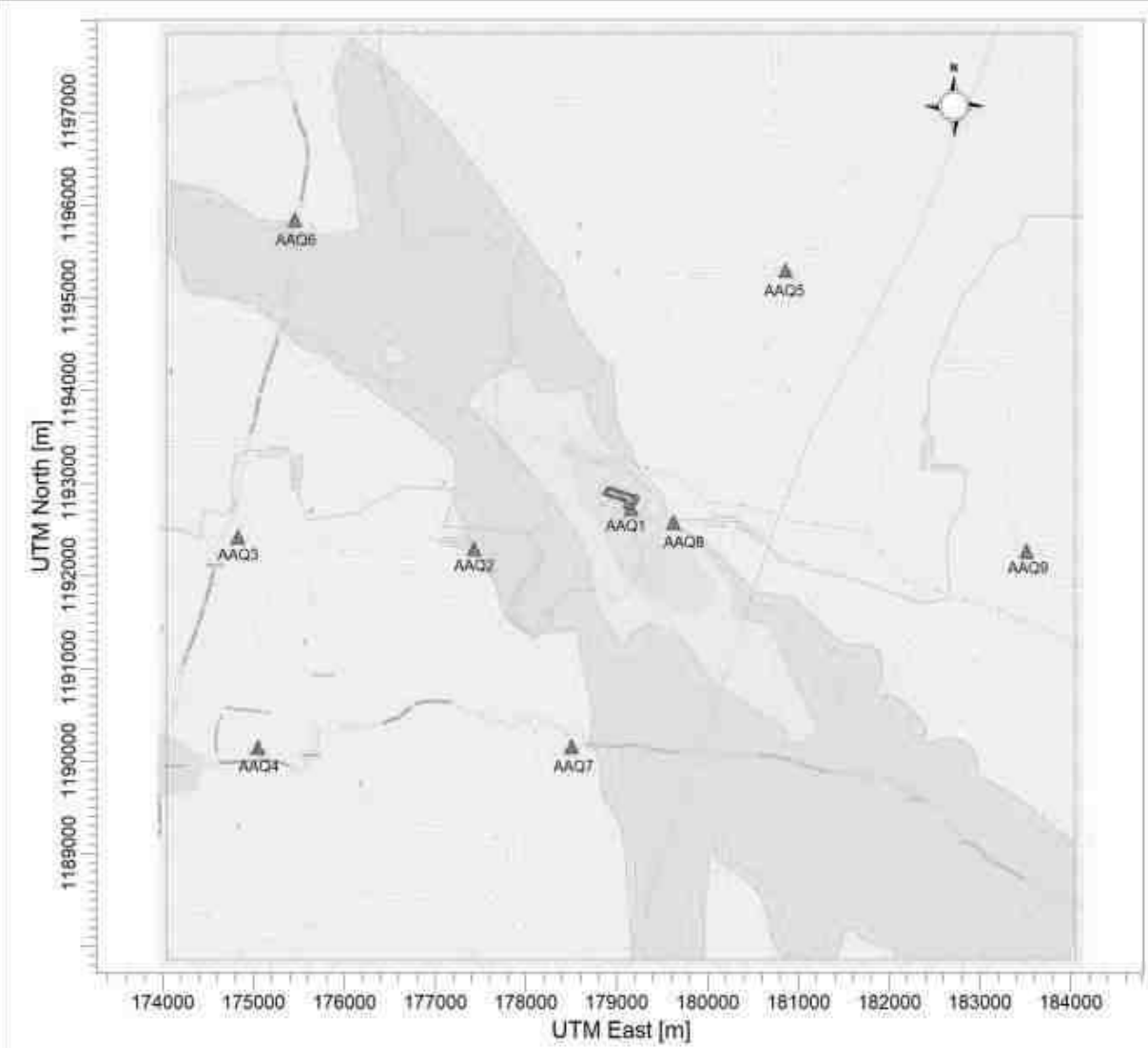
PROJECT TITLE:  
**M/S.DAHLIA GRANITES PRIVATE LIMITED-PM10**



COMMENTS:	SOURCES: <b>1</b>	COMPANY NAME:	
	RECEPTORS: <b>450</b>	MODELER:	
	OUTPUT TYPE: <b>Concentration</b>	SCALE: 1:72,547 	
	MAX: <b>13.6 ug/m³</b>	DATE: <b>3/8/2023</b>	PROJECT NO.:

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

PROJECT TITLE:  
**M/S.DAHLIA GRANITES PRIVATE LIMITED-SO2**



COMMENTS:	SOURCES: <b>1</b>	COMPANY NAME:	
	RECEPTORS: <b>450</b>	MODELER:	
	OUTPUT TYPE: <b>Concentration</b>	SCALE: 1:72,547 0  2 km	
	MAX: <b>5.58 ug/m<sup>3</sup></b>	DATE: <b>3/8/2023</b>	PROJECT NO.:

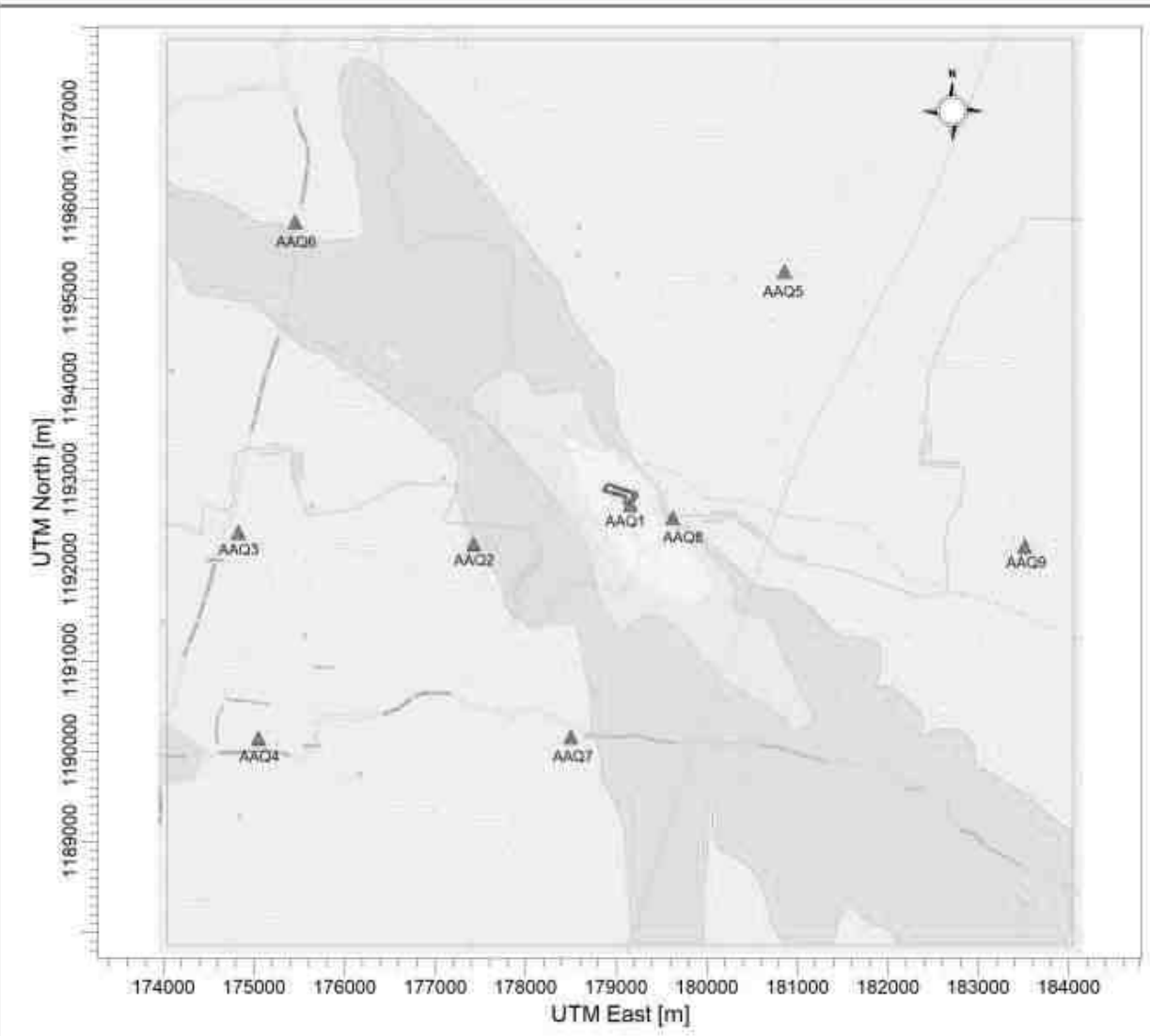
AERMOD View - Lakes Environmental Software.

C:\Users\USER\Desktop\Ghaliya granites\DAHLIA SO2\DAHLIA SO2.rtc

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



PROJECT TITLE  
**M/S.DAHLIA GRANITES PRIVATE LIMITED-NO<sub>x</sub>**



COMMENTS:	SOURCES:	COMPANY NAME:	
	1	MODELER:	
	RECEPTORS:	SCALE: 1:72,547	
	450	0  2 km	
OUTPUT TYPE:	DATE:		PROJECT NO.:
Concentration	3/8/2023		
MAX:	5.40 ug/m <sup>3</sup>		

AERMOD View - Lakes Environmental Software

C:\Users\USER\Desktop\ Dahlia granites\Nox\Nox.isc

**Figure 4.4 Predicted Incremental Concentration of NO<sub>x</sub>**

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

Station ID	Distance to core area (km)	Direction	PM <sub>2.5</sub> concentrations(µg/m <sup>3</sup> )			Comparison against air quality standard (60 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	20.7	6.20	26.9	Below standard	29.95	Not significant
AAQ2	1.56	SW	16.7	0.5	17.2		2.99	
AAQ3	4.06	W	16.8	0	16.8		0.00	
AAQ4	4.69	SW	15.8	0	15.8		0.00	
AAQ5	2.96	NE	17.6	0	17.6		0.00	
AAQ6	4.50	NW	14.8	0.5	15.3		3.38	
AAQ7	2.64	SSW	15.4	0	15.4		0.00	
AAQ8	0.48	SE	17.4	0.5	17.9		2.87	
AAQ9	4.34	ESE	16.1	0	16.1		0.00	

**Table 4.4 Incremental & Resultant GLC of PM<sub>10</sub>**

Station ID	Distance to core area (km)	Direction	PM <sub>10</sub> concentrations(µg/m <sup>3</sup> )			Comparison against air quality standard (100 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	38.6	13.6	52.2	Below standard	35.23	Not significant
AAQ2	1.56	SW	34.2	0.5	34.7		1.46	
AAQ3	4.06	W	35.9	0	35.9		0.00	
AAQ4	4.69	SW	34.3	0	34.3		0.00	
AAQ5	2.96	NE	38.2	0	38.2		0.00	
AAQ6	4.50	NW	31.2	0.5	31.7		1.60	
AAQ7	2.64	SSW	33.7	0	33.7		0.00	
AAQ8	0.48	SE	36.1	0.5	36.6		1.39	
AAQ9	4.34	ESE	34.4	0	34.4		0.00	

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

Station ID	Distance to core area (km)	Direction	SO <sub>2</sub> concentrations(µg/m <sup>3</sup> )			Comparison against air quality standard (80 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	9.0	5.58	14.58	Below standard	62.00	Not significant
AAQ2	1.56	SW	7.5	0.5	8		6.67	
AAQ3	4.06	W	7.4	0	7.4		0.00	
AAQ4	4.69	SW	6.6	0	6.6		0.00	
AAQ5	2.96	NE	8.5	0	8.5		0.00	
AAQ6	4.50	NW	5.6	0	5.6		0.00	
AAQ7	2.64	SSW	6.5	0	6.5		0.00	
AAQ8	0.48	SE	8.3	0.5	8.8		6.02	
AAQ9	4.34	ESE	7.7	0	7.7		0.00	

**Table 4.6 Incremental & Resultant GLC of NO<sub>x</sub>**

Station ID	Distance to core area (km)	Direction	NO <sub>x</sub> concentrations(µg/m <sup>3</sup> )			Comparison against air quality standard (80 µg/m <sup>3</sup> )	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	18.3	5.40	23.7	Below standard	29.51	Not significant
AAQ2	1.56	SW	16.7	0.5	17.2		2.99	
AAQ3	4.06	W	16.9	0	16.9		0.00	
AAQ4	4.69	SW	15.9	0	15.9		0.00	
AAQ5	2.96	NE	18.0	0	18		0.00	
AAQ6	4.50	NW	14.8	0.5	15.3		3.38	
AAQ7	2.64	SSW	15.0	0	15		0.00	
AAQ8	0.48	SE	16.9	0.5	17.4		2.96	
AAQ9	4.34	ESE	16.1	0	16.1		0.00	

From the resultant of cumulative concentration i.e., background + incremental, concentration of pollutants in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 60, 80 and 80 µg/m<sup>3</sup> for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>, respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

#### **4.4.2 Common Mitigation Measures**

##### ***Drilling***

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

### ***Haul Road & Transportation***

- ❖ Water will be sprinkled on haul roads, Loading Points 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 below 20 km/hr to avoid generation of dust.
- ❖ Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- ❖ The un-metalled haul roads will be compacted weekly before being put into use.
- ❖ Over loading of tippers will be avoided to prevent spillage.
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ❖ Grading of haul roads and service roads to clear accumulation of loose materials.

### ***Green Belt***

- ❖ Planting of trees all along main mine haul road and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- ❖ Green belt of adequate width will be developed around the project area

### ***Occupational Health***

- ❖ Dust mask will be provided to the workers and their use will be strictly monitored
- ❖ Annual medical check-ups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- ❖ Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

## **4.5 NOISE ENVIRONMENT**

Noise pollution is mainly due to operation like drilling & blasting (Occasionally) and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources.

Noise 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 model based on first principle.

$$Lp2 = Lp1 - 20 \log (r2/r1) - Ae1, 2$$

Where:

Lp<sub>1</sub>& Lp<sub>2</sub> are sound levels at points located at distances r<sub>1</sub>& r<sub>2</sub> from the source.

Ae<sub>1,2</sub> is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

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

#### 4.5.1 Anticipated Impact

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.7.

**Table 4.7 Activity and Noise Level Produced by Machinery**

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

\*50 feet from source = 15.24 meters

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

The total noise to be produced by mining activity is calculated to be 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**

<b>Noise Monitoring Location</b>	<b>Distance From Project Site (m)</b>	<b>Baseline Noise Level (dBA) m During Day Time</b>	<b>Predicted Noise Level (dBA)</b>	<b>Total (dBA)</b>
Core	100	42.2	39.38	44.03
R. Vellagoundanpatti	300	41.2	29.84	41.51
Papanayakanoor	1580	39.6	15.41	39.62
Kalapatti	4270	40.0	6.77	40.00
Edayapatti	4740	41.5	5.86	41.50
K.Pitchampatti	2980	42.4	9.90	42.40
Varikappatti	4470	39.8	6.37	39.80
Chatrapatti	2630	39.6	10.98	39.61
Thirumakkampatti	4370	38.7	6.57	38.70
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

The incremental noise level is found within the range of 39.38 dB (A) in core zone and 5.86 – 29.84dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000(The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986.).

#### **4.5.2 Mitigation measures for Control of Noise**

The following noise mitigation measures are proposed for control of Noise

- ❖ Usage of sharp drill bits while drilling which will help in reducing noise;
- ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;

- ❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- ❖ Silencers / mufflers will be installed in all machineries;
- ❖ Green Belt will be developed around the project areas 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 480kg per day, 129624 kg per year and 648123 kg over five years, as provided in Table 4.9.

**Table 4.9 Carbon Released During Five Years of Multi -Colour Granite Production**

	<b>Per day</b>	<b>Per year</b>	<b>Per five years</b>
Fuel consumption of excavator	33	8870	44351
Fuel consumption of compressor	13	3402	17010
Fuel consumption of tipper	134	36095	180476
Total fuel consumption in liters	179	48367	241837
Co <sub>2</sub> emission in kg	480	129624	648123

#### 4.6.2 Mitigation Measures on Flora

- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion

of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.

- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.

### ***Carbon Sequestration***

- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 24 kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.13), about 47 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 118 kg of the total carbon, as provided in Table 4.10.

**Table 4.10 CO<sub>2</sub> Sequestration**

CO <sub>2</sub> sequestration in kg	118	31768	158841
Remaining CO <sub>2</sub> not sequestered in kg	4	1140	5699
Trees required for environmental compensation	47		
Area required for environmental compensation in hectares	0		

### ***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.





**Figure 4.5 Green Belt Development Photos**

**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 <sup>2</sup> )
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	530	424	4770
	Number of plants outside the mine lease area		
	735	636	7155
<b>Total</b>	<b>1325</b>	<b>1060</b>	<b>11925</b>

**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)	530	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))"	106000	15900
Plantation outside the area	735	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	238500	23850
<b>Total</b>			<b>344500</b>	<b>39750</b>

Source: EMP budget

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased

anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

#### **4.6.3. Anticipated Impact on Fauna**

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

##### **4.6.3.1. Measures for Protection and Conservation of Wildlife Species**

- ❖ Undertaking mitigative measures for conducive environment to the flora and fauna in consultation with Forest Department.
- ❖ Dust suppression system will be installed within mine and periphery of mine for proposed project
- ❖ Plantation around mine area will help in creating habitats for small faunal species and to create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

##### **4.6.3.2. Mitigation Measures**

- ❖ All the preventive measures will be taken for growth & development of fauna.
- ❖ Creating and development awareness for nature and wildlife in the adjoin villages.
  - ❖ The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.

#### **4.6.4. Impact on Aquatic Biodiversity**

Mining activities will not disturb the existing aquatic ecology as there is no effluent discharge proposed from the Malt colour Granit quarry. There is no natural perennial surface water body within the mine lease area. Hence, aquatic biodiversity is not observed in the mine lease area.

#### **4.6.5. Impact Assessment on Biological Environment**

A detail of impact and assessments was mentioned in Table 4.14.

**Table 4.14 Ecological Impact Assessments**

<b>Sl. No</b>	<b>Attributes</b>	<b>Assessment</b>
1	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in mining lease site. The fauna sighted mostly migrated from buffer area.
2	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species sighted in core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	No
4	Proposed project restricts access to waterholes for wildlife	No
5	Proposed mining project impact surface water quality that also provide water to wildlife	No scheduled or threatened wildlife animal sighted regularly core in core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management such as drains is constructed properly so there will be no siltation affect in nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	No
8	The project release effluents into a water body that also supplies water to a wildlife	No water body near to core zone so chances of water become polluted is low.
9	Mining project effect the forest-based livelihood/ any specific forest product on which local livelihood depended	No
10	Project likely to affect migration routes	No migration route observed during monitoring period.
11	Project likely to affect flora of an area, which have medicinal value	No
12	Forestland is to be diverted, has carbon high sequestration	There was no forest land diverted.
13	The project likely to affect wetlands, Fish breeding grounds, marine ecology	Wetland was not present in near core Mining lease area. No breeding and nesting ground present in core mining area.

**Table 4.15 Anticipated Impact of Ecology and Biodiversity**

<b>S. No</b>	<b>Aspect Description</b>	<b>Likely Impacts on Ecology and Biodiversity (EB)</b>	<b>Impact Consequence - Probability Description / Justification</b>	<b>Significance</b>	<b>Mitigation Measures</b>
<b>Pre-Mining Phase</b>					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity (Direct impact)	Site possesses common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However, Greenbelt /plantation will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So, there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form Unique / critical habitat structure for unique flora or fauna.		
<b>Mining Phase</b>					
2	Excavation of mineral using machine and labours, Transportation activities will generate noise.	Site-specific disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM. Excavation of dump and transportation work should stop before 7PM.

3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO <sub>2</sub> , NO <sub>2</sub> , CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantation has been suggested Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.
---	--	--	---	-------------	--

**4.7 SOCIO ECONOMIC ENVIRONMENT**

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 the following tests

- ❖ 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
- ❖ 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.

#### **4.8.5 Post COVID Health Management Plan for Workers**

The following Health Management plan will be strictly implemented in the Mines, Mines officials like Mines Manager and Foreman will be Act as a Controller of Health Management of the workers.

- ❖ Temperature will be checked to all the workers while arriving to work on each day



- ❖ If any persons/employees have fever of 100.4 or higher, chills, shortness of breath will be sent to Hospital and the persons will be employed after fourteen days
- ❖ All the persons inside the mine area instructed to wear fabric or disposable pleated masks covering Nose and Mouth
- ❖ Social distancing of 6 feet will be maintained all the time
- ❖ Temporary Hand washing points will be installed near the working places, workers will be initiated to Wash hands frequently with soap and water for a minimum of 20 seconds and advised to avoid touching face. This is an essential contagion-control mechanism

#### 4.8.6 Plastic Waste Management

As per the Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated 25.06.2018 following kind of plastics will not be used in the mines area.

- ❖ Use and throw away plastics such as carry bags, plastic bags, plastic sheets used for food wrapping, spreading, plastic plates, plastic coated tea cups and plastic tumblers will not be used in the mines

**Table 4.16 Action Plan**

<b>Action Plan</b>	<b>Responsibility</b>
All the employees will be checked for plastics before entering the quarry.	Watchman
Every week or month a meeting of workers under the chairmanship of the mine manager will be held to explain the disadvantages of plastic use.	Mine Foreman & Mining Mate
They will be advised not to bring plastic materials into the mines and those who are involved in such activities will not be allowed to work on the day of the snow.	Mines Manager
The miners will be provided with areca nut plates and mugs to help reduce the use of plastics.	Mines owner

#### 4.9 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.

#### **4.9.1 Mine Closure criteria**

The criteria involved in mine closure are discussed below:

##### **4.9.1.1 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.

##### **4.9.1.2 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.

##### **4.9.1.3 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 II, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

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

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

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

The proposed mining lease areas have following advantages:

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

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

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

## CHAPTER VI

### ENVIRONMENTAL MONITORING PROGRAMME

#### 6.0 GENERAL

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

#### 6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

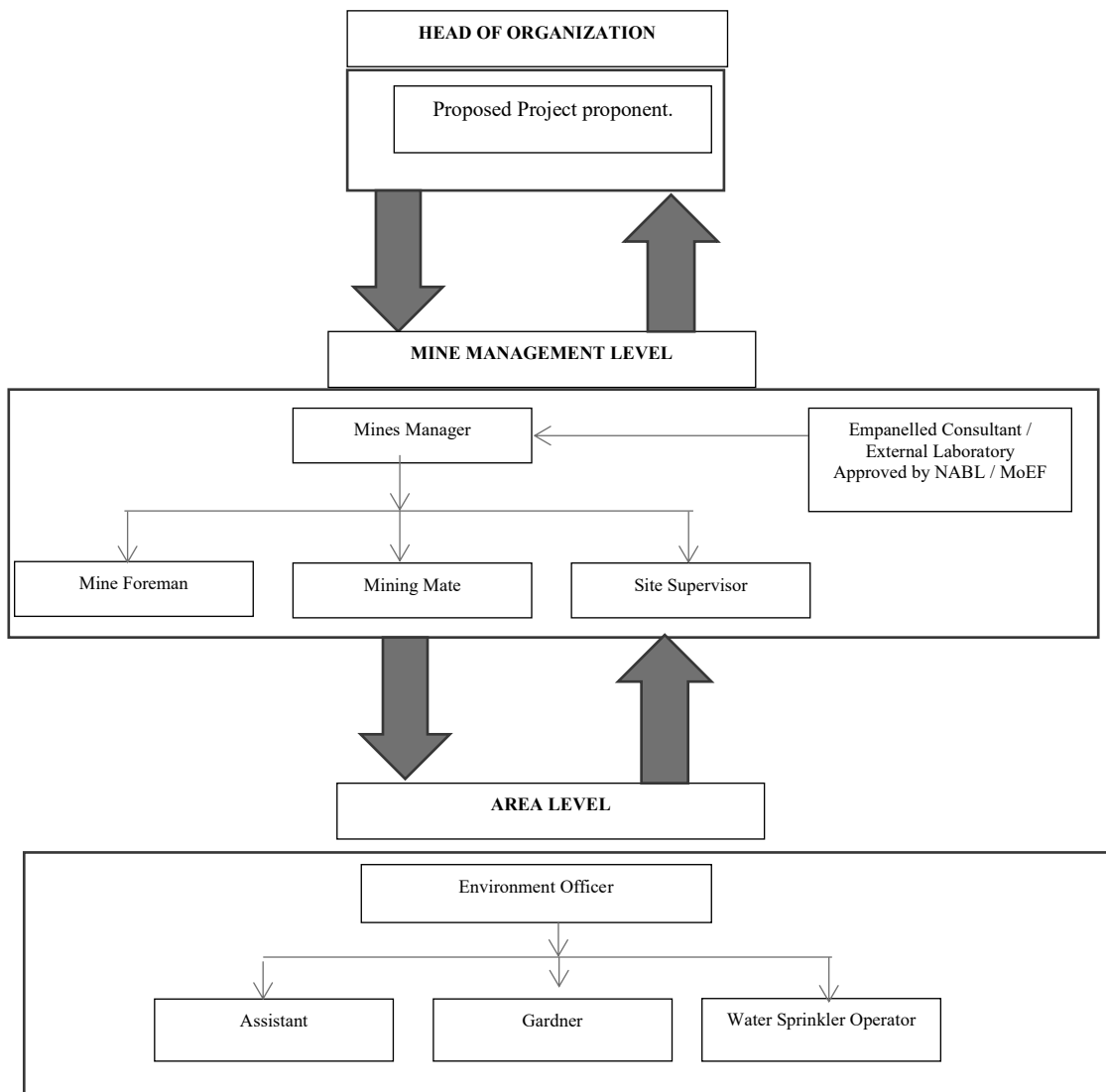
- ❖ Implementation of pollution control measures
- ❖ Monitoring programme implementation
- ❖ Post-plantation care
- ❖ To check the efficiency of pollution control measures taken
- ❖ Any other activity as may be related to environment

- ❖ Seeking expert's advice when needed.

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

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

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



**Figure 6.1 Proposed environmental monitoring chart**

## 6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

**Table 6.1 Implementation Schedule for Proposed Project**

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

## 6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

- ❖ Soil quality and
- ❖ Greenbelt development

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

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

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

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



#### 6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

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

**Table 6.3 Environment Monitoring Budget**

S. No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs 60,000/-
2	Meteorology	-	Rs 15,000/-
3	Water Quality	-	Rs 20,000/-
4	Water Level Monitoring		Rs 10,000/-
5	Soil Quality	-	Rs 20,000/-
6	Noise Quality	-	Rs 10,000/-
7	Vibration Study	-	Rs1,50,000/-
8	Greenbelt	-	Rs 10,000/-
<b>Total</b>		-	<b>Rs 2,95,000 /-</b>

Source: Field Data

#### 6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

## **CHAPTER - VII**

### **ADDITIONAL STUDIES**

#### **7.0 GENERAL**

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- ❖ Public Consultation
- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Open Pit Slope Stability Analysis
- ❖ CAG Action Plan

#### **7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT**

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

#### **7.2 RISK ASSESSMENT FOR PROPOSED PROJECT**

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31<sup>st</sup> December, 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. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below 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"> <li>▪ 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;</li> <li>▪ Entry of unauthorized persons will be prohibited;</li> <li>▪ Firefighting and first-aid provisions in the mine office complex and mining area;</li> <li>▪ 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</li> <li>▪ Working of quarry, as per approved plans and regularly updating the mine plans;</li> <li>▪ Cleaning of mine faces shall be daily done in order to avoid any overhang or undercut;</li> <li>▪ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager;</li> <li>▪ Maintenance and testing of all mining equipment as per manufacturer guidelines.</li> </ul>
2	OB / Waste Dump	Sliding of benches Height and slope of the benches Drainage facilities	<ul style="list-style-type: none"> <li>▪ Dumps benches are maintained with proper 3 m height and 37° slope to prevent slope failure and terraced.</li> <li>▪ Dumping in the waste dump in layers and dozing daily.</li> <li>▪ Vegetation of the top and slopes of the dump to prevent erosion and providing water drainage channels</li> <li>▪ Providing proper drainage facilities in mine and dump area.</li> </ul>

			<ul style="list-style-type: none"> <li>▪ Construction of retaining wall around dump area to stop sliding of material.</li> <li>▪ Garland drains to be made around OB dump area</li> </ul>
3	Drilling & Wire Saw Cutting	<p>Due to improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p>	<ul style="list-style-type: none"> <li>▪ Safe operating procedure established for drilling (SOP) will be strictly followed.</li> <li>▪ Only trained operators will be deployed.</li> <li>▪ 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,</li> <li>▪ Drill &amp; Wire saw operator shall examine the drilling and wire saw equipment and satisfy himself</li> <li>▪ Drilling &amp; cutting operations shall not be carried on simultaneously on the benches at places directly one above the other.</li> <li>▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment and wire saw equipment as per operator manual.</li> <li>▪ All drills and wire saw unit shall be provided with wet drilling and cutting arrangement and it shall be maintained in efficient working in condition.</li> <li>▪ Operator shall regularly use all the personal protective equipment.</li> </ul>

4	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	<ul style="list-style-type: none"> <li>▪ Before commencing work, drivers personally check the dumper/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.</li> <li>▪ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</li> <li>▪ Concave mirrors should be kept at all corners</li> <li>▪ All vehicles should be fitted with reverse horn with one spotter at every tipping point</li> <li>▪ Loading according to the vehicle capacity</li> <li>▪ Periodical maintenance of vehicles as per operator manual</li> </ul>
5	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> <li>▪ Escape Routes will be provided to prevent inundation of storm water</li> <li>▪ Garland drains will be provided at the toe of dump</li> <li>▪ Fire Extinguishers &amp; Sand Buckets</li> </ul>
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

### 7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

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.

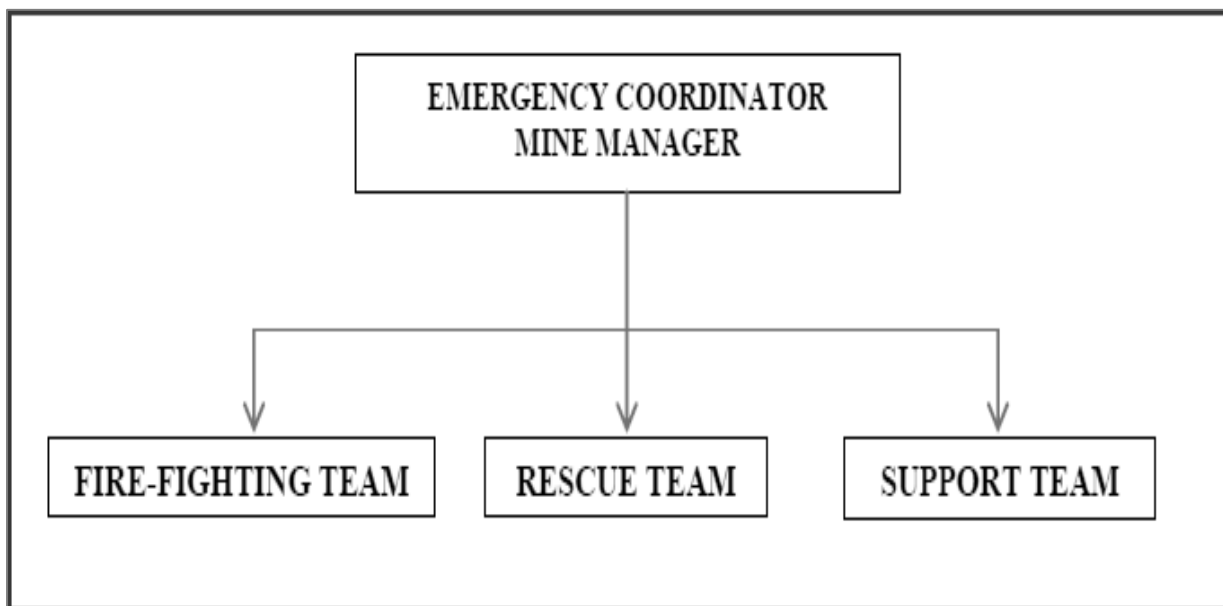
The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- ❖ Effect the 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

It is to optimize operational efficiency to rescue rehabilitation and render medical help and to restore normalcy. To tackle the consequences of a major emergency inside the mines or immediate vicinity of the mines, a disaster management plan must be formulated, and this planned emergency document is called “Disaster Management Plan”.

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 and the coordination among key personnel and their team has been shown in Fig 7.1.



**Figure 7.1 Disaster management team layout for Proposed Project**

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

**Table 7.2 Proposed Teams to Deal with Emergency Situation**

Designation	Qualification
<b>Fire-Fighting Team</b>	
Team Leader	Mines Manager
Team Member	Mines Foreman
Team Member	Mining Mate
<b>Rescue Team</b>	
Team Leader	Mines Manager
Team Member	Environment Officer
Team Member	Mining Foreman
<b>Support Team</b>	
Team Leader	Mines Manager
Assistant Team Leader	Environment Officer
Team Member	Mining Mate
Security Team	Mines Foreman

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

**7.3.1 Roles and responsibilities of emergency team**

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

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

(f) Emergency security controller

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

**7.3.2 Emergency control procedure**

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

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

**7.3.3 Proposed fire extinguishers at different locations**

The following type of fire extinguishers has been proposed at strategic locations within the mine.

Location	Type of Fire Extinguishers
Electrical Equipment's	CO <sub>2</sub> type, foam type, dry chemical powder type



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

### **Alarm system to be followed during disaster**

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes. The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster. In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- ❖ All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- ❖ Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- ❖ Entry of unauthorized persons into mine & allied areas is completely prohibited.
- ❖ Firefighting and first-aid provisions in the mines office complex and mining area are provided.
- ❖ Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- ❖ Training and refresher courses for all the employees working in hazardous premises.
- ❖ Working of mine, as per approved plans and regularly updating the mine plans.
- ❖ Cleaning of mine faces is regularly done.
- ❖ Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- ❖ Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- ❖ Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

## 7.4 CUMULATIVE IMPACT STUDY

The cumulative impact 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, one proposed project, known as P1. The details of P1 have been given in Table 1.2.

### 7.4.1 Air Environment

Calculation of the cumulative production load of granite from the proposed project within the cluster shows that the overall production of granite ROM per day is 17 m<sup>3</sup> giving rise to 3 truckloads per day.

#### 7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the proposed project on air environment of the cluster have been provided in Table 7.3. The cumulative values resulting from the one project for each pollutant do not exceed the permissible limits set by CPCB

**Table 7.3 Incremental and Resultant Ground Level Concentration from the 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	
PM <sub>2.5</sub>	20.7	6.2	26.9
PM <sub>10</sub>	38.6	13.6	52.2
SO <sub>2</sub>	9	5.58	14.5
NO <sub>2</sub>	18.3	5.4	23.7

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 7.4 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	300	SE	41.2	29.84	41.51	55
Cumulative Noise (dB(A))					41.51	

Source: Lab Monitoring Data

The cumulative analysis of noise due to one proposed project shows that habitation near P1 will receive about 41.51 dB (A), as shown in Table 7.4. 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

The one proposed project in the cluster shall create employment to 27 people and will spend Rs.1000000 towards CER as recommended by SEAC.

#### 7.4.4 Ecological Environment

**Table 7.5 Greenbelt Development Benefits**

<b>ID</b>	<b>No of Trees proposed to be planted</b>	<b>Area to be Covered(m<sup>2</sup>)</b>	<b>Name of the Species</b>	<b>No. of Trees expected to be grown @ 80% survival rate</b>
P1	1325	11925	Neem,	1060
<b>Total</b>	1325	11925	Pongamia, Teak, etc.,	1060

Cumulative studies show that the three proposed projects will plant about 1325 native tree species like Neem, Teak, etc both inside and outside the lease area. It is expected that 80 % of trees, i.e., 1060 trees will survive in this green belt development program.

#### 7.4.5 Traffic Density

Table 7.6 shows that the proposed project will add 6 truckloads per day, accounting for an increase of 18 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 7.6.

**Table 7.6 Action Plan to Manage Plastic Waste**

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

Source: Proposed by FAEs and EC

## **7.6 POST COVID HEALTH MANAGEMENT PLAN FOR PROPOSED PROJECT**

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

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

### 7.6.1 Post-COVID Follow up Protocol

- ❖ Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- ❖ Drink adequate amount of warm water (if not contra-indicated).
- ❖ Make sure your workplaces are clean and hygienic
- ❖ Surfaces (e.g., desks and tables) and objects (e.g., telephones, helmet) need to be wiped with disinfectant regularly
- ❖ Put sanitizing hand rub dispensers in prominent places around the workplace. Make sure these dispensers are regularly refilled
- ❖ Display posters promoting hand-washing
- ❖ Make sure that staff, contractors and customers have access to places where they can wash their hands with soap and water
- ❖ Display posters promoting respiratory hygiene.
- ❖ Brief your employees, contractors and customers that if COVID-19 starts spreading in your community anyone with even a mild cough or low-grade fever (37.3°C or more) need to stay at home. They should also stay home (or work from home) if they have had to take simple medications, such as paracetamol/acetaminophen, ibuprofen or aspirin, which may mask symptoms of infection
- ❖ Keep communicating and promoting the message that people need to stay at home even if they have just mild symptoms of COVID-19.
- ❖ Consider whether a face-to-face meeting or event is needed. Could it be replaced by a teleconference or online event?
- ❖ Could the meeting or event be scaled down so that fewer people attend?
- ❖ Pre-order sufficient supplies and materials, including tissues and hand sanitizer for all employees. Have surgical masks available to offer anyone who develops respiratory symptoms.
- ❖ It is also suggested by the Ministry of AYUSH that the use of Chyawanprash in the morning (1 teaspoonful) with Luke warm water/milk is highly recommended (under the direction of Registered Ayurveda physician) as in the clinical practice Chyawanprash is believed to be effective in post-recovery period.
- ❖ If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.

- ❖ Look for early warning signs like high grade fever, breathlessness, Sp O<sub>2</sub> < 95%, unexplained chest pain, new onset of confusion, focal weakness.
- ❖ Avoid smoking and consumption of alcohol.
- ❖ Communicate to your employees and contractors about the plan and make sure they are aware of what they need to do – or not do – under the plan. Emphasize key points such as the importance of staying away from work even if they have only mild symptoms or have had to take simple medications (e.g., paracetamol, ibuprofen) which may mask the symptoms
- ❖ The plan should address how to keep your business running even if a significant number of employees, contractors and suppliers cannot come to your place of business - either due to local restrictions on travel or due to illness.

## **CHAPTER VIII**

### **PROJECT BENEFITS**

#### **8.0 GENERAL**

The proposed project at K. Pitchampatti Village aims to produce **13819 m<sup>3</sup>** 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 14 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 K.Pitchampatti Village, Karur Taluk and Karur District of Tamil Nadu. The area has already well-established communications roads and other facilities. The following physical infrastructure facilities will further improve due to proposed project.

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

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

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

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

### **8.5 OTHER TANGIBLE BENEFITS**

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

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

### **8.6 CORPORATE SOCIAL RESPONSIBILITY**

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

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 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 K. Pitchampatti Village. CSR budget is allocated as 2.5% of the profit.



## 8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III dated 01.05.2018. As per para 6 (II) of the office memorandum, being a green field project & capital investment is  $\leq 100$  crores, the proposed project shall contribute 2% of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund on the basis of the extent of the project. Therefore, **Rs. 10,00,000** is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

**Table 8.1 CER Action Plan**

S. No.	Activity	Budget (Rs.in Lakh)
1	The applicant Indents to involve in corporate environment responsibilities (CER) activities such as renovation of existing toilet, plantation within the school premises, donating environment related books to the nearby school library, etc.	Rs.10,00,000
	<b>Total</b>	<b>Rs.10,00,000</b>

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

## 8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about Rs. 3, 94, 88,679 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.)
CER	10,00,000
Seigniorage @ Rs.2321/m <sup>3</sup> of Granite	3,20,73,899
District Mineral Foundation Tax @ 10% of Seigniorage	32,07,390
Green Tax @ 10% of Seigniorage	32,07,390
<b>Total</b>	<b>3,94,88,679</b>

## **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. Dahlia Granites Private Limited** will:

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

##### 10.1.1 Description of the Administration and Technical Setup

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

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

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

## 10.2 LAND ENVIRONMENT MANAGEMENT

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

**Table 10.1 Proposed Controls for Land Environment**

<b>Control</b>	<b>Responsibility</b>
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Refueling to be undertaken in a safe location away from vehicle movement pathways & 100 m away of any watercourse. Refueling activity to be under visual observation at all times. Drainage of refueling areas to sumps with oil/water separation.	Mine Foreman & Mining Mate
Soil and groundwater testing as required following up a particular incident of contamination.	Mines Manager
At conceptual stage, the mining pits will be converted into Rain Water Harvesting. Remaining area will be converted into greenbelt area.	Mines Manager
No external dumping i.e., outside the project area.	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

*Source: Proposed by FAEs & EIA Coordinator*

### 10.3 SOIL MANAGEMENT

#### 10.3.1 Top Soil Management

About 6222 m<sup>3</sup> of top soil will be removed and preserved all along the boundary barrier. The preserved soil will be used for the greenbelt development and bund construction. A detailed soil environment management plan has been provided in Table 10.2.

#### 10.3.2 Overburden / Waste and Side Burden Management

It is anticipating to remove 12324 m<sup>3</sup> of waste (Granite waste + Weathered rock) which will temporarily store at predetermined places as per mining plan.

**Table 10.2 Proposed Controls for Soil Management**

<b>Control</b>	<b>Responsibility</b>
backfilling process during mine closure as per mining plan	Mines Manager
The dump slopes will be planted with deep rooting shrubs, grasses and creepers for stabilizing them	Environment Officer
Garland drains are to be paved around the dump area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface dumps via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
The backfilled area shall be covered with the soil for green belt development	Environment Officer
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
The overall slope of the dump is maintained at angle of repose not exceeding 37° from horizontal	Mines Manager
The retaining wall has to be made to arrest the waste dump spills	Mines Manager
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

## 10.4 WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash and domestic sewage from mines office is anticipated. The quarrying operation is proposed up to a depth of 15 m. The water table in the area is at 60 m below ground level. Hence, the proposed project will not intersect the ground water table during entire quarry period. A detailed water environment management plan has been provided in Table 10.3.

**Table 10.3 Proposed Controls for Water Environment**

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

*Source: Proposed by FAEs & EIA Coordinator*

## 10.5 AIR QUALITY MANAGEMENT

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

**Table 10.4 Proposed Controls for Air Environment**

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

*Source: Proposed by FAEs & EIA Coordinator*

## 10.6 NOISE POLLUTION CONTROL

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

**Table 10.5 Proposed Controls for Noise Environment**

<b>Control</b>	<b>Responsibility</b>
Development of thick greenbelt all along the buffer zone (7.5 meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff/ ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager

Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

*Source: Proposed by FAEs & EIA Coordinator*

### **10.7 GROUND VIBRATION AND FLY ROCK CONTROL**

The multi-color granite quarry operation creates vibration due to the blasting and movement of heavy earth moving machineries, fly rocks due to the blasting. A detailed ground vibration management plan has been provided in Table 10.6.

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

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

*Source: Proposed by FAEs & EIA Coordinator*



## **10.8 BIOLOGICAL ENVIRONMENT MANAGEMENT**

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

- ❖ Greenbelt development all along the safety barrier of the project area.
- ❖ It is also proposed to implement the greenbelt development program and post plantation status will be regularly checked for every season.
- ❖ The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- ❖ Year wise greenbelt development will be recorded and monitored based on the area of plantation, period of plantation, type of plantation, spacing between the plants, type of manuring and fertilizers and its periods, lopping period, interval of watering, survival rate and density of plantation.
- ❖ The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

### **10.8.1 Green Belt Development Plan**

The main objectives of the greenbelt development plan are to:

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

**Table 10.7 Proposed Greenbelt Development Plan**

	<b>No. of trees proposed for plantation</b>	<b>No. of trees expected to survive @ 80%</b>	<b>Area to be covered(m<sup>2</sup>)</b>
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	530	424	4770
	Number of plants outside the mine lease area		
	795	636	7155
<b>Total</b>	<b>1325</b>	<b>1060</b>	<b>11925</b>

*Source: Proposed by FAEs & EIA Coordinator*

About 1325 saplings will be planted in and around the lease area with the survival rate of 80%. A well-planned green belt of trees with long canopy leaves shall be developed with dense plantations around the boundary and along the haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

## **10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT**

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

### **10.9.1 Medical Surveillance and Examinations**

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

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

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

❖ Detailed Routine Blood and Urine Examination.

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

**Table 10.8 Medical Examination Schedule**

S. No.	Activities	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups: Work force will be divided into three targeted groups age wise as follows:						
<b>Age Group</b>		<b>PME as per Mines Rules 1955</b>		<b>Special Examination</b>		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

**10.9.2 Proposed Occupational Health and Safety Measures**

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

- ❖ Noise exposure measurements will be taken to determine the need for noise control strategies.
- ❖ The personal protective equipment will be provided for mine workers.
- ❖ Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- ❖ At noisy working activity, exposure time will be minimized.
- ❖ Dust generating sources will be identified and proper control measure will be adopted.
- ❖ Periodic medical examinations will be provided for all workers.
- ❖ Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- ❖ The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- ❖ In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centers. All personal protective equipment's will be provided to them.
- ❖ A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- ❖ Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.



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

### 10.9.3 Health and Safety Training Program

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

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

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

stability, Dewatering, Haul Road maintenance.				<ul style="list-style-type: none"> <li>✓ Supervised practice in assigned work tasks.</li> </ul>
Refresher Training	All employees who received new-hire training	Yearly	One week	<ul style="list-style-type: none"> <li>✓ Required health and safety standards</li> <li>✓ Transportation controls</li> <li>✓ Communication systems</li> <li>✓ Escape ways, emergency evacuations</li> <li>✓ Fire warning</li> <li>✓ Ground control hazards</li> <li>✓ First aid on electrical hazards</li> <li>✓ Accident prevention</li> <li>✓ Explosives</li> <li>✓ Respirator devices</li> </ul>
Hazard Training	All employees exposed to mine hazards	Once	Variable	<ul style="list-style-type: none"> <li>✓ Hazard recognition and avoidance</li> <li>✓ Emergency evacuation procedures</li> <li>✓ Health standards</li> <li>✓ Safety rules</li> <li>✓ Respiratory devices</li> </ul>

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

#### **10.9.4 Budgetary Provision for Environmental Management**

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

**Table 10.10 EMP Budget for Proposed Project**

<b>Attribute</b>	<b>Mitigation measures</b>	<b>Provision for Implementation</b>	<b>Capital Cost (Rs.)</b>	<b>Recurring Cost/annum (Rs.)</b>
<b>Air Environment</b>	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	26500	26500
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed sprinkler installation and new water tanker cost for capital; and water sprinkling (thrice a day) cost for recurring	800000	50000
	Air quality will be regularly monitored as per norms within ML area & ambient area	Yearly compliance as per CPCB norms	0	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000

	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	100000	10000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the atmosphere	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of speed Governors @ Rs. 5000/- per tipper/dumper deployed	10000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of exhaust fumes	0	2500
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual)	0	20000



	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
<b>Noise Environment</b>	Source of noise will be transportation vehicles, and HEMM. For this, proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done.	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implementations that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0

	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for portable blaster shed	Installation of portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 tons of blasted material	0	0
<b>Water Environment</b>	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum	26500	13250

<b>Waste Management</b>	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
<b>Implementation of EC, Mining Plan &amp; DGMS Condition Occupational Health and Safety</b>	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed display board at the quarry entrance as permanent structure	10000	1000
	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	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	10600
	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	530000	26500
	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	132500	26500
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 <sup>st</sup> Class / 2 <sup>nd</sup> Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961	0	780000

		@ 40,000/- for Manager & @ 25,000/- for Foreman / Mate		
<b>Development of Green Belt</b>	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring))"	106000	15900
		Avenue plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	238500	23850
<b>Mine Closure Activity</b>	Closure includes Greenbelt development, wire fencing, drains	Provision made in closure cost	0	0
<b>Total EMP Budget</b>			<b>2258000</b>	<b>1181600</b>

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

<b>I<sup>st</sup> Year</b>	<b>II<sup>nd</sup> Year</b>	<b>III<sup>rd</sup> Year</b>	<b>IV<sup>th</sup> Year</b>	<b>V<sup>th</sup> Year</b>	<b>Total</b>
3439600	1240680	1302714	1367850	1436242	<b>8787086</b>

In order to implement the environmental protection measures, an amount of **Rs. 2258000** as capital cost and recurring cost as **Rs. 1181600** 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. 8787086**, as shown in Table 10.11.

#### **10.10 CONCLUSION**

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

## **CHAPTER XI**

### **SUMMARY AND CONCLUSION**

#### **11.0 INTRODUCTION**

This EIA report was prepared in compliance with ToR obtained vide Lr.No. SEIAA-TN/F.No.9654/SEAC/ToR-1394/2022 dated 16.02.2023 by considering one proposed quarry and four existing quarries in a cluster with the total extent of 12.02.5 hectares in K. Pitchampatti Village, Karur Taluk, Karur District and Tamil Nadu state. Cluster area was calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016. Baseline monitoring studies were carried out during the period of Oct–Dec, 2022.

#### **11.1 PROJECT DESCRIPTION**

The proposed project deals with excavation of multi colour granite which is primarily used as flooring stone in construction projects. The method adopted for granite excavation is a mechanized open cast mining method involving formation of benches with 5 m height and 5 m width. The proposed project area is located between latitudes from 10°46'32.82782"N to 10°46'40.35742"N and longitudes from 78°03'49.61142"E to 78°04'0.85412"E in K. Pitchampatti Village, Karur Taluk, Karur District and Tamil Nadu. The project site is a patta land with the extent of 2.65.0 ha leased for the project proponent, M/s. Dahlia Granites Private Limited. The proponent had applied for quarry lease on 18.03.2021 to extract granite and obtained the precise area communication letter issued by Industries (MME.2) Department, Secretariat Chennai Rc.no.2934330/MMB.2/2022-1, dated.10.10.2022. 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.5764/MM2/2021, dated:22.11.2022).

According to the approved mining plan, about 13819 m<sup>3</sup> of granite will be mined up to the depth of 15 m BGL in the first five years. Of the total quantity, 12324 m<sup>3</sup> of granite is marketable and the rest is stockpiled as wastes. To achieve the estimated production, 4 jack hammers, 2 compressors, 2 diesel generators, 2 diamond wire saws, 1 crawler crane, 1 excavator, and 2 tippers will be deployed. To operate the machineries and to extract the granite, about 27 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 101 m\* 61 m\* 25 m and about 2.65.0 ha of land would have been utilized for quarrying, 0.21.7 ha of land for waste dump, 0.02.0 ha for infrastructures, 0.07.0 ha for roads, 0.70.0 ha for green belt development, and the remaining 1.25.0 ha would have been left as unutilized area.

## 11.2 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring studies were carried out during December 2022 through February 2023 to assess the existing environmental conditions in the study area. For the purpose of the EIA studies, project area was considered as the core zone and area outside the project area up to 5 km radius from the periphery of the project site was considered as buffer zone. Baseline Environmental data has been collected for land, water, noise, ecology, socio-economy, and traffic.

### 11.2.1 Land Environment

Land Use and Land Cover (LULC) map was prepared using Sentinel II image for the study area of 5 km radius. Totally, 7 LULCs were mapped. Of the total area, mining area covers only 16.97 ha accounting for 0.22, of which lease area of 2.56.0 ha contributes only about 0.033%. The applied lease area exhibits flat topography 0-2m. The highest elevation observed in Western of the lease area is 205 m AMSL, whereas the lowest elevation in east is 203m AMSL.

#### 11.2.1.1 Soil Characteristics

##### *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 6.4 to 7.5 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 426 to 1188  $\mu\text{s}/\text{cm}$ . Bulk density ranges between 1.4 and 5.7  $\text{g}/\text{cm}^3$ .

##### *Chemical Characteristics*

Nitrogen ranges between 0.87 and 1.7 %. Phosphate ranges between 0.63 and 2.6 %. Potassium ranges between 0.104 and 0.253 % Chloride ranges between 189 and 473 mg/kg. Organic matter content ranges between 1.5 and 4.2 %.

### 11.2.2 Water Environment

#### *Surface Water*

K. Pichampatti pond is the prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. Surface water sample, known as SW01, was collected from K. Pichampatti pond to assess the baseline water quality. Table 3.6 summarizes surface water quality data of the samples.

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



## ***Ground Water***

Seven groundwater samples, known as OW01, OW02, BW01, BW02, BW03, BW04 and BW05 were collected from open well and bore well and analyzed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Results for ground water samples indicate that all the physical, chemical and biological parameters and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

### **11.2.3 AIR ENVIRONMENT**

#### ***Site Specific Meteorology***

Site specific meteorology during the study period was recorded by an automated weather station. According to the onsite data, the temperature in December, 2022 varied from 17.48 to 29.5<sup>0</sup>C with the average of 23.73<sup>0</sup> C; in January, 2023 from 14.19 to 32.55<sup>0</sup>C with the average of 22.83<sup>0</sup> C; and in February, 2023 from 15.73 to 36.54<sup>0</sup>C with the average of 25.22<sup>0</sup>C. In December, 2022, relative humidity ranged from 54.44 to 100 % with the average of 85.93%; in January, 2023, from 36.62 to 100 % with the average of 77.69 %; and in February, 2023, from 14.25 to 100 % with the average of 62.36 %. The wind speed in December, 2022 varied from 0.18 to 7.93 m/s with the average of 2.76 m/s; in January, 2023 from 1.11 to 5.78 m/s with the average of 2.79 m/s; and in February, 2023 from 0.44 to 6.46 m/s with the average of 3.0 m/s. In December, 2022, wind direction varied from 0.21 to 358.75 with the average of 106.57<sup>0</sup>; in January, 2023, from 0.29 to 359.63<sup>0</sup> with the average of 70.45<sup>0</sup>; and in February, 2023, from 0.37 to 358.92<sup>0</sup> with the average of 93.89<sup>0</sup>. In December, 2022, surface pressure varied from 97.89 to 99.43 kPa with the average of 98.60 kPa; in January, 2023, from 98.14 to 99.32 kPa with the average of 98.79 kPa; and in February, 2023, from 98.23 to 99.34 kPa with the average of 98.73 kPa

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

As per the monitoring data, PM<sub>2.5</sub> ranges from 14.6 µg/m<sup>3</sup> to 19.0 µg/m<sup>3</sup>; PM<sub>10</sub> from 32.3 µg/m<sup>3</sup> to 37.7 µg/m<sup>3</sup>; SO<sub>2</sub> from 5.7 µg/m<sup>3</sup> to 9.2 µg/m<sup>3</sup>; NO<sub>x</sub> from 12.7 µg/m<sup>3</sup> to 19.4g/m<sup>3</sup>. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

#### 11.2.4 NOISE ENVIRONMENT

Noise level in core zone was 42.2 dB (A) Leq during day time and 38.2 dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 38.7 to 42.4 dB (A) Leq and during night time from 34.3 to 38.2 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

#### 11.2.5 BIOLOGICAL ENVIRONMENT

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.

#### 11.2.6 SOCIO-ECONOMIC ENVIRONMENT

The socio-economic study in the study area gives a clear picture of its population, average household size, literacy rate and sex ratio etc. The study area covers 7 villages including Mookanankurichi, Paganatham, K. Pitchampatti, Vellianai (south), Venjamangudalur (East), Venjamangudalur (West) and Gudalur (West). As K. Pitchampatti is the village in which the proposed project site is located, As K. Pitchampatti is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 11.1.

**Table 11.1 K. Pitchampatti village Population Facts**

<b>K. Pitchampatti village</b>	
Number of Households	1093
Population	3,808
Male Population	1,889
Female Population	1,919
Children Population	301
Sex-ratio	4109
Literacy	66.84%
Male Literacy	79.76%
Female Literacy	54.27%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	823%
Total Workers	2,408
Main Worker	2,354
Marginal Worker	54

It is 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 the social standards will improve.

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

The summary of anticipated adverse environmental impacts due to the proposed project and mitigation measures are given in Table 11.2:

**Table 11.2 Anticipated Impacts & Mitigation Measures**

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

<ul style="list-style-type: none"> <li>❖ Disturbance to land drainage, overload and erosion of watercourses;</li> <li>❖ Changes to the surface over which water flows;</li> <li>❖ Changes to surface and groundwater resources quantity and quality due to stream blockage and contamination by particulate matter or waste;</li> <li>❖ Contamination of aquifers due to removal of the natural filter medium.</li> </ul>	<p>due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area</p> <ul style="list-style-type: none"> <li>❖ De-silting will be carried out before and immediately after the monsoon season and the settling tank and drains will be cleaned weekly, especially during monsoons</li> <li>❖ Domestic sewage from site office &amp; urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system.</li> <li>❖ Tippers &amp; HEMM will be washed in a designated area and the washed water will be routed through drains to a settling tank, which has an oil &amp; grease trap, only clear water will be reused for greenbelt development.</li> </ul>
---	---

**Air Environment**

<ul style="list-style-type: none"> <li>❖ Generation of Fugitive Dust</li> <li>❖ Dust will be generated mainly during excavation, loading &amp; unloading activities.</li> <li>❖ Gaseous pollutants will be generated mostly by the traffic.</li> <li>❖ Reduction in visibility due to dust plumes.</li> <li>❖ Coating of surfaces leading to annoyance and loss of amenity.</li> <li>❖ Physical and/or chemical contamination and corrosion.</li> <li>❖ Increase in the concentration of suspended particles in runoff water.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Haul roads will be well maintained by sprinkling water twice a day</li> <li>❖ The access road will be cleaned and brushed to ensure that mud and dust deposits do not accumulate.</li> <li>❖ To ensure that dust and debris is minimised on the access road, all the tipper drivers will be instructed to use water spray system on all the tyres and spray water on the loaded material that is provided at the compound area before leaving the site</li> <li>❖ Speed restrictions will be imposed to avoid spillage of loaded materials upon the road and to reduce wear and tear of the road.</li> <li>❖ Weekly inspections of the condition of the access road by competent person employed, and</li> </ul>
--	---

<ul style="list-style-type: none"> <li>❖ Coating of vegetation leading to reduced photosynthesis,</li> <li>❖ Inhibited growth, destroying of foliage, degradation of crops;</li> <li>❖ Increase in health hazards due to inhalation of dust.</li> </ul>	<p>immediate action will be taken to address any potholes or damage to the road surface.</p> <ul style="list-style-type: none"> <li>❖ Dust wetting agents can be mixed with the water applied to haul roads during hot, dry weather conditions to increase the duration that the road surface remains damp.</li> <li>❖ Personal Protective Equipment's will be provided to all workers</li> <li>❖ All drilling rods used will have dust suppression systems fitted which injects water into the hole.</li> <li>❖ Wet gunny bags will be used as a cover while drilling.</li> <li>❖ The blast zone will be kept damp by the application of water from the rain gun fitted to the water tanker prior to each blast to control any fugitive dust emissions that could arise from the surface during detonation.</li> <li>❖ A daily visual inspection shall be conducted by the site manager who will keep a daily log of all process operations and site activities and note any malfunctions which could lead to abnormal emissions from the quarry operations.</li> <li>❖ A site speed limit of 20 km/h will be set to minimise the potential for dust generation</li> <li>❖ Weekly maintenance programme to identify machinery due for maintenance, based on the number of hours it has been in operation.</li> <li>❖ Air filters are renewed after every 10<sup>00</sup> hours of use, unless otherwise indicated by an on-board computer system.</li> <li>❖ All site machineries &amp; tippers will be serviced and maintained 6 months once and drivers will report</li> </ul>
---	---

	any defects immediately to the site manager to enable repairs to be carried out promptly.
<b>Noise &amp; Vibration</b>	
<ul style="list-style-type: none"> <li>❖ Annoyance and deterioration of the quality of life;</li> <li>❖ Propelling of rocks fragments by blasting.</li> <li>❖ Shaking of buildings and people due to blasting;</li> </ul>	<ul style="list-style-type: none"> <li>❖ Usage of sharp drill bits while drilling which will help in reducing noise;</li> <li>❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;</li> <li>❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;</li> <li>❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;</li> <li>❖ Silencers / mufflers will be installed in all machineries;</li> <li>❖ Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;</li> <li>❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness.</li> </ul>
<b>Biological Environment</b>	
<ul style="list-style-type: none"> <li>❖ Direct impacts include land clearance and excavation causing destruction of flora and fauna and loss of habitats;</li> <li>❖ Indirect impacts include habitat degradation due to noise, dust, and human activity.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Only some common herbs, shrubs and grass will be cleared. So, there will be no impact on the biodiversity.</li> <li>❖ Green belt development with suitable species will enhance the biodiversity of the project area.</li> <li>❖ The core zone or buffer zone does not encompass any threatened flora or fauna species.</li> </ul>
<b>Socio-Economic Environment</b>	

<ul style="list-style-type: none"> <li>❖ Health and safety of workers and the general public;</li> <li>❖ Increase in traffic volumes and sizes of road vehicles;</li> <li>❖ Economic issues, including the increase in employment opportunities;</li> </ul>	<ul style="list-style-type: none"> <li>❖ The mining activity puts negligible change in the socio-economic profile.</li> <li>❖ Around 27 local workers will get employment opportunities along with periodical training to generate local skills.</li> <li>❖ New patterns of indirect employment/ income will generate.</li> <li>❖ Regular health check-up camp.</li> <li>❖ Assistance to schools and scholarship to children will be provided.</li> </ul>
<b>Occupational Health &amp; Safety</b>	
<ul style="list-style-type: none"> <li>❖ Exposure to Dust</li> <li>❖ Noise and Vibration Exposure</li> <li>❖ Physical Hazards</li> <li>❖ Respiratory hazards due to Dust exposure</li> </ul>	<ul style="list-style-type: none"> <li>❖ Provision of rest shelters for mine workers with amenities like drinking water etc.</li> <li>❖ All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc.</li> <li>❖ Training of employees for use of safety appliances and first aid in vocational training centre.</li> <li>❖ Weekly maintenance and testing of all equipment as per manufacturers' guidelines.</li> <li>❖ Pre placement and Yearly Medical Examination of all workers by a medical Officer</li> <li>❖ First Aid facility will be provided at the mine site.</li> <li>❖ Close surveillance of the factors in working environment and work practices which may affect environment and worker's health by the mine's manager employed.</li> <li>❖ Working of mine as per approved mining plan and environmental plans</li> </ul>

#### 11.4 ANALYSIS OF ALTERNATIVES

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

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

### **11.5 ENVIRONMENTAL MONITORING PROGRAM**

Environmental Monitoring program will be conducted for various environmental components such as air quality, meteorology, water quality, water level monitoring, soil quality, noise level, vibration, and greenbelt as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB. For this environmental monitoring program, Rs **2,95,000** /- per annum will spent by the project proponent. The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the cluster mine management coordinator and Respective Head of Organization and submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

### **11.6 ADDITIONAL STUDIES**

#### ***Public Consultation***

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

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

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31<sup>st</sup> December, and 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess



the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures set to time table are recorded along with pinpointed responsibilities.

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

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

### ***Cumulative Studies***

- The results on the cumulative impact of the proposed project 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 daytime.
- The proposed project will allocate Rs. 1000000/- towards CER as recommended by SEAC.
- The proposed project will directly provide jobs to 27 local people, in addition to indirect jobs.
- The proposed project will plant about 1325 trees in and around the lease area.
- The proposed project will add traffic of 18 PCU per day to the nearby roads.

### **11.7 PROJECT BENEFITS FOR PROPOSED PROJECT**

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

- ❖ Direct employment to 27 local people
- ❖ Rain water harvesting structures to augment the water availability for irrigation and plantation and ground water recharge
- ❖ Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,

- ❖ Strengthening of existing community facilities through the Community Development Programme
- ❖ Skill development & capacity building like vocational training
- ❖ Awareness program and community activities, like health camps, medical aids, sports & cultural activities, plantation etc.,
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups etc., will be taken up in the village of the proposed project. CSR budget is allocated as 2.5% of the profit.
- ❖ Rs. 10, 00,000 will be allocated for CER.

### **11.8 ENVIRONMENT MANAGEMENT PLAN**

In order to implement the environmental protection measures, an amount of **Rs. 2258000** as capital cost and recurring cost as **Rs. 1181600** 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. 8787086**

### **11.9 CONCLUSION**

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

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

The Mines Management will be responsible for the project review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

## CHAPTER XII

### DISCLOSURES OF CONSULTANT

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

**Address of the consultancy:**

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

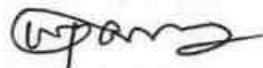
The accredited experts and associated members who were engaged in this EIA study are given below:

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

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

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

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

Signature : 

Date : 14.03.2023

Name : **Dr. S. Karuppannan**




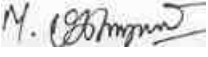

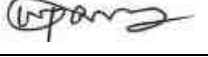



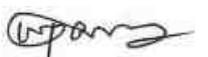

Designation : EIA Coordinator



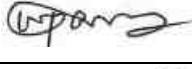




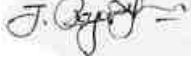

Name of the EIA Consultant Organization : Geo Technical Mining Solutions


Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for **M/s. Dahlia Granites Private Limited** multi colour granite project with the extent of 2.65.0 ha situated in the cluster with the extent of 12.02.5 ha in K. Pitchampatti Village of Karur Taluk, Karur District of Tamil Nadu is true and correct to the best of our knowledge.







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

S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	○ Identification of different sources of air pollution due to the proposed mine activity	J.N. Manikandan	
		○ Prediction of air pollution and propose mitigation measures / control measures	P.Venkatesh	
2	WP	○ Suggesting water treatment systems, drainage facilities ○ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.	Dr.S. Malar	
3	HG	○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics	Dr.M. Vijay Prabhu	
			G. Uma Maheswaran	
			Dr.S. Karuppannan	
4	GEO	○ Field Survey for assessing the regional and local geology of the area. ○ Preparation of mineral and geological maps. ○ Geology and Geo morphological analysis/description and Stratigraphy/Lithology.	G.Gopala Krishnan	
			G.Uma Maheswaran	
			Dr.M. Vijay Prabhu	
			Dr.S. Karuppannan	
5	SE	○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive Management Plan ○ Corporate Environment Responsibility.	Dr. G. Prabhakaran	

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

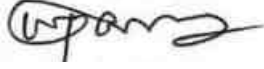
12	SHW	<ul style="list-style-type: none"> <li>○ Identify source of generation of non-hazardous solid waste and hazardous waste.</li> <li>○ Suggesting measures for minimization of generation of waste and how it can be reused or recycled.</li> </ul>	J.N. Manikandan	
----	-----	--	-----------------	---

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

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

**DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT**  
**ORGANIZATION**

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for **M/s. Dahlia Granites Private Limited** multi colour granite project with the extent of 2.65.0 ha located within the cluster of 12.02.5 ha in K.Pitchampatti Village of Karur Taluk, Karur District of Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date : 14.03.2023

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

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

Validity : Till 31.12.2023





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

STATE LEVEL ENVIRONMENT IMPACT  
ASSESSMENT AUTHORITY-TAMILNADU  
3<sup>rd</sup> Floor, Panagal Maaligai,  
No.1, Jeenis Road, Saidapet,  
Chennai - 600 015.  
Phone No. 044-24359973  
Fax No. 044-24359975

**TERMS OF REFERENCE (ToR)**

**Lr No.SEIAA-TN/F.No.9654/SEAC/ToR-1349/2022 Dated:16.02.2023.**

To

M/s. Dahlia Granites Private Limited,  
S.F.No.468/1A, R.Vellagoundanpatti,  
K.Pitchampatti-Post,  
Karur District - 639 118.

Sir / Madam,

**Sub:** SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Multi-colour Granite quarry lease over an extent of 2.65.0 Ha in SF. No. 417/2, 454/2, 417/5, 417/7(P) of K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu by M/s. Dahlia Granites Private Limited - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No. SIA/TN/MIN/410301/2022, dated 12.12.2022.
  2. Your application submitted for Terms of Reference dated: 20.12.2022.
  4. Minutes of the 347<sup>th</sup> SEAC meeting held on 13.01.2023.
  5. Minutes of the 592<sup>nd</sup> SEIAA meeting held on 16.02.2023.

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

The proponent, M/s. Dahlia Granites Private Limited has submitted application for Terms of Reference (ToR) in Form-I, Pre- Feasibility report for the Proposed Multi-colour Granite quarry lease over an extent of 2.65.0 Ha in SF. No. 417/2, 454/2, 417/5, 417/7(P) of K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu.

  
MEMBER SECRETARY  
SEIAA-TN

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

**Proposed Multi-colour Granite quarry lease over an extent of 2.65.0 Ha in SF. No. 417/2, 454/2, 417/5, 417/7(P) of K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu by M/s. Dahlia Granites Private Limited - For Terms of Reference.**

**(SIA/TN/MIN/410301/2022, Dated : 12.12.2022)**

The proposal was placed in 347<sup>th</sup> SEAC meeting held on 13.01.2023. 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. Dahlia Granites Private Limited has applied for Terms of Reference for the proposed Multi-colour Granite quarry lease over an extent of 2.65.0 Ha in S.F.Nos. 417/2, 417/5, 417/7 (P) & 454/2 of K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. As per the mining plan the lease period is 20 years. The mining plan is for the period of five years & The production should not exceed 32365 m<sup>3</sup> (ROM) of Multi-colour Granite , 13819 m<sup>3</sup> of Multi-Colour Granite @ 60% Recovery , 9213 m<sup>3</sup> of Granite Waste @ 40% , 3111 m<sup>3</sup> of weathered Rock & 6222 m<sup>3</sup> of Topsoil With an ultimate depth of mining is 15 m BGL . The annual peak production is 8070 m<sup>3</sup> (ROM) of Multi-colour Granite (1<sup>st</sup> Year), 2822 m<sup>3</sup> of Multi-Colour Granite (1<sup>st</sup> Year) @ 60% Recovery , 1882 m<sup>3</sup> of Granite Waste (1<sup>st</sup> Year) @ 40% , 1122 m<sup>3</sup> of weathered Rock (1<sup>st</sup> Year) & 2244 m<sup>3</sup> of Topsoil (1<sup>st</sup> year).

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

1. The proponent is requested to carry out a survey and enumerate on the structures located within 50m, 100m, 150m, 200m, 250m, 300m and 500m from the boundary of the mine lease area.
2. The proponent shall discuss the funds for mitigation measures to be included in the EMP.
3. The proponent shall adhere to the bench height - 5m as stated in the approved mining plan.
4. The proponent shall submit an affidavit on participation in the Anna University Star rating system.
5. The PP shall frame Environmental policy and shall appoint Environmental Manger etc.,
6. The PP shall furnish ownership details of all survey numbers in EIA report.

7. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Necessary data and documentation in this regard may be provided.
8. The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.
9. In the case of proposed lease in an existing (or old) quarry where the benches are non-existent (or) partially formed critical of the bench geometry approved in the Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the 'highwall' benches to ensure slope stability in the proposed quarry lease which shall be vetted by the concerned Asst. Director of Geology and Mining, during the time of appraisal for obtaining the EC.
10. Details of Green belt & fencing shall be included in the EIA Report.
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,
  - What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
  - 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.
13. 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

  
MEMBER SECRETARY  
SEIAA-TN

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).

14. The PP shall carry out Drone video survey covering the cluster, Green belt , fencing etc.,
15. 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.
16. 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.
17. 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.
18. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
19. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
20. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
21. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
22. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.

23. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
24. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
25. Impact on local transport infrastructure due to the Project should be indicated.
26. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
27. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
28. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
29. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
30. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
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 eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all

  
MEMBER SECRETARY  
SEIAA-TN

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>Ascle marmelos</i>	Vilvam	விஸ்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbeck</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆகதி
7	<i>Bauhinia tomentos</i>	Iruvattu	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon sweetonia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவுளி
18	<i>Creteva adansonii</i>	Mavalingum	மாவிளங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உசா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உசா
21	<i>Diospyro sebenum</i>	Karungali	கருங்காலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amplissima</i>	Kalltchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்புலரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Lanea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	விலா மரம்
31	<i>Litsea glutinos</i>	Picupattai	பிரம்பா, பிசிப்பட்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Mankara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழமரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	ஈச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

40	<i>Premna mollissima</i>	Muruvai	முள்ளை
41	<i>Premna serratifolia</i>	Narumunnai	நறு முள்ளை
42	<i>Premna tomentosa</i>	Malaipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Varuni maram	வண்ணி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வெண்ணங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	பூவரசு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிப்புகள் சோபுகாய்
50	<i>Saraca asoca</i>	Asoca	அசோகா
51	<i>Strebilus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தாள் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாண்ட்ரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsuratrifoliata</i>	valsura	வாலசூரா
60	<i>Wrightia tinctoria</i>	Veppalai	வெப்பாளை
61	<i>Pithecolobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

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

The proposal was placed in the 592<sup>nd</sup> Authority meeting held on 16.02.2023. The authority noted that this proposal was placed for appraisal in this 347<sup>th</sup> meeting of SEAC held on 13.01.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in 'Annexure B' of this minute.

1. The activity should not result in CO<sub>2</sub> release and temperature rise and add to micro climate alternations.
2. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution, to water sources in the area.
3. The proponent shall ensure that the activity does not disturb Soil health & bio-diversity, Climate change leading to Droughts, Floods etc.
4. The proponent shall ensure that the activity does not Pollute leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.



5. The proponent shall ensure that the activity does not make the Possibilities of water contamination and impact on aquatic ecosystem health.
6. The trees present in the site shall be protected, replanted elsewhere.
7. The PP shall study the impact on Invasive Alien Species (IAP).
8. The PP shall revise EMP.

### 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

  
MEMBER SECRETARY  
SEIAA-TN

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
- Soil health & soil biological, physical land chemical features .
  - Climate change leading to Droughts, Floods etc.
  - Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
  - Possibilities of water contamination and impact on aquatic ecosystem health.
  - Agriculture, Forestry & Traditional practices.
  - Hydrothermal/Geothermal effect due to destruction in the Environment.
  - Bio-geochemical processes and its foot prints including environmental stress.
  - Sediment geochemistry in the surface streams.

**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.

  
MEMBER SECRETARY  
SEIAA-TN

33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

#### **Mine Closure Plan**

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

#### **EMP**

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

#### **Risk Assessment**

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

#### **Disaster Management Plan**

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

#### **Others**

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

  
MEMBER SECRETARY  
SEIAA-TN

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

  
MEMBER SECRETARY  
SEIAA-TN

- 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

  
MEMBER SECRETARY  
SEIAA-TN

of Law against the Project should be given.


- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
  - a) Executive Summary of the EIA/EMP Report
  - b) All documents to be properly referenced with index and continuous page numbering.
  - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
  - e) Where the documents provided are in a language other than English, an English translation should be provided.
  - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
  - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA, II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
  - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
  - i) As per the circular no. J-11011/618/2010-IA, II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
  - j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii)

sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

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

  
MEMBER SECRETARY  
SEIAA-TN

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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.

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

  
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. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Karur District.
7. Stock File.



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

To  
M/s.Dahlia Granites Pvt Ltd.,  
S.F.No. 468/1A,  
R.Vellagoundanpatti,  
K.Pitchampatty Post,  
Karur - 639 118

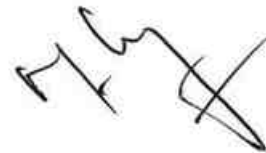
**Rc.No.135/Mines/2021, Dated:05.12.2022**

Sir,

Sub: Mines and Minerals - Minor Minerals - Multicolour Granite-  
Karur District - Karur Taluk - K.Pitchampatti Village -  
S.F.Nos.417/2 (0.67.50 hecets), 417/5 (0.39.0 hecets) 417/7  
(Part) 0.25.5 hecets and 454/2 (1.33.0 hecets) over an extent of  
2.65.0 hectares - Quarry lease application for Multicolour  
Granite - Preferred by M/s.Dahlia Granites Pvt Ltd.,- Mining  
Plan approved - requested for the details of Existing/ proposed/  
abandoned quarries situated within 500 mts radial distance -  
furnished - Regarding.

- Ref: 1. Granite Quarry lease application of M/s.Dahlia  
Granites Pvt Ltd., S.F.No. 468/1A, R.Vellagoundanpatti,  
K.Pitchampatty Post, Karur - 639 118, Dated: 18.03.2021.
2. Precise Area Communication letter  
No.2934330/MMB.2/2022-1, Dated: 10.10.2022
3. Mining Plan submitted by M/s.Dahlia Granites Pvt Ltd.,  
Letter dated: 18.10.2022.
4. The Commissioner of Geology and Mining, Karur Mining  
Plan approved letter Rc.No. 5764/MM2/2021,  
Dated:22.11.2022
5. M/s.Dahlia Granites Pvt Ltd.,letter dated:02.12.2022

In the reference 1<sup>st</sup> cited, M/s.Dahlia Granites Pvt Ltd.,have applied quarry  
lease for quarrying Multicolour Granite in S.F.Nos.417/2 (0.67.50 hecets), 417/5  
(0.39.0 hecets) 417/7 (Part) 0.25.5 hecets and 454/2 (1.33.0 hecets) over an extent  
of 2.65.0 hectares of patta lands in K.Pitchampatty Village, Karur Taluk &  
District. The Additional Chief Secretary to the Government, Chennai have issued  
precise area letter to the proposed lease area vide reference 2<sup>nd</sup> cited.



Accordingly, the applicant firm has submitted the draft Mining Plan and the same was approved by the Commissioner of Geology and Mining, Chennai vide reference 4<sup>th</sup> cited.

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

**I. Existing Other Quarries: -**

Sl No.	Name of the Owner	S.F.No.	Total Extent (hect)	Lease Period	Remarks
1	Thiru.K.S.Raja Mahendran, Kudeer 2nd Floor, Valmiki Nagar, Thiruvanimiyur, Chennai.	423/17, 423/3, 423/4, 423/5, 423/6, 423/7B 452/15, 452/16 452/17, 452/22B	2.29.0	14.06.2010 to 13.06.2030	Last permit obtained on 06.01.2017
2	Thiru.P.Ramachandran, S/o.Paramasivam, 12, Bharathiyar 5 <sup>th</sup> Street, SS Colony Ward, Madurai.	407/1, 407/2 407/3, 407/4 408/3, 408/4	2.84.5	05.8.2016 to 04.8.2036	Last permit obtained on 02.06.2021
3	Tvl.Ananta Granites LLP, 8-2-293/82/A/501, Road No.36, Jubilee Hills, Hydrabad-500 033 Telengana.	468/1B (P) 417/8 468/2	2.22.5	21.08.2017 to 20.08.2037	Last permit obtained on 18.08.2022
4	M/s.Colonial Granites, No.528, O.H.T Road, K.K. Nagar, Madurai 625 020,	417/3 417/4(P) 417/6(P)	2.01.5	13.06.2022 to 12.06.2042	Not yet commenced quarry operation



**II. Proposed Area: -**

Sl No.	Name of the Owner	S.F.No.	Total Extent (hect)	Lease Period	Mineral	Remarks
1	M/s.Dahlia Granites Pvt ltd., S.F.No. 468/1A, R.Vellagoundanpatti, K.Pitchampatty Post, Karur - 639 118	417/2 417/5 417/7(P) 454/2	2.65.0	Proposed Area	Multicolour Granite	---

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

Sl No.	Name of the Owner	S.F.No.	Total Extent (hect)	Lease Period	Mineral	Remarks
1	Nil					

*W. S. S. S.*  
05/12/22

Deputy Director,  
Geology and Mining,  
Karur.

05/12/22

*M. S. S.*

**COMMISSIONERATE OF GEOLOGY AND MINING**

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

To  
M/s. Dalhia Granites Pvt Ltd.  
R.Vellagoundanpatti,  
K.Pitchampatti Post,  
Karur - 639 118.

Rc.No. 5764/MM2/2021, dated: 22.11.2022

Sir,

Sub: Mines and Minerals - Multi-colour Granite - Karur District - Karur Taluk - K.Pitchampatti Village - S.F.Nos. 417/2 (0.67.50 hecets), 417/5 (0.39.0 hecets) 417/7 (Part) 0.25.5 hecets and 454/2 (1.33.0 hecets). - over an extent of 2.65.2 hecets. of Patta land - Granite quarry lease application preferred by M/s. Dalhia Granites Pvt Ltd - Precise area communicated by the Government - Mining Plan submitted for first five years - Approval accorded - Regarding.

- Ref: 1) Government letter No.2934330/MMB.2/2022-1, dated: 10.10.2022.  
2) Mining Plan submitted by M/s. Dalhia Granites Pvt Ltd, letter dated 18.10.2022.  
3) Deputy Director (G&M), Karur letter Rc.No. 135/Mines/2021, Dated: 28.10.2022.

\*\*\*\*\*

Kind attention is invited to the references cited above.

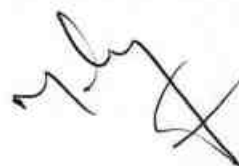
2) In the reference 1<sup>st</sup> cited, the Government has communicated precise area to the applicant with a direction to submit the approved mining plan and environmental clearance on the proposal recommending for grant of multi-coloured quarry lease over an extent of 2.65.0 Ha. of Patta lands in S.F.Nos. 417/2 (0.67.50 hecets), 417/5 (0.39.0 hecets) 417/7 (Part) 0.25.5 hecets and 454/2 (1.33.0 hecets) of K.Pitchampatti Village, Karur Taluk, Karur District. Accordingly, vide reference 2<sup>nd</sup> cited, the applicant has submitted five copies of draft mining plan for the approval of the Commissioner of Geology and Mining.

3) In the reference 3<sup>rd</sup> cited, the Deputy Director (G&M), Karur District has reported that the draft mining Plan submitted by the applicant in respect of the precise area communicated is verified and found correct along with field conditions. Further, the Deputy Director has reported that Geological and Movable reserves at 60% recovery factor are 1,24,766 M<sup>3</sup>, 55,303 M<sup>3</sup> and 13,819 M<sup>3</sup> respectively at depth persistence of 25m depth and accepted the proposed 5 years production of 13,819 M<sup>3</sup> at 60% recovery at depth persistence of 15 m. Finally, the Deputy Director (G&M), Karur has recommended and forwarded the subject mining

plan submitted by the applicant M/s. Dalhia Granites Pvt Ltd for approval of the Commissioner of Geology and Mining.

4) On perusal of the Draft Mining Plan, it is revealed that total Geological, Movable and Recoverable reserves are 6,69,596 m<sup>3</sup> and 1,33,775 m<sup>3</sup> respectively. Further, the proposed Run of Mine of granite for the first five year is 32,365 m<sup>3</sup>. The mining plan has been prepared in accordance with the precise area communicated for grant of lease. Based on the recommendation of the Deputy Director (G&M), Karur District, the Mining plan submitted by M/s. Dalhia Granites Pvt Ltd is hereby approved subject to the following conditions stipulated in the precise area communication issued by the Government.

- i) 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.
- ii) 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.
- iii) This mining plan including Progressive mine closure plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- iv) 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.
- v) 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.
- vi) Relaxation to be obtained under Rule 106(2) (a) and (b) of Metalliferous Mines Regulations, 1961 from the Director of Mines Safety, if necessary
- vii) A safety distance of 7.5 meters should be left out for the adjacent patta lands all along the boundary of the applied area.
- viii) The four boundaries of the applied area should be fixed and the District Administration / Geology and Mining Department should ensure that the quarrying operations should be restricted within the area granted on lease.
- ix) Quarrying activity should be carried out from 07.00 AM to 05.00 PM only.



- x) 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.
- xi) Barbed wire fencing or Compound wall should be erected all along the boundary of the lease granted area.
- xii) The waste materials generated during the course of quarrying should be dumped only within the leasehold area.
- xiii) Environmental Clearance should be obtained from the competent 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 applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows:-
  - (i) The applicant firm shall at his own expenses erect, maintain and keep in repair all the boundary pillars.
  - (ii) 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.
  - (iii) The applicant firm shall incorporate the Geo Co-ordinates taken by DGPS for the entire boundary pillars of the area and the same should be clearly shown in the Mining Plan.
  - (iv) A soft copy of the digitalized map with the Geo Co-ordinates of the boundary pillar and shape file of the lease boundary should be submitted in the CD form to the Deputy Director(G&M), Karur and the Commissioner of Geology and Mining.
- xv) The applicant firm should use mild explosives during quarrying.
- xvi) Child labour should not be engaged in the quarry works.
- xvii) 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.
- xviii) The conditions mentioned in G.O.(Ms) No.79, Industries (MMC.1) Department, dated:06.04.2015 should be complied with.
- xix) The applicant firm should comply with the conditions stipulated in the Government of India, Ministry of Mines order dated 14.01.2020 issued as per the orders of the Hon'ble Supreme Court of India dated 08.01.2020 that, "the mining lease holders 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.,"

- xx) The applicant firm shall strictly adhere to the statutory and safety requirements.
- xxi) Quarrying shall be done as per the approved mining plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- xxii) 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.
- xxiii) 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.
- xxiv) As per rule 12(v) of the Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016. The applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.

**Encl:** Approved Mining Plan.

Sd/- J.Jayakanthan,  
Commissioner of Geology and Mining

Forwarded / By Order

Additional Director

**Copy Submitted to:**

Additional Chief Secretary to Government,  
Industries, Investment Promotion and  
Commerce Department,  
Secretariat, Chennai-9.

**Copy to**

1. The Director of Mines Safety,  
Lapis Lagoon, AA Block,  
Shanthy Colony, Anna Nagar,  
Chennai-40. (With AMP)
2. The District Collector,  
Karur.
3. The Deputy Director,  
Geology and Mining, Karur. (With AMP)

# MINING PLAN

FOR

**K.PITCHAMPATTI VILLAGE MULTI-COLOUR GRANITE MINING LEASE WITH  
PROGRESSIVE QUARRY CLOSURE PLAN**

Patta Land/Opencast, Semi-Mechanized Mining/Non-Forest/Non-Captive use-  
'B2' Category

Lease period 20 Years from the date of lease execution

(For the ensuring mining plan prepared for the period of first five years)

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

## LOCATION OF THE LEASE AREA

STATE : TAMILNADU  
DISTRICT : KARUR  
TALUK : KARUR  
VILLAGE : K.PITCHAMPATTI  
S.F.NO'S : 417/2, 417/5, 417/7(P) & 454/2  
EXTENT : 2.65.0HECTARES

## ADDRESS OF THE APPLICANT

**M/s. DAHLIA GRANITES PRIVATE LIMITED,**

S.F.No.468/1A,

R.Vellagoundanpatti, K.Pitchampatti Post,

Karur District - 639118

Mobile no.+91 9626655777.

## PREPARED BY

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

RQP/MAS/263/2014/A

**GEO TECHNICAL MINING SOLUTIONS**

(A NABET Accredited & ISO Certified Company)

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

Oddapatti, Collectorate Post office,

Dharmapuri -636705. Tamil Nadu.

Mob. : +91 9443937841, +917010076633,

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

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



212

**CONTENTS**



Sl. No.	Description	Page No.
-	Certificates	8
-	Introductory notes	9
1.0	General	13
2.0	Location and Accessibility	14
<b><u>PART-A</u></b>		
3.0	Geology and Mineral reserves	18
4.0	Mining	24
5.0	Blasting	30
6.0	Mine drainage	32
7.0	Stacking of mineral rejects and disposal of waste	32
8.0	Uses of mineral	33
9.0	Others	34
10.0	Mineral processing / Beneficiations	35
<b><u>PART-B</u></b>		
11.0	Environmental management plan	37
12.0	Progressive mine closure plan	43
13.0	Financial assurance	46
14.0	Certificates	46
15.0	Plan and sections, etc	46
16.0	Any other details intend to furnish by the applicant	46
17.0	CSR Expenditure	47

**ANNEXURES**

Sl. No.	Description	Annexure No.
1.	Copy of principal secretary to Government of Tamil Nadu communication letter	I
2.	Copy of <b>FMB</b> (Field Measurement book)	II
3.	Copy of village map	III
4.	Copy of "A" register	IV
5.	Copy of computer chitta, adangal and land documents	V
6.	Photo copy of the applied lease area	VI
7.	Copy of company registration certificate and partnership deed	VII
8.	Copy of power of attorney	VIII
9.	Copy of ID proof of the authorized signatory	IX
10.	Copy of willingness letter for explosives, Blasting work & license form	X
11.	Copy of RQP Certificate	XI

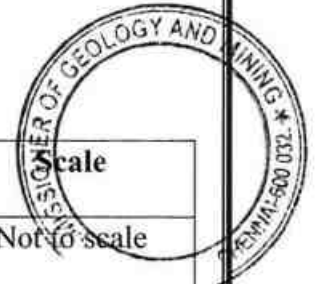


*Handwritten signature/initials*



**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	Toposheet 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, Geological plan & Sections	III	<b>Plan</b> -1:2000 <b>Sections</b> HOR 1:1000 VER 1:500
10	Year wise development, Production plan and Sections	IV	<b>Plan</b> -1:2000 <b>Sections</b> HOR 1:1000 VER 1:500
12	Quarry layout and Land use pattern plan	V	1:2000
13	Progressive quarry closure plan and sections	VI	<b>Plan</b> -1:2000 <b>Sections</b> HOR 1:1000 VER 1:500
15	Conceptual plan and sections	VII	<b>Plan</b> -1:2000 <b>Sections</b> HOR 1:1000 VER 1:500



M. S. J.

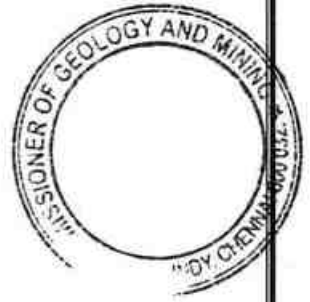
**M/s. DAHLIA GRANITES PRIVATE LIMITED**

S.F.No.468/1A,

R.Vellagoundanpatti,

K.Pitchampatti Post,

Karur District – 639118



**CONSENT LETTER FROM THE APPLICANT**

The Mining Plan in respect of multi-colour granite quarry lease in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) of Patta land, over an extent of 2.65.0hectares in K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu State has been prepared by

**Dr. S. KARUPPANNAN. M.Sc., Ph.D. Regn. No. RQP/MAS/263/2014/A**  
**(Under rule 13 (1) of Granite Conservation and Development Rules, 1999)**

We request "The Commissioner, Department 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  
 E-mail: info.gtmsdpi@gmail.com,  
 Website: [www.gtmsind.com](http://www.gtmsind.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: Karur, TN

Date:

Signature of the applicant  
**(M/s. DAHLIA GRANITES PRIVATE LIMITED)**

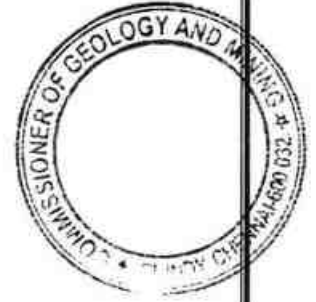
**M/s. DAHLIA GRANITES PRIVATE LIMITED**

S.F.No.468/1A,

R.Vellagoundanpatti,

K.Pitchampatti Post,

Karur District – 639118




**DECLARATION**

The mining plan in respect of multi-colour granite quarry lease in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) of Patta land, over an extent of 2.65.0hectares in K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu State have been prepared with my consultation and I have understood and agree the contents to implement in accordance with the Granite Conservation & Development Rules, 1999.

Place: Karur, TN

Date:

  
Signature of the applicant  
(M/s. Dahlia Granites Private Limited)

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.gtmsdpi@gmail.com,  
 Website: [www.gtmsind.com](http://www.gtmsind.com)



**CERTIFICATE**

This is to certify that, the provisions of under rule *12 & 13 of Granite Conservation and Development Rules, 1999* have been observed in the Mining Plan in respect of multi-colour granite quarry lease in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) of Patta land, over an extent of 2.65.0hectares in K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu State prepared to **M/s.Dahlia Granites Private Limited**, Karur-639118, Tamil Nadu State.

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

Place: Dharmapuri, TN  
 Date: 15/10/22

Signature of the Recognized Qualified Person.

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

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  
 E-mail: info.gtmsdpi@gmail.com,  
 Website: [www.gtmsind.com](http://www.gtmsind.com)



### CERTIFICATE

I certified that the preparation of the mining plan in respect of multi-colour granite quarry lease in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) of Patta land, over an extent of 2.65.0hectares in K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu State prepared to M/s. **Dahlia Granites Private Limited**, Karur-639118, Tamil Nadu State, covers all the provisions of mines act, rules and regulations etc., made therein and if any specific permissions required the applicant should approach "**The Director General of Mines and Safety**", **Chennai-600040**. The standards prescribed by DGMS with respect to mines health will be strictly implemented.

Place: Dharmapuri, TN

Date: 15/10/22

Signature of the Recognized Qualified Person.

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

# MINING PLAN

FOR

**K.PITCHAMPATTI VILLAGE MULTI COLOUR GRANITE MINING LEASE WITH  
PROGRESSIVE QUARRY CLOSURE PLAN**

Patta Land/Opencast-Semi Mechanized Mining/Non-Forest/Non-Captive Use –  
“B2” Category

**Lease Period 20 Years from the date of lease execution**

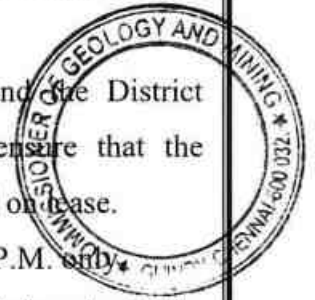
*(For the ensuring mining plan prepared for the period of first five years)*

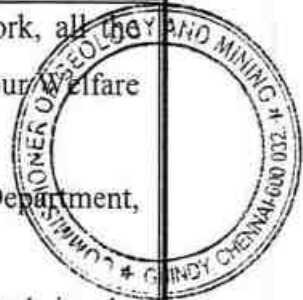
**(Prepared under rule 12 & 13 of Granite Conservation and Development Rules, 1999)**

## INTRODUCTORY NOTES:

1. **Introduction:** The Mining plan with progressive quarry closure plan is prepared for M/s. **Dahlia Granites Private Limited**, registered office at S.F.No.468/1A, R.Vellagoundanpatti, K.Pitchampatti Post, Karur District – 639118 and filed with application for new proposal has requested to grant the quarrying lease for multi-colour granite in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) over an extent of 2.65.0hectares of K.Pitchampatti Village, Karur Taluk, Karur District, Tamil Nadu State to the District Collector, Karur dated 18.03.2021 and forwarded to the Director, Department of Geology and Mining, Guindy, Chennai vide letter no.135/Mines/2021, Dated 25.08.2021.
2. **Letter of Principal Secretary of Tamil Nadu:** The Principal Secretary to Government of TamilNadu has directed to the applicant M/s. **Dahlia Granites Private Limited** through his precise area communication letter No. 2934330/MMB.2/2022-1, Dated 10.10.2022, to furnish approved mining plan through the Director of Geology and Mining within a period of 3 months as per sub-rule (13) of rule 19-A of the **TamilNadu Minor Mineral Concession Rules, 1959** and to produce Environmental Clearance obtained from competent authority for the quarrying lease multi-colour granite at Tamil Nadu State, Karur District, Karur Taluk, K.Pitchampatti Village in S.F.No's. 417/2 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) over an extent of 2.65.0hectares has grant of quarrying lease for 20 (Twenty) years under rule 19-A of Tamil Nadu Minor Mineral Concession Rules, 1959, subject to the following conditions: -

- 1) A safety distance of 7.5 meters should be left out for the adjacent Patta lands all along the boundary of the applied area.
- 2) The four boundaries of the applied area should be fixed and the District Administration / Geology and mining Department should ensure that the quarrying operations should be restricted within the area granted on lease.
- 3) Quarrying activity should be carried out from 7.00A.M. to 5.00 P.M. only.
- 4) A Green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity by planting at least 500 seedings of Neem and Pungan all around the area.
- 5) Barbed wire fencing or Compound wall should be erected all along the boundary of the lease granted area.
- 6) The waste materials generated during the course of quarrying should be dumped only within the leasehold area.
- 7) Environmental Clearance should be obtained from the competent authority in respect of the subject area as per rule 42 of the Tamilnadu Minor Mineral Concession Rules, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- 8) The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows: -
  - (i) The applicant firm shall at his own expenses erect, maintain and keep in repair all the boundary pillars.
  - (ii) 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.
  - (iii) The applicant firm shall incorporate the Geo coordinates taken by DGPS for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
  - (iv) A soft copy of the digitalized map with the Geo coordinates of the boundary pillar and shape file of the lease boundary should be submitted in the CD form to the Deputy Director, (G&M), Karur and the Commissioner of Geology and Mining.
- 9) The applicant firm should use mild explosives during quarrying.
- 10) Child labour should not be engaged in the quarry works.





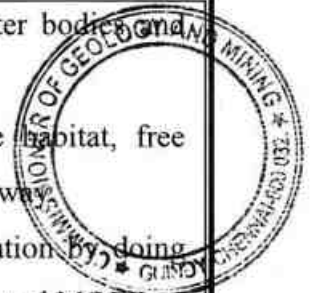
- 11) The applicant firm should ensure that while starting the quarry work, all the quarry workers working under their control are registered in the Labour Welfare Board and also enrolled in the ongoing insurance scheme.
  - 12) The conditions mentioned in G.O.(Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
  - 13) 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 lease holders 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."
  - 14) The applicant firm shall strictly adhere to the statutory and safety requirements.
  - 15) Quarrying shall be done as per the approved Mining plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the central Government, State Government or any other authority.
  - 16) 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.
  - 17) 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.
  - 18) As per rule 12 (V) of the Mineral (other than Atomic and Hydro Carbons Energy Minerals) concession Rules, 2016, the applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.
3. **Preparation and Submission of Mining Plan:** The Mining Plan with progressive quarry closure plan is prepared under rule 12 & 13 of Granite Conservation and Development Rules, 1999 and the conditions mentioned in the Principal Secretary of Tamil Nadu letter No. 2934330/MMB.2 /2022-1, Dated 10.10.2022.
  4. **Geological Resources and Mineable Reserves:** Geological resource of multi-colour granite is estimated as 207944m<sup>3</sup> including the resources of safety zone and block in benches. Of which, multi-colour granite is 124766m<sup>3</sup> in recovery of 60% and granites rejects of 83178m<sup>3</sup> (Refer Plate No's.III). Mineable reserves of multi-



colour granite are estimated is  $92172\text{m}^3$  by deducting the reserve safety zone in benches from the total Geological resources. of which, multi-colour granite is  $55303\text{m}^3$  on recovery of 60% and granites rejects of  $36869\text{m}^3$  up to a depth of 25m below ground level (R.L.205-180m) (Refer Plate No's.VII).

5. **Proposed Production Schedule:** Total proposed production of multi-colour granite is  $23032\text{m}^3$ . Of which multi-colour granite is  $13819\text{m}^3$  in recovery of 60% and rejects of granites is  $9213\text{m}^3$  of 40% up to a depth of 15m below ground level (R.L.205-190m) (Refer Plate No's.IV) for the first 5 years plan period. Average production will be  $2764\text{m}^3$  of multi-colour granite per year.
6. **Environmental sensitivity of the proposed lease area: -**
- i) **Interstate Boundary:** There is no interstate boundary within the 10km radius from the proposed lease area.
  - ii) **Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.
  - iii) **Indian Reserve Forest Act, 1980:** There is no reserve forest with in the 1km radius. The Thoppasamymalai RF and Sembianatham which is situated about 14.9km away from southeast side of lease area.
  - iv) **CRZ Notification, 2019:** There is no sea coastal zone area found periphery of 10km radius lease area and this project site doesn't attract CRZ Notification, 2019.
- 7) **Environmental measures will be adopted during mining operation: -**
- i) Wet drilling method is adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting will be used so as to reduce vibration and dust.
  - ii) Drilling and blasting will be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
  - iii) The following measures are to be implemented to reduce Air Pollution during transportation of mineral
    - a. Roads will be graded to mitigate the dust emission.
    - b. Water will be sprinkled at regular interval on the main road and other service roads to suppress dust
  - iv) No tree-felling will be done in the leased area, except only with the permission from competent Authority.

- v) During quarrying operation should not disturbed the nearby water bodies and agricultural activities surrounding site.
- vi) The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way.
- vii) 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.
- viii) Any other conditions stipulated by other Statutory/Government authorities will be complied



**1.0 GENERAL:**

a.	<b>Name of the applicant</b>	<b>M/s. Dahlia Granites Private Limited</b>
	Applicant address	<b>M/s. Dahlia Granites Private Limited</b> S.F.No.468/1A, R.Vellagoundanpatti, K.Pitchampatti Post, Karur District – 639118
	District	Karur
	State	TamilNadu
	Pin code	639118
	Phone	+91 9626655777
	Fax	---
	Gram	---
	Telex	---
	E-mail	---
	<b>Status of the applicant</b>	
	Private individual	---
	Cooperative Association	---
	Private company	Private Firm
	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	Multi-colour granite
d.	Period for which the mining lease granted/renewed/proposed to be applied	Mining lease granted for the period of 20 (Twenty) years under rule 19 -A of Tamil Nadu Minor Mineral Concession Rules, 1959
e.	Name of the RQP preparing the Mining Plan	Dr. S.KARUPPANNAN.M.Sc.,Ph.D.,
	Address	<b>GEO TECHNICAL MINING SOLUTIONS</b> (A NABET Accredited & ISO Certified Company) No: 1/213-B, Ground Floor,

## MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE

	Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Website: www.gtmsind.com
Phone	+91 9443937841, 701007663
Fax	Nil
e-mail	info.gtmsdpi@gmail.com
Telex	Nil
Registration Number	RQP/MAS/263/2014/A
Date of grant/renewal	16.12.2014
Valid upto	15.12.2024
f. Name of the prospecting agency	The commissioner, Department of Geology and Mining
Address	State Geological Department O/o The Commissioner of Geology and Mining, Thiru.Ve.Ka.Industrial Estate,Guindy, Chennai-600032
Phone	-----
g. Reference No. and date of consent letter from the state government	The principal secretary to government, Government of Tamilnadu - Letter. No. 2934330/MMB.2/2022-1, Dated 10.10.2022

**2.0 LOCATION AND ACCESSIBILITY:**

a.	Details of the Area:	: Refer plate no: IA & IB																																								
	District & State	: Karur, Tamil Nadu																																								
	Taluk	: Karur																																								
	Village	: K.Pitchampatti																																								
	Khasra No./ Plot No./ Block Range/Felling Series etc.,																																									
	<table border="1"> <thead> <tr> <th>Survey No.</th> <th>Sub division</th> <th>Total Extent in Hect</th> <th>Patta No.</th> <th>Village and Name of the Land Owner</th> <th>Mine lease Applied S.F. No.</th> <th>Mine lease Applied Area out of total area in hect.</th> </tr> </thead> <tbody> <tr> <td>417</td> <td>2</td> <td>0.67.5</td> <td rowspan="2">3245</td> <td>Mr.Piramothu</td> <td>417/2</td> <td>0.67.5</td> </tr> <tr> <td>454</td> <td>2</td> <td>1.33.0</td> <td>S/o.Dolendra Prasath Nellur</td> <td>454/2</td> <td>1.33.0</td> </tr> <tr> <td>417</td> <td>5</td> <td>0.39.0</td> <td rowspan="2">3156</td> <td>Garlapati</td> <td>417/5</td> <td>0.39.0</td> </tr> <tr> <td>417</td> <td>7</td> <td>0.65.5</td> <td>Chenchamma W/o.Subba Rao</td> <td>417/7 (Part)</td> <td>0.25.5</td> </tr> <tr> <td colspan="2"><b>Total Extent</b></td> <td><b>3.05.0</b></td> <td></td> <td colspan="2"><b>Total applied lease area</b></td> <td><b>2.65.0</b></td> </tr> </tbody> </table>	Survey No.	Sub division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F. No.	Mine lease Applied Area out of total area in hect.	417	2	0.67.5	3245	Mr.Piramothu	417/2	0.67.5	454	2	1.33.0	S/o.Dolendra Prasath Nellur	454/2	1.33.0	417	5	0.39.0	3156	Garlapati	417/5	0.39.0	417	7	0.65.5	Chenchamma W/o.Subba Rao	417/7 (Part)	0.25.5	<b>Total Extent</b>		<b>3.05.0</b>		<b>Total applied lease area</b>		<b>2.65.0</b>	
Survey No.	Sub division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F. No.	Mine lease Applied Area out of total area in hect.																																				
417	2	0.67.5	3245	Mr.Piramothu	417/2	0.67.5																																				
454	2	1.33.0		S/o.Dolendra Prasath Nellur	454/2	1.33.0																																				
417	5	0.39.0	3156	Garlapati	417/5	0.39.0																																				
417	7	0.65.5		Chenchamma W/o.Subba Rao	417/7 (Part)	0.25.5																																				
<b>Total Extent</b>		<b>3.05.0</b>		<b>Total applied lease area</b>		<b>2.65.0</b>																																				
	Lease area (hectares)	: 2.65.0hectares																																								
	Whether the area is recorded to be in forest (please specify whether protected, reserved etc)	: No, forest is involved. This is recorded as a patta land.																																								

MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE

Ownership / Occupancy	: This is a patta land S.F.No's. 417/2 & 454//2 is registered in the name of Mr.Piramothu S/o.Dolendira Prasath Nellur vide Patta No. 417/2 and S.F.No's. 417/5 & 417/6 (Part) is registered in the name of Mrs.Garlapathi Chenchamma w/o.Subba Rao vide Patta No 3156 in K.Pitchampatti village records. (Ref. Annex. No:V).
Existence of Public Road / Railway line if any nearby and approximate distance	: ✓ Exploited granite materials will transported through the nearby approach road is situated on the eastern side. ✓ There is no SH or NH road situated within radius of 5km.
Toposheet No. with latitude and longitude	: Toposheet No. <b>58 J/1</b> Latitude: 10°46'32.82782" N to 10°46'40.35742" N longitude: 78°03'49.61142" E to 78°04'0.85412" E



DGPS Geo-Coordinates of the lease boundary:

DGPS SURVEY COORDINATE SYSTEM						
Name	: World wide/UTM			Datum : WGS 1984		
Receiver Model	: R8s - (Base) & R8s- (Rover)			Zone : 44 North		
Time Zone	: Mountain Standard Time			Geoid : EGM96 (Global)		
Date of Survey: 11/10/2022						
DGPS SURVEY WAS CONDUCTED IN STATIC METHOD (BASE POINT 2 HOUR DGPS POINT)						
ID	Latitude (Global)	Longitude (Global)	Easting (Meter)	Northing (Meter)	Elevation (Meter)	Feature Code
BS	10°46'38.41956"N	78°03'56.42674"E	179073.404	1192897.545	204.565	Revenue stone + (Base Station)
ROVER POINTS 2 HOURS FOR BOUNDARY Pillar AND 20 MINUTES FOR INTERMEDIATE Pillar IN STATIC METHOD						
1	10° 46' 36.49000" N	78° 04' 0.85412" E	179207.453	1192836.919	203.891	Boundary Pillar
2	10° 46' 34.91501" N	78° 04' 0.44591" E	179194.577	1192788.605	203.651	Intermediate Pillar
3	10° 46' 34.45513" N	78° 04' 0.32675" E	179190.817	1192774.497	203.564	Boundary Pillar
4	10° 46' 34.95553" N	78° 03' 59.11963" E	179154.262	1192790.237	203.125	Boundary Pillar
5	10° 46' 33.38184" N	78° 03' 58.70672" E	179141.243	1192741.962	203.214	Intermediate Pillar
6	10° 46' 32.82782" N	78° 03' 58.56134" E	179136.660	1192724.969	203.264	Boundary Pillar
7	10° 46' 33.34524" N	78° 03' 57.00252" E	179089.415	1192741.335	203.989	Intermediate Pillar

*Handwritten signature/initials*

Sl. No.	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar	Boundary Pillar	Intermediate Pillar																																																																																																												
8	10° 46' 33.42181" N	78° 03' 56.77181" E	1192743.757	1192743.422	203.865	203.865	1192790.654	1192790.761	179099.761	179099.761	203.986	203.986	1192812.79	1192812.79	203.864	203.864	1192826.679	1192826.679	179059.913	179059.913	204.568	204.568	1192827.377	1192827.377	204.537	204.537	1192843.111	1192843.111	204.874	204.874	1192858.850	1192858.850	204.989	204.989	178963.314	178963.314	1192874.589	1192874.589	205.211	205.211	178868.398	178868.398	1192890.328	1192890.328	205.898	205.898	178866.099	178866.099	1192891.08	1192891.08	205.875	205.875	178892.288	178892.288	1192933.685	1192933.685	205.785	205.785	178907.684	178907.684	1192958.731	1192958.731	205.286	205.286	178953.792	178953.792	1192939.39	1192939.39	205.125	205.125	178999.9	178999.9	1192920.049	1192920.049	204.985	204.985	179046.008	179046.008	1192900.708	1192900.708	204.215	204.215	179071.687	179071.687	1192889.936	1192889.936	204.125	204.125	179071.995	179071.995	1192891.302	1192891.302	204.125	204.125	179119.250	179119.250	1192874.963	1192874.963	203.891	203.891	179166.506	179166.506	1192858.625	1192858.625	203.125	203.125	179172.176	179172.176	1192856.664	1192856.664	203.115	203.115	179171.395	179171.395	1192853.768	1192853.768	203.251	203.251	179171.395	179171.395	1192853.768	1192853.768	203.251	203.251	179171.395	179171.395	1192853.768	1192853.768	203.251	203.251

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

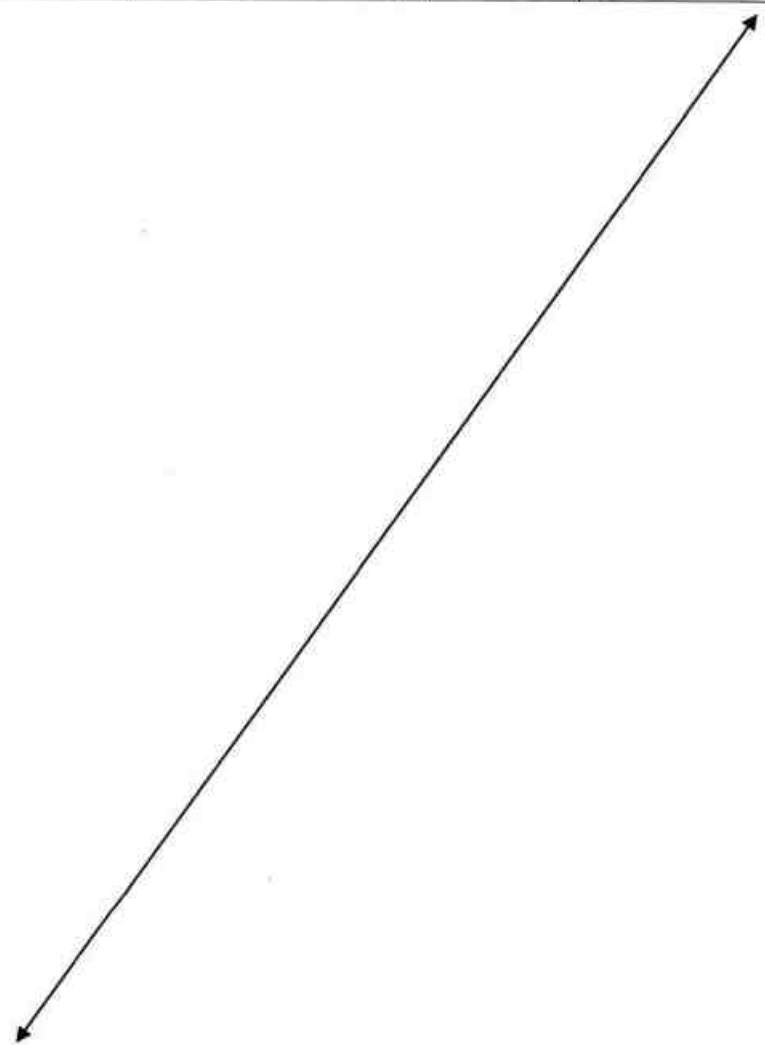
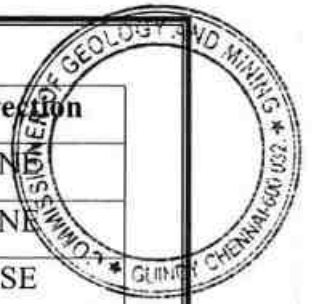
b). Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.

: Refer plate No-IA & IB



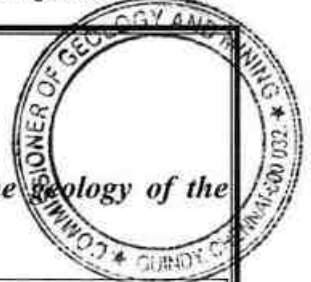
**i) INFRASTRUCTURE AND COMMUNICATION:**

S.No	Description	Place	Distance	Direction
a.	Nearest post office	K.Pichampatti	2.36Km	NE
b.	Nearest police station	Velliyanai	10.18km	NE
c.	Nearest fire station	Gujiliyamparai	11.5km	SE
d.	Nearest medical facility	K.Pichampatti	4.18Km	NE
e.	Nearest school	Vellode	5.46Km	SW
f.	Nearest railway station	Velliyanai	8.8km	NE
g.	Nearest port facility	Thoothukudi	221.5km	SE
h.	Nearest airport	Trichy	69.7km	East
i.	Nearest DSP office	Aravakurichi	16.8km	West
j.	Nearest villages	Alamarathupatty	1.76km	North
		Kollapatti	2.7km	South
		R.Vellagoundanpatti	0.27km	East
		Kalapatti	4.2km	West



*M. S. J.*

**PART - A**



**3.0 GEOLOGY AND MINERAL RESERVES:**

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

(i)	Topography	:	The applied lease area exhibits flat topography 0-2m. The highest elevation observed in Western of the lease area is 205m AMSL, whereas the lowest elevation in east is 203m AMSL. The slope is towards eastern side and falls in Toposheet no.58-J/1.
-----	------------	---	--

(ii) General Geology of the District: -  
 Karur District is comprised of Archaean peninsular gneisses such as charnockites, Hornblende gneisses, Biotite gneisses and migmatites and limestone, dolomite etc., they are intruded by younger formations like pegmatite and quartz veins. The colonial Gold/white/Leuco granites consists of garnet, biotite mica, plagioclase and orthoclase feldspars and quartz and are found as sheet rocks running to several kms from SW-NE direction as a massive rocks formation. The granite body found in the applications area is a narrow intrusive of white Granite with yellow shades upon polishing.

The order of superposition of geological sequence are given as under,

Description	Geological Age
Top soil -Red soil (1m Thick)	Recent age
Garnetiferous White Granite (Colonial Gold/white	Archaean age
Peninsular gneisses	Archaean complex

(iii) Local / Mine Geology of the Mineral Deposit: -  
**a) Topography of the proposed lease area:**  
 The applied lease area exhibits flat topography 0-2m. The highest elevation observed in Western of the lease area is 205m AMSL, whereas the lowest elevation in east is 203m AMSL. The slope is towards eastern side  
 The topsoil is obtained about 0-2m, 2-3m weathered rock and a multi-colour starts from 3 to 25m (R.L.202-180m) from below the ground level as respectively. The Surface plan showing elevation, outcrops, contour, accessibility road and Geological map was prepared the proposed lease area.  
 The strike direction of granite band is measured as N30°E-S30°W with almost



vertical dip. The country rock is biotite gneiss, into which the granite invaded with cross cutting relationship.

Colonial gold/white granite may persist and most of outcrops of granite surface shows partly weathered.

Description	Geological Age
Top soil -Red soil (1-2m Thick)	Recent age
Garnetiferous White Granite (Colonial Gold/white)	Archaean age
Biotite gneisses	Archaean complex

The regional trend is shown in the geological plan. The rate of recovery of salable granite is taken as 60% upto 25m depth.

**b) Physiographic:**

The area applied for quarry lease is a flat terrain and no major pond or other infra structures are found nearby. A safety distance of 7.5m is provided from the along lease boundary. Water table is located at a depth of 45m from the surface in adjacent bore wells. Area around quarry lease is dry agricultural lands with acacia bushes, palm trees and neem trees etc.,

(iv)	Drainage Pattern	:	There are no major water bodies like rivers, pond, etc., located within a radius of 50m. The drainage is sub-dendritic in general.
------	------------------	---	--

**(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 :1,00,000  
 Geological Plan – Plate No. III (1:1000 Scale)

**(i) Present status:**

RQP along with hydrogeologists and DGPS team of Geotechnical Mining Solutions, Dharmapuri analyzed the lease area for mining plan preparation. The proposed lease area is a fresh lease grant and the area exhibits outcrops well exposed on the western and Southeast side and has strike of the granite body is trending in N30<sup>0</sup>E-S30<sup>0</sup>W direction with steep dip.



**(ii) Surface Plan:**

Surface plan showing elevation, contours, outcrops and accessibility road prepared at the scale of 1: 1000, as shown in Plate No.III.

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

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

**(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	N.A	---	---	N.A
Second	N.A	---	---	N.A
Third	N.A	---	---	N.A
Fourth	N.A	---	---	N.A
Fifth	N.A	---	---	N.A
<b>Total</b>	---	---	---	---

Since, its proved by State Geological Department, The Commissioner of Geology and Mining, Thiru.Ve.Ka. Industrial Estate,Guindy, Chennai-600032. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.

(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 resources were computed by cross section method with respect to the boundaries of the lease area. In this method, the lease area was divided into three sections (longitudinal and transverse) to calculate the volume of material up to the depth of 25m (R.L.205m-180m) below the ground level. The longitudinal and transverse cross sections were assigned XY-AB & X1Y1-AB . Using the cross-sectional method, total reserve is estimated to be **669596m<sup>3</sup>** including the resources of safety zone, Side burden, weathered rock and topsoil. Of which, multi-colour granite is **124766m<sup>3</sup>** in recovery of 60% and granites rejects of **83178m<sup>3</sup>** (Refer Plate No's. IV).

The topsoil is obtained about 0-2m, weathered rock is 2-3m thick from the slope of the area and a multi-colour starts from 3-25m (R.L.202-180m) below the ground level as respectively. (Refer plate no's. IV).

**GEOLOGICAL RESOURCES**

Section	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m <sup>3</sup> )	Geological Reserves in m <sup>3</sup>	Multi colour Granite 60% Recovery in m <sup>3</sup>	Granite Waste 40% in m <sup>3</sup>	Side Burden in m <sup>3</sup>	Weathered rock in m <sup>3</sup>	Top Soil in m <sup>3</sup>
XY-AB	I	338	68	2	45968	.....	.....	.....	.....	.....	45968
	I	338	68	1	22984	.....	.....	.....	.....	22984	.....
	I	84	68	2	11424	11424	6854	4570	.....	.....	.....
		255	68	2	34680	.....	.....	.....	34680	.....	.....
	II	84	68	5	28560	28560	17136	11424	.....	.....	.....
		255	68	5	86700	.....	.....	.....	86700	.....	.....



*Handwritten signature or initials.*

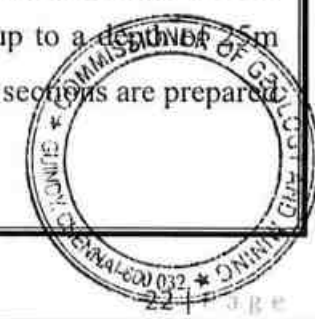
181

**MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE**

	III	84	68	5	28560	28560	17136	11424	.....	.....	.....
		255	68	5	86700	.....	.....	.....	86700	.....	.....
	IV	84	68	5	28560	28560	17136	11424	.....	.....	.....
		255	68	5	86700	.....	.....	.....	86700	.....	.....
	V	84	68	5	28560	28560	17136	11424	.....	.....	.....
		255	68	5	86700	.....	.....	.....	86700	.....	.....
<b>TOTAL</b>					<b>576096</b>	<b>125664</b>	<b>75398</b>	<b>50266</b>	<b>381480</b>	<b>22984</b>	<b>45968</b>
XIYI-AB	I	55	68	2	7480	.....	.....	.....	.....	.....	7480
	I	55	68	1	3740	.....	.....	.....	.....	3740	.....
	I	55	68	2	7480	7480	4488	2992	.....	.....	.....
	II	55	68	5	18700	18700	11220	7480	.....	.....	.....
	III	55	68	5	18700	18700	11220	7480	.....	.....	.....
	IV	55	68	5	18700	18700	11220	7480	.....	.....	.....
	V	55	68	5	18700	18700	11220	7480	.....	.....	.....
<b>TOTAL</b>					<b>93500</b>	<b>82280</b>	<b>49368</b>	<b>32912</b>	<b>0</b>	<b>3740</b>	<b>7480</b>
<b>GRAND TOTAL</b>					<b>669596</b>	<b>207944</b>	<b>124766</b>	<b>83178</b>	<b>381480</b>	<b>26724</b>	<b>53448</b>

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

The Mineable reserves of multi-colour granite are estimated is **92172m<sup>3</sup>** by deducting the reserve safety zone, block in benches from the total Geological resources. Of which, multi-colour granite is **55303m<sup>3</sup>** on recovery of 60% and granites rejects of **36869m<sup>3</sup>** up to a depth of 25m below ground level (R.L.205-180m). The commercially viable multi-colour granite has been prepared on 1: 1000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's. VIII).



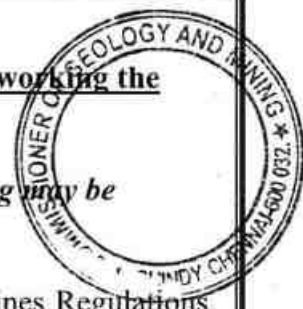
*Handwritten signature/initials in the bottom left corner.*

**MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE**

<b>MINEABLE RESERVES</b>												
<b>Section</b>	<b>Bench</b>	<b>length in (m)</b>	<b>Width in (m)</b>	<b>Depth in (m)</b>	<b>Rom in (m<sup>3</sup>)</b>	<b>Mineable Reserves in m<sup>3</sup></b>	<b>Multicolour Granite 60% Recovery in m<sup>3</sup></b>	<b>Granite Waste 40% in m<sup>3</sup></b>	<b>Side Burden in m<sup>3</sup></b>	<b>Weathered rock in m<sup>3</sup></b>	<b>Top Soil in m<sup>3</sup></b>	
XY-AB	I	101	61	2	12322	.....	.....	.....	.....	.....	12322	
	I	101	61	1	6161	.....	.....	.....	.....	6161	.....	
	I	76	61	2	9272	9272	5563	3709	.....	.....	.....	
		25	61	2	3050	.....	.....	.....	3050	.....	.....	
	II	71	56	5	19880	19880	11928	7952	.....	.....	.....	
		20	56	5	5600	.....	.....	.....	5600	.....	.....	
	III	66	51	5	16830	16830	10098	6732	.....	.....	.....	
		15	51	5	3825	.....	.....	.....	3825	.....	.....	
	IV	61	46	5	14030	14030	8418	5612	.....	.....	.....	
		10	46	5	2300	.....	.....	.....	2300	.....	.....	
	V	56	41	5	11480	11480	6888	4592	.....	.....	.....	
		5	41	5	1025	.....	.....	.....	1025	.....	.....	
	<b>TOTAL</b>					<b>105775</b>	<b>71492</b>	<b>42895</b>	<b>28597</b>	<b>15800</b>	<b>6161</b>	<b>12322</b>
	X1Y1-AB	I	40	61	2	4880	.....	.....	.....	.....	.....	4880
I		40	61	1	2440	.....	.....	.....	.....	2440	.....	
I		40	61	2	4880	4880	2928	1952	.....	.....	.....	
II		30	56	5	8400	8400	5040	3360	.....	.....	.....	
III		20	51	5	5100	5100	3060	2040	.....	.....	.....	
IV		10	46	5	2300	2300	1380	920	.....	.....	.....	
<b>TOTAL</b>					<b>28000</b>	<b>20680</b>	<b>12408</b>	<b>8272</b>	<b>0</b>	<b>2440</b>	<b>4880</b>	
<b>GRAND TOTAL</b>					<b>133775</b>	<b>92172</b>	<b>55303</b>	<b>36869</b>	<b>15800</b>	<b>8601</b>	<b>17202</b>	



*Handwritten signature or initials in the bottom left corner.*



**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 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 and tonnage and grade of production expected pit wise as in table below.**

Total proposed production of multi-colour granite is **23032m<sup>3</sup>**. Of which multi-colour granite is **13819m<sup>3</sup>** in recovery of 60% and rejects of granites is **9213m<sup>3</sup>** of 40% up to a depth of 15m below ground level (R.L.205-190m) (Refer Plate No's.V) for the first 5 years plan period. Average production will be **2764m<sup>3</sup>** of multi-colour granite per year.

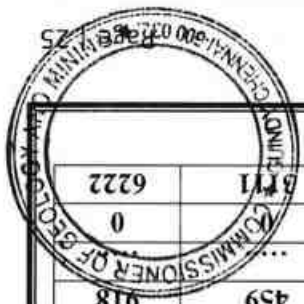
Year	Pit No.(s)	Topsoil/ Overburden (m <sup>3</sup> )	ROM (m <sup>3</sup> )	Saleable multi- colour granite(m <sup>3</sup> ) @ 60%	Granite rejects(m <sup>3</sup> ) @ 40%	Weathered rock in (m <sup>3</sup> )	Side burden (m <sup>3</sup> )	Multi colour granite to Overburden ratio
First	I	2244	4704	2822	1882	1122	---	1: 1.86
Second	I	1530	4605	2763	1842	765	---	1: 1.50
Third	I	1530	4605	2763	1842	765	---	1: 1.50
Fourth	I	918	4623	2774	1849	459	---	1: 1.16
Fifth	I	---	4495	2697	1798	---	---	1: 0.66
<b>Total</b>	---	<b>6222</b>	<b>23032</b>	<b>13819</b>	<b>9213</b>	<b>3111</b>	---	<b>1: 1.34</b>

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

Not applicable. It is a "B" class mine

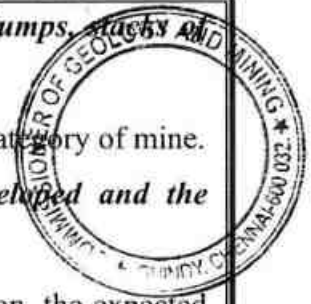
1881-

Handwritten signature



YEARWISE PRODUCTION											
Section	Year	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m <sup>3</sup> )	Production Reserves in m <sup>3</sup>	Multicolour Granite 60% Recovery in m <sup>3</sup>	Granite Waste 40% in m <sup>3</sup>	Weathered rock in m <sup>3</sup>	Top Soil in m <sup>3</sup>
XY-AB	I - YEAR	I	22	51	2	2244	.....	.....	.....	.....	2244
		I	22	51	1	1122	.....	.....	.....	1122	.....
		I	22	51	2	2244	.....	.....	.....	.....	.....
		II	12	41	5	2460	1476	1346	984	.....	.....
	II - YEAR	I	15	51	2	1530	.....	.....	.....	.....	1530
		I	15	51	1	765	.....	.....	.....	765	.....
		I	15	51	2	1530	.....	.....	.....	.....	.....
		II	15	41	5	3075	1845	1230	.....	.....	
	III - YEAR	I	15	51	2	1530	.....	.....	.....	.....	1530
		I	15	51	1	765	.....	.....	.....	765	.....
		I	15	51	2	1530	.....	.....	.....	.....	.....
		II	15	41	5	3075	1845	1230	.....	.....	
	IV - YEAR	I	9	51	2	918	.....	.....	.....	.....	918
		I	9	51	1	459	.....	.....	.....	459	.....
		I	9	51	2	918	.....	.....	.....	.....	.....
		II	9	41	5	1845	1107	738	.....	.....	
	V - YEAR	III	12	31	5	1860	1116	744	.....	.....	.....
		III	12	31	5	1860	1116	744	.....	.....	.....
		III	29	31	5	4495	2697	1798	.....	.....	
		TOTAL	4495	2697	1798	.....	.....	.....	.....	.....	
GRAND TOTAL			32365	23032	13819	9213	.....	.....	.....	.....	

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



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

Composite plan not prepared in this proposed lease area. It is "B<sub>2</sub>" category of mine.

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

The proposed production is **230m<sup>3</sup>/month**. At this rate of production, the expected life of quarry is calculated for production details are given as below: -

Minable reserves of multi-colour granite (60%)	=	<b>55303m<sup>3</sup></b>
First five years production	=	<b>13819m<sup>3</sup></b>
Yearly production	=	<b>2764m<sup>3</sup></b>
Life of Mine (55303/2764)	=	<b>20years</b>
Remaining minable reserves for multi-colour	=	<b>41484m<sup>3</sup></b>

The regular working of the quarry and its production depends upon the demand in 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 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 for core program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:*

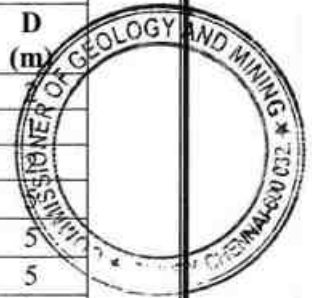
Consider the indefinite depth the multi-colour granite deposit is proved beyond the workable limits about a depth of 25m below ground level (R.L.205-180m).

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

The ultimate pit limit has been determined and demarcated in the conceptual plan and sections (Refer plate no's.VIII).

ULTIMATE PIT LIMIT-(XY-AB)						
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
I	R.L.205-200m	First 5 years	Topsoil	101	61	2
			Weathered rock	101	61	1
			Multi colour	76	61	2
II	R.L.200-195m	First 5 years	Multi colour	71	56	5
III	R.L.195-190m		Multi colour	66	51	5
IV	R.L.190-185m		Remaining lease period	Multi colour	61	46
V	R.L.185-180m	Multi colour		56	41	5
				<b>Total</b>		<b>25m</b>

ULTIMATE PIT LIMIT-(X1Y1-AB)						
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
I	R.L.205-200m	First 5 years	Topsoil	40	61	
			Weathered rock	40	61	
			Multi colour	40	61	
II	R.L.200-195m		Multi colour	30	56	
III	R.L.195-190m		Multi colour	20	51	5
IV	R.L.190-185m		Multi colour	10	46	5
<b>Total</b>						<b>25m</b>



(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 multi-colour granite rejects (up to 40%) and weathered rock are 12324m<sup>3</sup> (9213m<sup>3</sup> + 3111m<sup>3</sup>) will be removed and dumped in the northwest side of the lease area average dimensions of (L62m X W35m X H 5.6m) for the period of five years. The topsoil is 6222m<sup>3</sup> will be removed and stacked for earth bund in the lease hold area to prevent inherent entry of cattle's and human as per rules 106 of the Metalliferous Mines Regulations, 1961. If multi-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: -

No immediate proposal for back filling as the granite deposit is still persisting at deeper level.

(v) Whether post mining land use envisaged: -

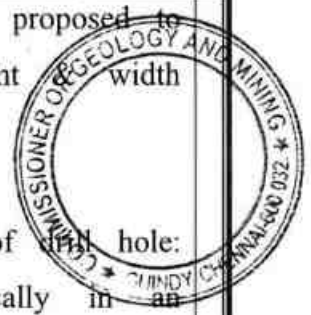
It is a Patta land. At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.

g. <b>Open Cast Mines:</b>	
i) Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: The mining operation is opencast semi-mechanized method adopted on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cost workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

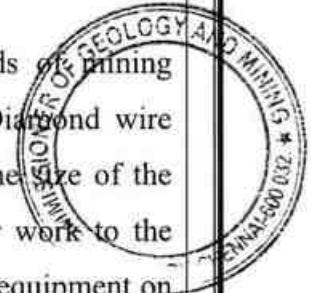
*M. J. S.*



<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 multi-colour granite is proposed to quarry at 5m bench height conventional open cast method.</p> <p>i) Drill hole diameter 32mm</p> <p>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.</p> <p>iii) Spacing and burden: The spacing will 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> <p>The intrusive body will be tackled with latest technology by deploying diamond wire saw cutting for obtaining the good recovery factor of sizeable blocks.</p>
<p>a. Details of Topsoil/ Overburden</p>	<p>: The topsoil is <b>6222m<sup>3</sup></b> will be removed and stacked for earth bund in the lease hold area to prevent inherent entry of cattle's and human as per rules 106, Metalliferous Mines Regulations Act, 1961.</p>
<p>b. Multi-colour granite waste and side burden waste: -</p>	<p>: The multi-colour granite rejects (up to 40%) and weathered rock are <b>12324m<sup>3</sup> (9213m<sup>3</sup> + 3111m<sup>3</sup>)</b> will be removed and dumped in the northwestern side of the lease area average dimensions of (L62m X W35m X H 5.6m) for the period of five years. If multi-colour granite may be unsold will be keep within the lease boundary.</p>
<p>h. <i>Underground Mines:</i></p>	<p>: It is an open cast quarry operation only</p>



*M. J.*



i. **Extent of mechanization:**

Being a fresh quarry, opencast semi- mechanized methods of mining 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 machinery. Hence, most of the quarry operations engage this equipment on hire basis.

**Drilling and cutting equipment:**

a). **Drilling equipment:**

Type	No s	Dia of hole (mm)	Size/Capacity	Make	Motive power
Jack Hammers	4	32mm	--	--	Compressor Air
Compressors	2	--	--	--	Diesel

b). **Cutting equipment's: -**

- i. Diamond wire saw machine = 2 nos
- ii. Line drilling machinery = 2nos

(1) **Loading Equipment:**

Type	No	H.P	Size/Capacity	Make	Motive power
Excavator	--	--	--	--	Diesel

(2) **Haulage and Transport Equipment: -**

(a) Haulage within the mining leasehold:

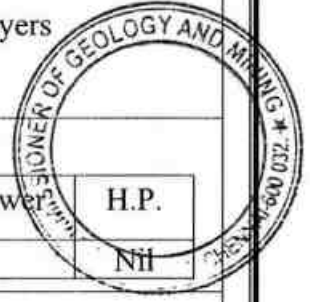
Type	Nos	Size / Capacity	Make	Motive power	H.P.
Tipper	2	--	--	Diesel	--

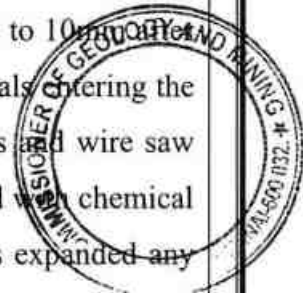
**Whether the dumpers are fitted with exhaust conditioner should be indicated:** The dump is not used in this quarry area, hence it's a small B2 category mine.

(b) Transport from mine head to the destination	:	Tipper will be used for transport.
c. Describe briefly the transport system (please specify)	:	The hired tipper and excavator will be used for carrying out day to day mining activities on the day basis or hourly basis as per market scenario.
d. Ore transported by: own trucks / hired trucks	:	Hired tippers and hydraulic excavator for initially production purposes.

*[Handwritten signature]*

e. Main destination to which ore is transported (giving to and from distance)	: The excavated multi-colour granite transported to needy buyers												
f. Details of hauling / transport equipment:													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Type</th> <th style="width: 10%;">Nos</th> <th style="width: 20%;">Size / Capacity</th> <th style="width: 15%;">Make</th> <th style="width: 20%;">Motive power</th> <th style="width: 20%;">H.P.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Nil</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">Nil</td> <td style="text-align: center;">Nil</td> </tr> </tbody> </table>		Type	Nos	Size / Capacity	Make	Motive power	H.P.	Nil	Nil	Nil	Nil	Nil	Nil
Type	Nos	Size / Capacity	Make	Motive power	H.P.								
Nil	Nil	Nil	Nil	Nil	Nil								
<b>(3) Miscellaneous:</b> Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.													
(A) Operations	: The mining operation is opencast, semi-mechanized method.												
(B) Machineries deployed	: 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.												
5. <b>BLASTING:</b> a) <i>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>  <b>Blasting pattern:</b> 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 "Rock breaking Powder" [Ca (OH) <sub>2</sub> ] 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.  <b>Chemical Blasting Method:</b> The multi-colour 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 10 meters. 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 explosives. A hydraulic rammer generates a crack which is through the holes drilled. The crack is expanded by using hydraulic bags are used to pull the rock.

**c) Miscellaneous:-**

Apart from the above, the following tools and tackles already provided by applicant 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

d) Whether secondary blasting is needed, if so describe it briefly : Not applicable

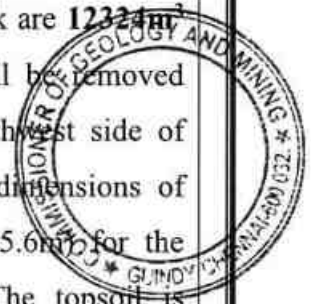
e) Storage of explosives (like capacity and type of explosive magazine) :

1. The applicant is advised to engage an authorized explosive agency to carry out blasting.
2. The blasting time at a day is proposed to be 9.0 PM to 3.0 AM.
3. First aid box will be kept ready at all the time.
4. Necessary precautionary

		announcement will be carried out before the blasting operation																													
<b>6.</b>	<b>MINE DRAINAGE</b>																														
	a) Likely depth of water table based on observations from nearby wells and water bodies	: The ground water table is reported as of 45m in summer and 40m in rainy season from the ground level which was predicted by observation of adjacent bore wells around the lease area.																													
	b) Workings expected to be _____ m. above / reach below water table by the year _____	: Ultimate mining depth is 25m below ground level. So, the present mine lease will be proposed above the water table and hence, quarrying may not affect the ground water.																													
	c) Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	: The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage will be less than 300 Lpm and it will 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.																													
<b>7.</b>	<b>STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:</b>																														
	a) Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the first five years plan period:																														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Topsoil (m<sup>3</sup>)</th> <th>Weathered rock/ Side burden (m<sup>3</sup>)</th> <th>Mineral rejects /Waste (m<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>2244</td> <td>1122</td> <td>1882</td> </tr> <tr> <td>Second</td> <td>1530</td> <td>765</td> <td>1842</td> </tr> <tr> <td>Third</td> <td>1530</td> <td>765</td> <td>1842</td> </tr> <tr> <td>Fourth</td> <td>918</td> <td>459</td> <td>1849</td> </tr> <tr> <td>Fifth</td> <td>---</td> <td>---</td> <td>1798</td> </tr> <tr> <td><b>Total</b></td> <td><b>6222</b></td> <td><b>3111</b></td> <td><b>9213</b></td> </tr> </tbody> </table>			Year	Topsoil (m <sup>3</sup> )	Weathered rock/ Side burden (m <sup>3</sup> )	Mineral rejects /Waste (m <sup>3</sup> )	First	2244	1122	1882	Second	1530	765	1842	Third	1530	765	1842	Fourth	918	459	1849	Fifth	---	---	1798	<b>Total</b>	<b>6222</b>	<b>3111</b>	<b>9213</b>
Year	Topsoil (m <sup>3</sup> )	Weathered rock/ Side burden (m <sup>3</sup> )	Mineral rejects /Waste (m <sup>3</sup> )																												
First	2244	1122	1882																												
Second	1530	765	1842																												
Third	1530	765	1842																												
Fourth	918	459	1849																												
Fifth	---	---	1798																												
<b>Total</b>	<b>6222</b>	<b>3111</b>	<b>9213</b>																												
	b) Land chosen for disposal of waste with proposed justification	: The granite rejects and weathered rock will be dumped on the northwest of the lease area																													



<p>c) Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.</p>	<p>: The multi-colour granite rejects (up to 40%) and weathered rock are <del>12324m<sup>3</sup></del> (9213m<sup>3</sup> + 3111m<sup>3</sup>) will be removed and dumped in the north west side of the lease area average dimensions of (L62m X W35m X H 5.6m) for the period of five years. The topsoil is 6222m<sup>3</sup> will be removed and stacked for earth bund in the lease hold area to prevent inherent entry of cattle's and human as per rules 106 of Metalliferous Mines Regulations, 1961.</p>
<p><b>8. USES OF MINERAL:</b></p>	
<p>a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)</p>	<p>: The quarried multi-colour granite blocks are used to make floors, monuments etc.</p>
<p>b) Indicate physical and chemical specifications stipulated by buyers</p>	<p>: The materials produced at this quarry are multi-colour granite which is used in floors, furniture, counter tops and monuments.</p> <p>This stone is especially good for Countertops, monuments, mosaic, exterior - interior wall and floor applications, fountains, pool and wall capping, stairs, window sills and other design projects.</p> <p>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.</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. <b>OTHERS</b></p>																					
<p><b>Describe briefly the following</b> a) Site services</p>	<p>: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for quarry laborers. No manual mine or stack of spares, lubricant and fuels are required to be maintained at the mine site. Approach road is available from the mine road to the site.</p>																				
<p>b) Employment potential:</p> <p>As per Mines safety under the provisions of Metalliferous Mines Regulations, 1961 &amp; 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.</p> <p>The following man power is proposed for quarrying multi-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 DGMS norms.</p> <table border="1"> <tr> <td rowspan="4">1.</td> <td rowspan="4">Highly Skilled</td> <td>Quarry Manager</td> <td>1No.</td> </tr> <tr> <td>Mines Forman</td> <td>---</td> </tr> <tr> <td>Geologist</td> <td>1No</td> </tr> <tr> <td>Accountant cum &amp; admin</td> <td>1No.</td> </tr> <tr> <td rowspan="4">2.</td> <td rowspan="4">Skilled</td> <td>Earth moving Operator</td> <td>--</td> </tr> <tr> <td>Driver</td> <td>2 Nos.</td> </tr> <tr> <td>Mechanic</td> <td>1 No.</td> </tr> <tr> <td>Blaster/Mat</td> <td>---</td> </tr> </table>		1.	Highly Skilled	Quarry Manager	1No.	Mines Forman	---	Geologist	1No	Accountant cum & admin	1No.	2.	Skilled	Earth moving Operator	--	Driver	2 Nos.	Mechanic	1 No.	Blaster/Mat	---
1.	Highly Skilled			Quarry Manager	1No.																
				Mines Forman	---																
				Geologist	1No																
		Accountant cum & admin	1No.																		
2.	Skilled	Earth moving Operator	--																		
		Driver	2 Nos.																		
		Mechanic	1 No.																		
		Blaster/Mat	---																		



3.	Semi – skilled	Helpers, Greaser's	1 No
4.	Unskilled	Musdoor / Labours	19 Nos
		Cleaners	1 No
		Attendant's	1 No
<b>Total =</b>			<b>22 Nos</b>



**10 MINERAL PROCESSING/BENEFICIATIONS:**

<p>a) If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.</p>	<p>: Excavated multi-colour granite blocks will be directly sale to the needy customer.</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 will 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 will 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</p>	<p>: Drinking is 0.3KLD, utilized water is 1.0KLD, Dust suppression is 1.0KLD and Green Belt is 1.0KLD. Minimum</p>

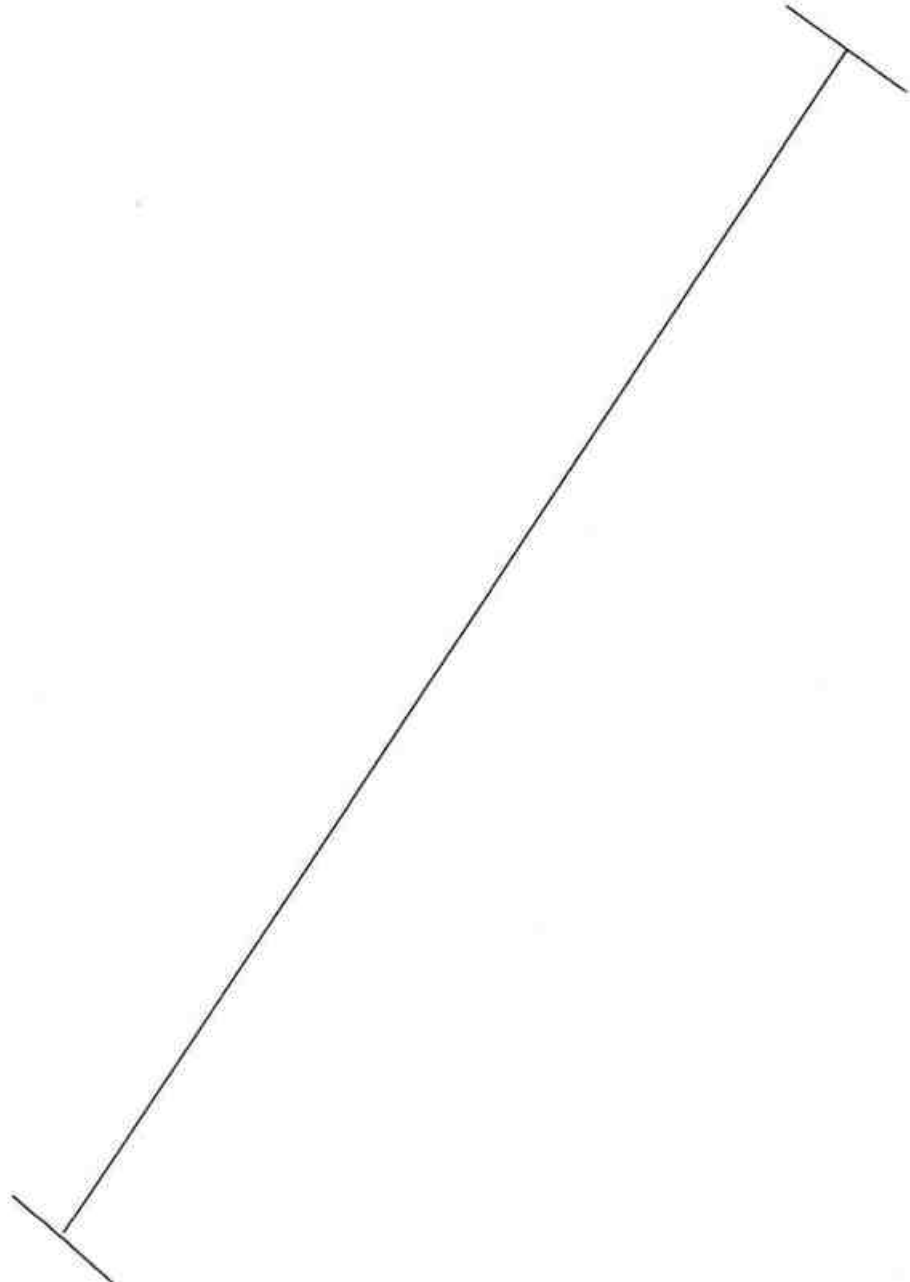
*M. S. D.*



water. Disposal of water and extent of recycling.

quantity of water 3.3KLD per day has to be maintained as per the Mines Rules, 1960. It is proposed to make an own borewell for providing uninterrupted supply of drinking water, dust suppression and Green belt development.

The sewage water to a tune of 1.0KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit.

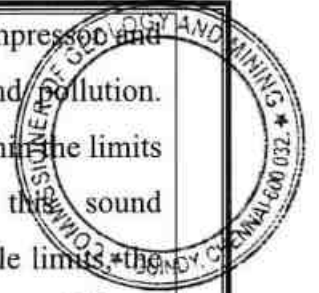


*Handwritten signature*

**PART – B****11.0 ENVIRONMENTAL MANAGEMENT PLAN :**

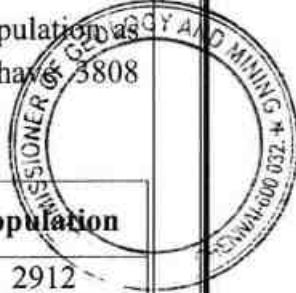
a) Attach a note on the status of Baseline information with regard to the following:

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 land use pattern is given as below.																												
<table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Land Use</th> <th>Present area (Hect.)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Under quarrying area</td> <td>Nil</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>Nil</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>Nil</td> </tr> <tr> <td>4</td> <td>Unutilized</td> <td>2.53.5</td> </tr> <tr> <td>5</td> <td>Waste dump</td> <td>Nil</td> </tr> <tr> <td>6</td> <td>Green Belt</td> <td>0.11.5</td> </tr> <tr> <td>7</td> <td>Drainage &amp; Settling tank</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>Total =</b></td> <td><b>2.65.0</b></td> </tr> </tbody> </table>	Sl. No.	Land Use	Present area (Hect.)	1.	Under quarrying area	Nil	2	Infrastructure	Nil	3	Roads	Nil	4	Unutilized	2.53.5	5	Waste dump	Nil	6	Green Belt	0.11.5	7	Drainage & Settling tank		<b>Total =</b>		<b>2.65.0</b>		
Sl. No.	Land Use	Present area (Hect.)																											
1.	Under quarrying area	Nil																											
2	Infrastructure	Nil																											
3	Roads	Nil																											
4	Unutilized	2.53.5																											
5	Waste dump	Nil																											
6	Green Belt	0.11.5																											
7	Drainage & Settling tank																												
<b>Total =</b>		<b>2.65.0</b>																											
11.2	Water Regime	: Water table in this area is noticed at a depth of 40m in rainy season and 45m in summer from general ground level and presently the quarrying of multi-colour granite is proposed depth of mining is 15m 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	: 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.  In this quarry, the machinery operations																											



		<p>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 and 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>
<p>11.5</p>	<p>Climatic conditions</p>	<p><b>Climate:</b></p> <p>The district receives the rain under the influence of both Southwest and Northeast monsoons. The Northeast monsoon chiefly contributes to the rainfall in the district. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The Southwest monsoon rainfall is highly erratic and summer rains are negligible. The average annual rainfall over the district varies from about 620 mm to 745 mm.</p> <p><b>Rainfall:</b></p> <p>The annual rainfall normal (1970-2000) of Karur district is 742 mm.4 Projections of rainfall over Karur for the periods 2010-2040 (2020s), 2040- 2070 (2050s) and 2070-2100 (2080s) with reference to the baseline (1970-2000) indicate a general decrease of 4.0%, 3.0% and 11.0% respectively.</p>

*Handwritten signature*

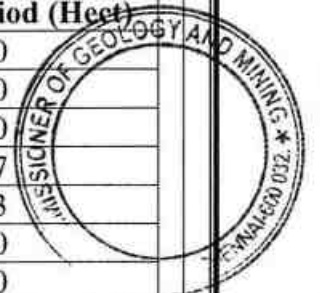
11.6	<p>Human Settlement:</p> <p>The nearest Villages are found in the buffer zone with population as per 2011 census. The K.Pitchampatti Village population has 3808 peoples both Male (1889) and Female (1919).</p>																										
<table border="1"> <thead> <tr> <th>S.N</th> <th>Village</th> <th>Direction</th> <th>Distance in Km</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Alamarathupatty</td> <td>North</td> <td>1.76km</td> <td>2912</td> </tr> <tr> <td>2</td> <td>Kollapatti</td> <td>South</td> <td>2.7km</td> <td>1650</td> </tr> <tr> <td>3</td> <td>R.Vellagoundanpatti</td> <td>East</td> <td>0.27km</td> <td>1195</td> </tr> <tr> <td>4</td> <td>Kalapatti</td> <td>West</td> <td>4.2km</td> <td>1450</td> </tr> </tbody> </table>	S.N	Village	Direction	Distance in Km	Population	1	Alamarathupatty	North	1.76km	2912	2	Kollapatti	South	2.7km	1650	3	R.Vellagoundanpatti	East	0.27km	1195	4	Kalapatti	West	4.2km	1450		
S.N	Village	Direction	Distance in Km	Population																							
1	Alamarathupatty	North	1.76km	2912																							
2	Kollapatti	South	2.7km	1650																							
3	R.Vellagoundanpatti	East	0.27km	1195																							
4	Kalapatti	West	4.2km	1450																							
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																									

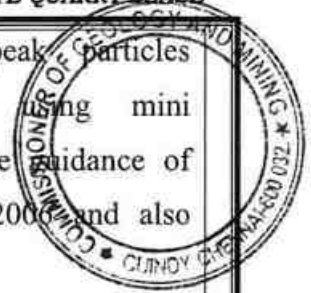
**b) Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines):**

i)	<p><b>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:</b></p> <p>Due to quarrying and exploitation of the multi-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 shown in the tabular form:</p>
----	--

*M. S. S.*

Sl. No.	Land Use	Area in use during the quarrying period (Hect)
1.	Under Quarrying Area	0.30.0
2	Infrastructure	0.02.0
3	Roads	0.07.0
4	Waste dump	0.21.7
5	Garland drainage & Settling tank	0.09.3
6	Green Belt	0.70.0
7	Unutilized	1.25.0
<b>Total =</b>		<b>2.65.0</b>
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 multi-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 (due to blasting)	: It is an Eco-friendly quarry operation, no blasting is proposed, Diamond wire saw cutting method is adopted by the applicant. 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 "Rock breaking Powder" $[Ca(OH)_2]$ 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



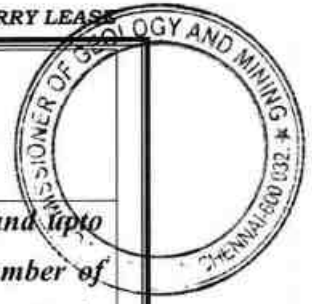


			operation. The maximum peak particles velocity will be recorded using mini seismograph devises as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water Regime	:	No major river or any other water bodies are found around 50m radius.
vii).	Socio-Economics	:	<ol style="list-style-type: none"> <li>1. To provide Employment opportunities of the nearby villagers.</li> <li>2. For the cultural development of the nearby villagers.</li> <li>3. To provide medical facilities and periodical health checkup for the surrounding village peoples.</li> </ol>
viii).	Historical monuments etc.	:	There are no historical monuments, etc found around 10km radius.

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

i).	Temporary storage and utilization of topsoil	:	The topsoil is 6222m <sup>3</sup> will be removed and stacked for earth bund in the lease hold area to prevent inherent entry of cattle's and human as per rules 106, Metalliferous Mines Regulations, 1961.
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	:	The ultimate mining is proposed to an up to depth of 25m below ground level (R.L.205-180m) 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 multi-colour granite persist still at deeper level

MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE



	holding capacity and proposal for utilization of such water be given.																																		
iii).	<p><b>Programme of afforestation, Year wise 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.</b></p> <p>7.5m safety barrier, school and nearest panchayat road 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</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Place</th> <th>Area in Sq.m</th> <th>No.of Plants</th> <th>Rate of survival</th> <th>Rate</th> <th>Amount in Rs</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>Lease Boundary</td> <td>7000</td> <td>750</td> <td>80%</td> <td rowspan="3">@100 Rs Per sapling</td> <td>75,000/-</td> </tr> <tr> <td>Second</td> <td>Approach road, dump road and Nearby Village Road</td> <td>--</td> <td>500</td> <td>80%</td> <td>50,000/-</td> </tr> <tr> <td>Third</td> <td>Schools</td> <td>--</td> <td>400</td> <td>80%</td> <td>40,000/-</td> </tr> <tr> <td colspan="6" style="text-align: right;"><b>Total</b></td> <td><b>1,65,000/-</b></td> </tr> </tbody> </table>	Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs	First	Lease Boundary	7000	750	80%	@100 Rs Per sapling	75,000/-	Second	Approach road, dump road and Nearby Village Road	--	500	80%	50,000/-	Third	Schools	--	400	80%	40,000/-	<b>Total</b>						<b>1,65,000/-</b>	
Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs																													
First	Lease Boundary	7000	750	80%	@100 Rs Per sapling	75,000/-																													
Second	Approach road, dump road and Nearby Village Road	--	500	80%		50,000/-																													
Third	Schools	--	400	80%		40,000/-																													
<b>Total</b>						<b>1,65,000/-</b>																													
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 multi-colour granite rejects (up to 40%) and weathered rock are <b>12324m<sup>3</sup> (9213m<sup>3</sup> + 3111m<sup>3</sup>)</b> will be removed and dumped in the northwest side of the lease area average dimensions of (L62m X W35m X H 5.6m) for the period of five years. The topsoil is <b>6222m<sup>3</sup></b> will be removed and stacked for earth bund in the lease hold area to prevent inherent entry of cattle's and human as per 106 Metalliferous Mines Regulations, 1961. If multi-colour granite may be unsold will be keep within the lease boundary.																																	
v).	Measures to control erosion / sedimentation of water courses.	: No soil erosion takes place in this quarrying activity.																																	
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.																																	

MINING PLAN FOR K.PITCHAMPATTI MULTI COLOUR GRANITE QUARRY LEASE



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

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

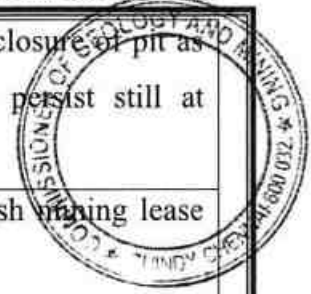
Not applicable. It is B2 category quarry

**12.0 PROGRESSIVE MINE CLOSURE PLAN:**

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	: The present mining is proposed depth is 15m (R.L.205m-190m) below ground level. The mined-out area will be fenced on top of opencast 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 1650 trees will be proposed in quarry lease area, nearby village road and schools. No



		<p>immediate proposals for closure of pit as the multi-colour granite persist still at deeper level.</p>
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	<p>: The quarry lease is a fresh mining lease for 20 years lease period.</p>
12.4	Mine closure activity	<p>: The mined-out area will be fenced on top of opencast working with S1 fencing. Low lying areas with water logging will be used for fish culture. No immediate proposals for closure of pit as the multi-colour granite persist still at deeper level.</p>
12.5	Safety and security	<p>: Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous Mines Regulations, 1961, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.</p>
12.6	Disaster management and Risk Assessment	<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 applicant is capable to meet</p>



*[Handwritten signature]*

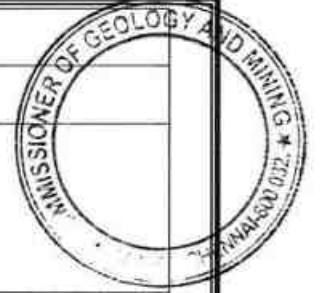
		such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	: During temporary discontinuance the working place will be fenced completely and a board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and man power entrenchments	: During the five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 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:**

<b>A</b>	<b>Fixed Asset Cost:</b>	
	1. Land Cost	: Rs. 15,89,490/-
	2. Labour Shed	: Rs. 3,00,000/-
	3. Sanitary Facility	: Rs. 2,50,000/-
	4. Fencing - 964 Sq.m X Rs.200/-	: Rs. 1,92,800/-
	5. Other expenses (Security guard, bin, etc)	: Rs. 5,00,000/-
	<b>Total</b>	: <b>Rs. 28,32,290/-</b>
<b>B</b>	<b>B. Machinery cost</b>	: <b>Rs. 30,00,000/-</b> (Hire Basis)
<b>C</b>	<b>Total Expenditure of EMP cost (for five years)</b>	
	1. Drinking Water Facility	: Rs. 2,00,000/-
	2. Sanitary facility & Maintenance	: Rs. 1,50,000/-
	3. Permanent water sprinkler	: Rs. 10,00,000/-
	4. Afforestation and maintenance	: Rs. 1,65,000/-

*M. J.*

	5. Safety Kits	:	Rs. 2,00,000/-
	6. Provision of tyre washing facility	:	Rs. 1,00,000/-
	7. Surface runoff management structures like garland drain, settling pond & Bund (0.09.3Hect or 930Sq.m X 400	:	Rs. 3,72,000/-
	8. Blasting materials with blast mat cost	:	Rs. 30,00,000/-
	9. Environment monitoring	:	Rs. 5,00,000/-
	<b>Total</b>	:	<b>Rs. 56,87,000/-</b>
E	<b>Total Project Cost (A+B+C)</b>	:	<b>Rs. 1,15,19,290/-</b>

**13.0 FINANCIAL ASSURANCE:**

Not applicable, it is a small B2 multi-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 multi-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 Tamil Nadu, vide letter 2934330/MMB.2/2022-1, Dated 10.10.2022,
- (iv) Total proposed production of multi-colour granite is 23032m<sup>3</sup>. Of which multi-colour granite is 13819m<sup>3</sup> in recovery of 60% and rejects of granites is 9213m<sup>3</sup> of 40% upto a depth of 15m below ground level (R.L.205-190m) (Refer Plate No's.V) for the first 5 years plan period. Average production will be 2764m<sup>3</sup> of multi-colour granite per year.

**17.0 CSR Expenditure:**

CSR (Corporate Social responsibility) shall provide by the applicant @ 2.0% of average net profit of the company for the last three financial years to the nearby village on the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22<sup>nd</sup> January 2021 as circular no. CSR-05/01/2021-CSR-MCA dated 25<sup>th</sup> August 2021.



Place: Dharmapuri, TN

Date: 15/10/22

Signature of the Recognized Qualified Person

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

*Signature*  
COMMISSIONER 23/11/2022  
GEOLOGY AND MINING  
GUINDY, CHENNAI-600 032.

*File*  
23/11/2022

This Mining Plan is Approved  
Subject to the Conditions/ Stipulation  
Indicated in the Mining Plan Approval  
Letter No./ Dated

**ANNEXURE-I**



Industries, Investment Promotion  
and Commerce (MMB.2)  
Department,  
Secretariat, Chennai-600 009



E.mail: [indusmmb@tn.gov.in](mailto:indusmmb@tn.gov.in)

Letter No.2934330/MMB.2/2022-1, Dated 10.10.2022

From

Thiru S. Krishnan, I.A.S.,  
Additional Chief Secretary to Government.

To

M/s.Dahlia Granites Private Limited,  
S.F.No.468/1A,  
R.Vellagoundanpatti,  
K.Pitchampatti Post,  
Karur – 639 118.

Sir,

Sub: Industries, IP&C - Mines and Minerals – Minor Mineral – Quarry lease application preferred by M/s.Dahlia Granites Private Limited for quarrying of Multicoloured Granite over an extent of 2.65.0 hectares of patta land in S.F.Nos.417/2 (0.67.50 hectare), 417/5 (0.39.0 hectare), 417/7 (Part) (0.25.5 hectare) and 454/2 (1.33.0 hectare) in K.Pitchampatti Village, Karur Taluk and District – Precise area communicated - Approved Mining Plan and Environmental Clearance – Called for.

- Ref:
1. Your Quarry Lease Application dated 18.03.2021.
  2. From the District Collector, Karur, Note File No.135/Mines/2021, Dated 25.08.2021.
  3. From the Commissioner of Geology and Mining, Chennai, File No5764/MM2/2021, Dated 02.08.2022.

-----

I am directed to invite attention to the references second and third cited, wherein the District Collector, Karur and the Commissioner of Geology and Mining, Chennai have recommended and forwarded your quarry lease application for grant of quarry lease for quarrying of Multicoloured Granite over



an extent of 2.65.0 hectares of patta land in S.F.Nos.417/2 (0.67.50 hectare), 417/5 (0.39.0 hectare), 417/7 (Part) (0.25.5 hectare) and 454/2 (1.33.0 hectare) in K.Pitchampatti Village, Karur Taluk and District for a period of 20 years under rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. The Government carefully examined the recommendations of the District Collector, Karur and the Commissioner of Geology and Mining. The extent of 2.65.0 hectares of patta land in S.F.Nos.417/2 (0.67.50 hectare), 417/5 (0.39.0 hectare), 417/7 (Part) (0.25.5 hectare) and 454/2 (1.33.0 hectare) in K.Pitchampatti Village, Karur Taluk and District as recommended by the Commissioner of Geology and Mining is communicated as Precise Area under sub-rule (13) of Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of lease.

3. I therefore request you to furnish the Approved Mining Plan for the above said Precise Area through the Commissioner of Geology and Mining within a period of 3 months as per sub-rule (13) of Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 and to produce Environmental Clearance obtained from the competent authority for the above said area by incorporating the following conditions to the Government: -

1. A safety distance of 7.5 meters should be left out for the adjacent patta lands all along the boundary of the applied area.
2. The four boundaries of the applied area should be fixed and the District Administration / Geology and Mining Department should ensure that the quarrying operations should be restricted within the area granted on lease.
3. Quarrying activity should be carried out from 07.00 AM to 05.00 PM only.
4. 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.
5. Barbed wire fencing or Compound wall should be erected all along the boundary of the lease granted area.
6. The waste materials generated during the course of quarrying should be dumped only within the leasehold area.
7. Environmental Clearance should be obtained from the competent 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



8. The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows -
  - (i) The applicant firm shall at his own expenses erect, maintain and keep in repair all the boundary pillars.
  - (ii) 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.
  - (iii) The applicant firm shall incorporate the Geo Co-ordinates taken by DGPS for the entire boundary pillars of the area and the same should be clearly shown in the Mining Plan.
  - (iv) A soft copy of the digitalized map with the Geo Co-ordinates of the boundary pillar and shape file of the lease boundary should be submitted in the CD form to the Deputy Director, (G&M), Karur and the Commissioner of Geology and Mining.
9. The applicant firm should use mild explosives during quarrying.
10. Child labour should not be engaged in the quarry works.
11. 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.
12. The conditions mentioned in G.O. (Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
13. 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."
14. The applicant firm shall strictly adhere to the statutory and safety requirements.



- 15. Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- 16. 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.
- 17. 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.
- 18. As per rule 12 (v) of the Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.

Yours faithfully,

*S. Ramugandhan*  
10/10/22.

for Additional Chief Secretary to Government.

*10.10.2022*

Copy to:

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

The District Collector, Karur District, Karur.

*M. J.*



# ANNEXURE-II

கனவட்டம், சிஞ்சரிமலையம்மா

உள்ளு. 556  
450 ஏக்கர். ASA

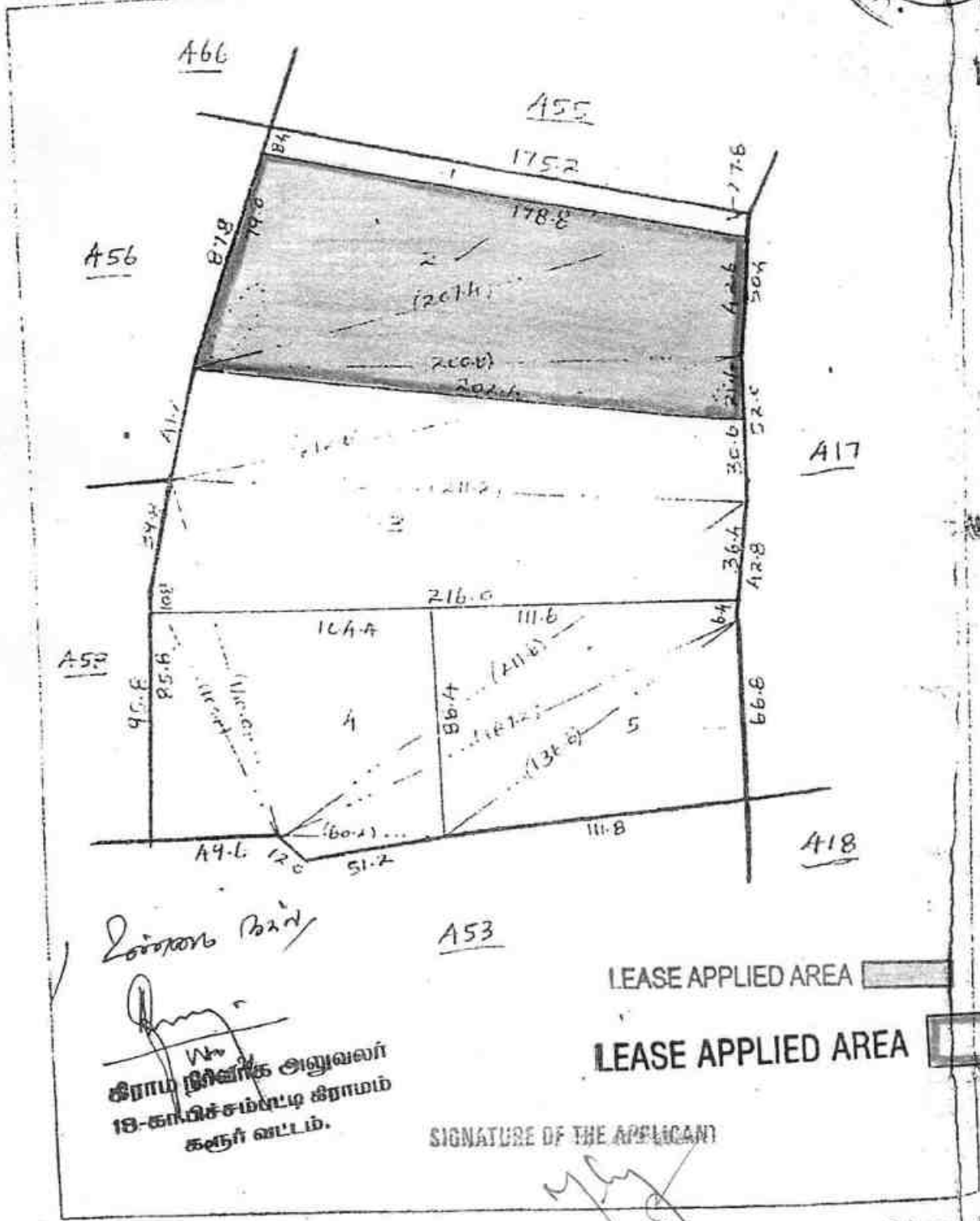
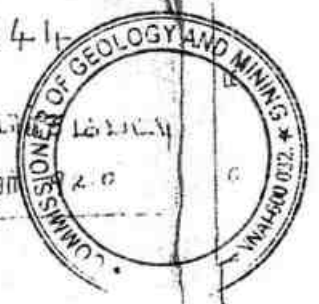
சுமார் 23

சுமார் (63) 41

சுமார்

சுமார் K. L. ...

சுமார் 4



சுமார் 23

*(Signature)*

Who  
சுமார் நிர்வாக அலுவலர்  
18-காமிச்சம்பட்டி சுமார்  
கடந்த வட்டம்.

A53

LEASE APPLIED AREA

LEASE APPLIED AREA

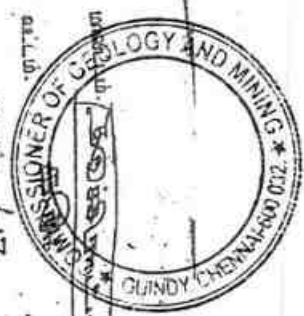
SIGNATURE OF THE APPLICANT

சுமார் 1 = 2000 18 15

சுமார் 23

சுமார் 23

*(Handwritten signature)*



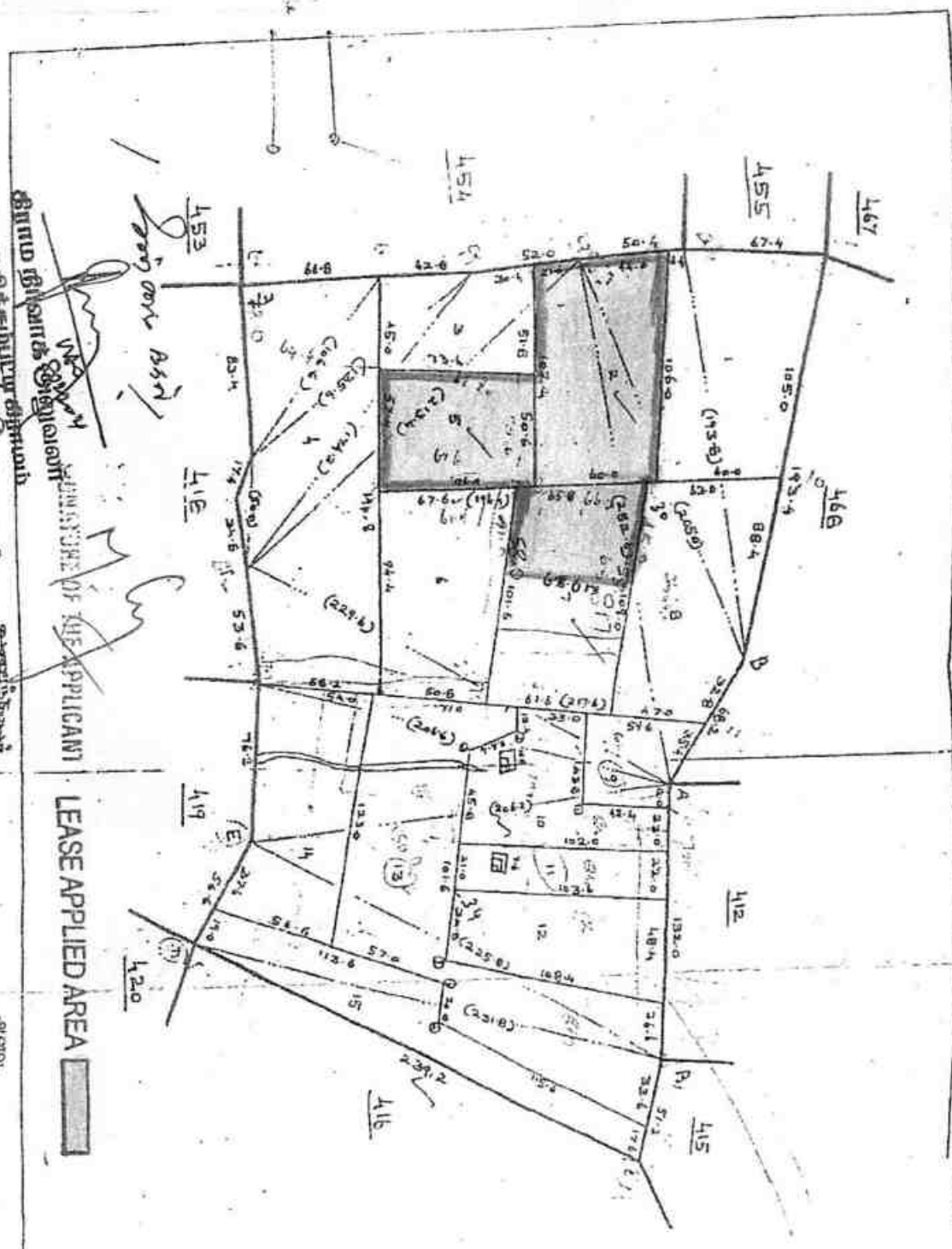
you enter, 417

Under Operation 8 of B.I.V.O

you enter.

Under Operation 8

8 of B.I.V.O



1	412	420	2
2	70.2	35.4	2
3	77.4	16.6	W
4	71.6	19.2	W
5	94.0	30.4	W
6	118.0		W
7	116.4		W
8	119.2		W
9	118.0		W
10	118.0		W
11	118.0		W
12	118.0		W
13	118.0		W
14	118.0		W
15	118.0		W
16	118.0		W
17	118.0		W
18	118.0		W
19	118.0		W
20	118.0		W
21	118.0		W
22	118.0		W
23	118.0		W
24	118.0		W
25	118.0		W
26	118.0		W
27	118.0		W
28	118.0		W
29	118.0		W
30	118.0		W
31	118.0		W
32	118.0		W
33	118.0		W
34	118.0		W
35	118.0		W
36	118.0		W
37	118.0		W
38	118.0		W
39	118.0		W
40	118.0		W
41	118.0		W
42	118.0		W
43	118.0		W
44	118.0		W
45	118.0		W
46	118.0		W
47	118.0		W
48	118.0		W
49	118.0		W
50	118.0		W
51	118.0		W
52	118.0		W
53	118.0		W
54	118.0		W
55	118.0		W
56	118.0		W
57	118.0		W
58	118.0		W
59	118.0		W
60	118.0		W
61	118.0		W
62	118.0		W
63	118.0		W
64	118.0		W
65	118.0		W
66	118.0		W
67	118.0		W
68	118.0		W
69	118.0		W
70	118.0		W
71	118.0		W
72	118.0		W
73	118.0		W
74	118.0		W
75	118.0		W
76	118.0		W
77	118.0		W
78	118.0		W
79	118.0		W
80	118.0		W
81	118.0		W
82	118.0		W
83	118.0		W
84	118.0		W
85	118.0		W
86	118.0		W
87	118.0		W
88	118.0		W
89	118.0		W
90	118.0		W
91	118.0		W
92	118.0		W
93	118.0		W
94	118.0		W
95	118.0		W
96	118.0		W
97	118.0		W
98	118.0		W
99	118.0		W
100	118.0		W

LEASE APPLIED AREA



*[Handwritten signature]*



1	2	3	4	5	6	7	8	9	10	11
453	2	453-100	11	...	8-1	6	1 38	2 06.0	2 84	1206 கு. செயல்பாடு
								3 90.0	5 38	கு. செயல்பாடு
454	1	454-100	11	...	8-4	6	1 38	0 14.0	0 20	79 கு. செயல்பாடு
								1 33.0	1 85	498 கு. செயல்பாடு
								1 67.0	2 32	1039 கு. செயல்பாடு
								0 91.0	1 25	856 கு. செயல்பாடு
								0 87.0	1 19	801 கு. செயல்பாடு
455	...	455	11	...	8-3	5	2 00	1 16.0	2 32	79 கு. செயல்பாடு
								0 43.5	0 87	460 கு. செயல்பாடு
456	1	456-100	11	...	8-3	5	2 00	0 55.5	1 11	1091 கு. செயல்பாடு
								0 91.0	1 83	899 கு. செயல்பாடு
457	1	457-100	11	...	8-3	5	2 00	1 23.0	2 46	460 கு. செயல்பாடு
								0 94.0	1 88	1091 கு. செயல்பாடு
								2 06.0	4 12	899 கு. செயல்பாடு
458	...	458	11	...	8-3	5	2 00	4 23.0	8 46	1821 கு. செயல்பாடு
								5 53.0	11 06	கு. செயல்பாடு
459	1	459-100	11	...	8-1	6	1 38	1 50.0	2 07	1206 கு. செயல்பாடு
								2 05.0	2 84	326 கு. செயல்பாடு
460	V	460-V	11	...	8-4	6	1 38	2 39.5	3 32	1207 கு. செயல்பாடு
								3 55.0	4 91	கு. செயல்பாடு



தேர்வு எண். 18-கா.பி.செ.ம. கிராமம் கிராம நிர்வாக அலுவலர்

1/2000 Part

1	2	3	4	5	6	7	8	9	10
414	16	414-10	4	8-3	5	2 00	0 40.0	0	859 B. குன்றம் எலி.
415	A	415-A	11.0	...	...	...	1 26.5	...	151 கு. எலி. குன்றம் எலி.
415	B	...	4	8-3	5	3 00	0 36.5	0 73	1035 எலி. குன்றம் எலி.
416	...	...	4	8-3	5	2 00	2 43.0	4 47	79 B. குன்றம் எலி.
417	1	417-10	2	8-3	5	2 00	0 75.0	1 50	766 ம. குன்றம் எலி.
2	...	...	4	8-3	5	2 00	0 67.5	1 35	859 B. குன்றம் எலி.
3	...	...	4	8-3	5	2 00	0 35.0	0 70	1035 எலி. குன்றம் எலி.
4	...	...	4	8-3	5	2 00	1 19.0	2 38	766 ம. குன்றம் எலி.
5	...	...	4	8-3	5	2 00	0 39.0	0 78	859 B. குன்றம் எலி.
6	...	...	4	8-4	5	2 00	0 56.0	1 12	766 ம. குன்றம் எலி.
7	...	...	4	8-3	5	2 00	0 65.0	1 30	1035 எலி. குன்றம் எலி.
8	...	...	4	8-4	5	2 00	0 20.0	0 40	766 ம. குன்றம் எலி.
9	...	...	4	8-4	5	2 00	0 40.0	0 80	859 B. குன்றம் எலி.
10	...	...	4	8-4	5	2 00	0 21.0	0 42	766 ம. குன்றம் எலி.
11	...	...	4	8-3	5	2 00	0 46.0	0 92	859 B. குன்றம் எலி.
12	...	...	4	8-3	5	2 00	1 20.0	2 40	766 ம. குன்றம் எலி.
13	...	...	4	8-3	5	2 00	0 60.5	1 22	859 ம. குன்றம் எலி.
14	...	...	4	8-3	5	2 00	0 54.0	1 08	1035 எலி. குன்றம் எலி.
15	...	...	4	8-3	5	2 00	8 82.0	17 69	





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : கரூர்

வருவாய் கிராமம் : க.பிச்சம்பட்டி

பட்டா எண் : 3245

உரிமையாளர்கள் பெயர்

1. டோலேந்திர பிரசாத் நெல்லூர்

மகன்

பிரமோத்



புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
417	2	0 - 67.50	1.35	--	--	--	--	2020/0103/14/148548-- --- 10-12-2020
454	2	1 - 33.00	1.85	--	--	--	--	2020/0103/14/148548-- --- 10-12-2020
		2 - 0.50	3.20					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/01/044/03245/30464 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 14-10-2022 அன்று 11:47:08 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- ஸ்கான்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : கரூர்

வருவாய் கிராமம் : க.பிச்சம்பட்டி

பட்டா எண் : 3156

உரிமையாளர்கள் பெயர்

1. சுப்பா ராவ்

மனைவி

காரலபாட்டி செஞ்சம்மா

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
417	5	0 - 39.00	0.78	--	--	--	--	2019/0103/14/091590-- --- 16-06-2019
417	7	0 - 65.00	1.30	--	--	--	--	2019/0103/14/091590-- --- 16-06-2019
454	5	0 - 87.00	1.19	--	--	--	--	2019/0103/14/091590-- --- 16-06-2019
		1 - 91.00	3.27					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/01/044/03156/30475 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 14-10-2022 அன்று 11:48:49 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.



30 - ஆம் பரவிநிலம்

செய்த

மாநாட்டின்

செய்த

மாநாடு

பக்கம் 2

மாநாட்டில் கலந்துகொள்ளும் மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

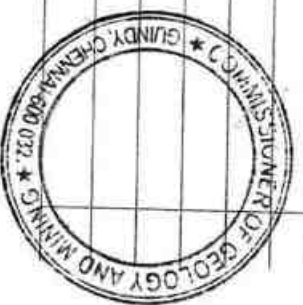
மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

மாண்புமிகு அமைச்சர்

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
417	2	1.37.5	1.37	2245	செ. அனாபந்தி	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்
5	0.59	0.78	2.156	சி. சண்முகவேலு	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்
7	1.30	1.30	1.30	சி. சண்முகவேலு	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்
454	2	1.37.5	1.37	2245	செ. அனாபந்தி	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்	மாண்புமிகு அமைச்சர்

300/26-R.F. III-A-10-50,00,000 CPs-GPB-Mdu-7-2016.







1489/2019 TP/65029565/2019



தமிழ்நாடு தமிழ்நாடு TAMILNADU

6.6.2019  
Rs. 25000/-  
Ganapati Chendham  
Bodipalam  
D 886299  
N. SHANMUGAM  
STAMP VENDOR,  
VELLIANAL,  
L.No. 1997 KRR



**SALE DEED**

On this, the 06<sup>th</sup> day of June month of 2019 of the year, We, Periyasamy (DL No.TN47 20120006241) son of (late) Marudapillai, residing at A.Vellagoundanpatti, K. Pichampatti village, Karur taluk, Karur district - 1, the son of No.1 of us namely Arulmani (Aadhaar Card No.2291 0542 8629) - 2 and the daughter of (late) Marudapillai as well as the blood sister of No.1 of us namely Vellaiyammal (Voter ID Card No.TN/22/150/0028014) wife of Athikari, residing at Kambiliyampatti, Kottanatham village, Vedasandur taluk, Dindigul district -3 do hereby execute this absolute sale deed.

Purchaser

Sellers

நாற்பாதி சிவசுப்பிரமணியன்

M. Shanmugam  
Arulmani  
L. Sri Vellaiyammal

Stamp box with handwritten details and a signature.



Handwritten signature



தமிழ்நாடு தமில்நாடு TAMILNADU



6.6.2019  
Rs. 25000/-  
Garlapati Chenchamma  
Bodipalem  
D 886300  
N. SHANMUGAM  
STAMP VENDOR,  
VELLIANAI,  
I.No. 19/97 KRR

To and in favour of Garlapati Chenchamma (Aadhaar Card No.9971 6438 0600, Cell No.9705851666) wife of Subba Rao, residing at No.3-35, Bodipalem Village Kakumanu Mandal, Bodipalem Post, Quntur District, Andhrapradesh-522315.

Whereas the under mentioned property belong to us ancestrally and UDR Patta (Separate Patta Nos.766 and 801) were issued in the name of No.1 of us and subsequently separate Computer Patta Nos. 766 and 801 were issued in favour of No.1 of us vide F.No.10(1) and since then we have been in exclusive and peaceful possession and enjoyment of the same as absolute

Purchaser: Sellers

Handwritten signature in Telugu script

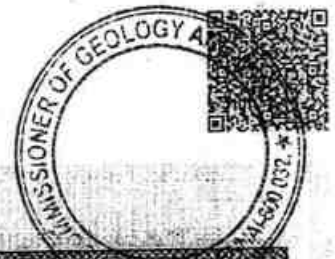
M. Shanmugam  
Bodipalem

Lot Vellaiyammal

Stamp box with handwritten numbers: 1, 16, 2



Handwritten signature



தமிழ்நாடு தமில்நாடு TAMILNADU

A 512137  
b.b. 2019  
Rs. 20000/-  
Garbati Cherthamma  
Bodipalera  
N. SHANMUGAM  
STAMP VENDOR,  
VELLIANAL  
L.No. 19/97 KRR



owners thereof, and on today itself we have sold the below mentioned property to you including by handing over possession and received Rs.9,97,500/- as consideration by way of cheque No.250287 dated 06.06.2019 drawn on ICICI Bank limited, Cuntur branch issued in favour of the above named No.1 of us.

As we have received the said amount of Rupees nine lakhs ninety seven thousand five hundred only from you as stated above towards our family expenses, on and from today itself you can enjoy the under mentioned property as your absolute and exclusive property independently with all rights available therewith by paying tax etc., in your name including by transferring

Purchaser

Sellers:

நாடு உரிமை உடையது உடையது

N. Shanmugam  
Ravi Varan  
L. Sri Vellaiyammal

செய்த நாள்: 06.06.2019  
16  
3  
பதிவு செய்துள்ள  
பதிவு செய்துள்ள



M. S.



the patla in your name and by creating all kind of encumbrances over which you wish to do so.

We assure you that regarding the below mentioned property there is no encumbrances and disputes etc., Perhaps if any encumbrances and disputes are come out and because of which if you sustain any loss, we will compensate such loss through our other properties.

We hereby assure that from today onwards either ourselves or our heirs do not have any right, title and interest whatsoever over the below mentioned property.

On today itself we have handed over the possession of the below mentioned property to you.

DETAILS OF THE PROPERTY

Tamil Nadu State, Karur Registration district, Velliyanai Sub Registration district, Karur taluk, Thanthoni Union, K.Pichampatti Village Panchayat, K.Pichampatti village:

1) S.F.No.417/5 Fee:0.39.00 = Acre:0.96-1/4 cents of punja land and situated within the following four boundaries:

North of the land in S.F.No.417/4, East of the land in S.F.No.417/3, South of the land in S.F.No.417/2 and West of the below mentioned land in S.F.No.417/7 and the land in S.F.No. 417/6

within these boundaries, the said land is situated with mamool pathway rights etc.

Purchaser

Sellers

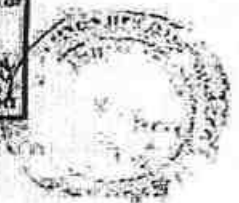
Handwritten signature in Tamil script.

Handwritten signature: M. S. S. S. S.

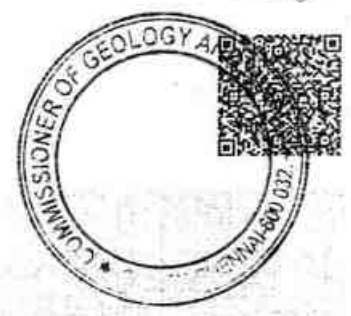
Handwritten signature: R. V. V. V. V.



Rectangular stamp with text in Tamil and English, including a signature and a date.



Handwritten signature in the bottom right corner.



5.

2) S.F.No.4177 Hec.0.65.00 = Acre 1.60-1/2 cents of punja land and situated within the following four boundaries:

North of the land in S.F.No.4176, East of the land in S.F.No.4172 and the above said land in S.F.No.4175, South of the land in S.F.No.4178 and West of the lands in S.F.No.4179, 41710 and 41713

within these boundaries, the said land is situated with mamool pathway rights etc.,

3) S.F.No.454/5 Hec.0.87.00 = Acre 2.15 cents of punja land and situated within the following four boundaries:

North of the land in S.F.No.453/1, East of the land in S.F.No.454/4, South of the land in S.F.No.454/3 and West of the lands in S.F.No.417/3 and 417/4

within these boundaries, the said land is situated with mamool pathway rights etc.,

Total extent of the said three items is Ac.4.71 3/4 cents only.

Purchaser

Sellers

Handwritten signature of the purchaser in Tamil script.

M. P. Sanyal  
R. K. Mani

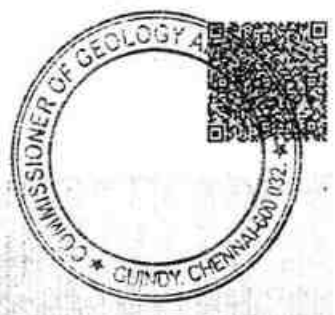


L. N. V. Vellaiyammal

Rectangular stamp containing handwritten numbers and text, possibly a registration or recording stamp.



Handwritten signature or initials in the bottom right corner.



6.

Value of the the said property is Rs.9,97,500/-

Purchaser

Handwritten name of the purchaser in Tamil script.

Sellers

M. Kesava  
Paul Mani

Large blacked-out area followed by the handwritten name 'L. Vellaiyammal'.

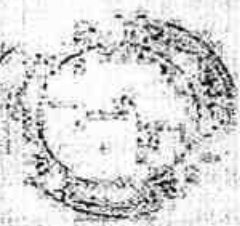
Witnesses

Handwritten names and addresses of witnesses in Tamil script, including details like 'No. 62001' and 'No. 614602'.

Document prepared by

Signature of the document preparer.  
S. J. G. ... M.Sc. B.Ed.  
... P.O.  
No. B. 1352/KRR/1984

Rectangular stamp with handwritten text and a signature, possibly a registration or recording stamp.



Handwritten signature or initials in the bottom right corner.



1968 ஆம் வருஷத்திய தமிழக அரசு பத்திரங்களின் (முன்புத்திரவகடும்புச்) சட்ட விதிகள் விதி 3 (1)ன் படி அறிக்கை

K. V. சம்பந்தம் கிராமம்

வரிசை எண்	சாலை எண்	விஸ்தாரம்		பரந்தரம்		வரத்தின் தன்மை	அமுதிக்கப்பட்டவரின் அபிப்பிராயம் நடுவர் மன்றம்	
		ஏ.	ஏ.	ஏ.	ஏ.		ரூ.	பை.
1.	417/5	0	96 1/4	0	96 1/4	4 அடம் 0.39.0	2,03,580	00
2.	417/7	1	60 1/2	1	60 1/2	4 அடம் 0.65.0	3,39,300	00
3.	454/5	2	15	2	15	4 அடம் 0.87.0	454,140	00
சம்பந்தம் கிராமம்							480	00
ஆக 3,000				4.71 3/4			997500.00	

1. பத்திரவகடும்புச் சட்டம், 1968  
2. தமிழக அரசு பத்திரங்கள், 1968  
3. சட்ட விதிகள், 1968



மாண்புமிகு கிராம அமைச்சர்











M. Perumal  
District Engineer  
T-10, Vellaiyannal

Handwritten signature/initials.



R/வெள்ளியனைப்புத்தகம்-1/1489/2019

மாநில ஆய்வு ஆணை துறை அமைச்சர், தலைநகர், சென்னை, 04.12.2019 மலையாளத்தில் வெள்ளியனைப்பு சார்புவெள்ளி ஆய்வுக்கான தரக்கள் செய்து காட்டும் 1.4.1489 தொகுதியைப் பற்றி.

<p>இடது பெருவிரல்</p> 		<p>நா. சுவாமிசெட்டிவேலு</p> <p>கட்டுரை விவரங்கள் ஆவண வாசகத்தில் உள்ளது.</p>
<p>வலது க்கொடுத்தகக் ஒப்பக் கொண்டவர் இடது பெருவிரல்</p> 		<p>M. Selvaraj</p> <p>கட்டுரை விவரங்கள் ஆவண வாசகத்தில் உள்ளது.</p>
<p>வலது க்கொடுத்தகக் ஒப்பக் கொண்டவர் இடது பெருவிரல்</p> 		<p>Paul Mani</p> <p>கட்டுரை விவரங்கள் ஆவண வாசகத்தில் உள்ளது.</p>
<p>வலது க்கொடுத்தகக் ஒப்பக் கொண்டவர் இடது பெருவிரல்</p> 		<p>- LTD</p> <p>கட்டுரை விவரங்கள் ஆவண வாசகத்தில் உள்ளது.</p>

1. இவ்வாறு 2019 ஆண்டு 04.12.2019 ஆவணங்கள்  
 2. தயாரிக்கப்பட்டன என்பதை உறுதிப்படுத்துக  
 3. கட்டுரை நபர்

13/12/2019



M. S.



Handwritten mark at the top left corner.

212



Rectangular box containing a signature and some text.

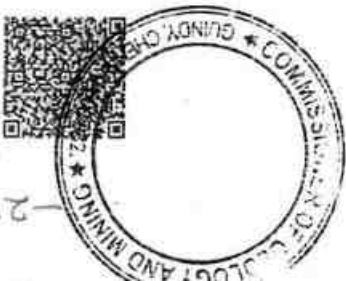
Rectangular box containing a signature, a circular stamp, and text.

Rectangular box containing a signature and text.

Rectangular box containing two signatures and text.

Rectangular box containing a signature, a photograph, a fingerprint, and text.

6102788717489/2019





252

പട്ടണത്തിൽ, 63, അക്ഷരങ്ങൾ, 52, 10, 19.

1	2	3	4	5	6	7	8	9	10	11	1	2	
414	16	414-DH	0	4	...	8-3	5	2 00	0 40.0	0 80	2168	...	414-119
	17	-DH	7	4	...	8-3	5	2 00	0 57.0	1 14	896	...	-119
									8 48.5	16 57			-119
415	A	415-A	0	4	...	8-3	5	2 00	0 26.5	...	...	...	-119
	B	-B	0	4	...	8-3	5	2 00	0 36.5	0 73	151	...	-119
									1 63.0	0 73			-119
416		416	0	4	...	8-3	5	2 00	2 43.0	4 87	1035	...	-119
417	1	417	0	4	...	8-3	5	2 00	0 25.0	1 20	798	...	417-119
	2	-DH	0	4	...	8-3	5	2 00	0 67.5	1 35	595	...	-119
	3	-DH	0	4	...	8-3	5	2 00	0 85.0	1 70	854	...	-119
	4	-DH	0	4	...	8-3	5	2 00	1 19.0	2 38	1035	...	-119
	5	-DH	0	4	...	8-3	5	2 00	0 39.0	0 78	766	...	-119
	6	-DH	0	4	...	8-4	5	2 00	0 56.0	1 12	859	...	-119
	7	-DH	0	4	...	8-3	5	2 00	0 65.0	1 30	766	...	-119
	8	-DH	0	4	...	8-4	5	2 00	0 66.0	1 32	1035	...	-119
	9	-DH	0	4	...	8-4	5	2 00	0 20.0	0 40	766	...	-119
	10	-DH	0	4	...	8-4	5	2 00	0 40.0	0 80	859	...	-119
	11	-DH	0	4	...	8-4	5	2 00	0 21.0	0 42	766	...	-119
	12	-DH	0	4	...	8-3	5	2 00	0 46.0	0 92	859	...	-119
	13	-DH	0	4	...	8-3	5	2 00	1 20.0	2 40	766	...	-119
	14	-DH	0	4	...	8-3	5	2 00	0 60.5	1 22	859	...	-119
	15	-DH	0	4	...	8-3	5	2 00	0 54.0	1 08	1035	...	-119
									5 54.0	17 69			

*Signature*  
 Director  
 18-01-2019  
 Director  
 18-01-2019

18-01-2019  
 Director  
 18-01-2019

*Handwritten signature*



162

பி. ஏ. சி. பி. கார்ட்டுகள்

1	2	3	4	5	6	7	8	9	10	11
453	2	453-101	H		8-4	6	1 38	2 06.0	2 84	1206 கி.மீ. மீட்டர் மீட்டர்.
								3 90.0	5 38	
454	1	454-101	H		8-4	6	1 38	0 14.0	0 20	79 மீ. மீட்டர் மீட்டர்.
	2	454-102	H		8-4	6	1 38	1 33.0	1 85	498 மீட்டர்.
	3	454-103	H		8-4	6	1 38	1 67.0	2 32	1089 மீட்டர். மீட்டர்.
	4	454-104	H		8-4	6	1 38	0 91.0	1 25	556 மீட்டர். மீட்டர்.
	5	454-105	H		8-4	6	1 38	0 87.0	1 19	801 மீட்டர். மீட்டர்.
								4 92.0	6 81	
455		455	H		8-3	5	2 00	1 16.0	2 32	79 மீ. மீட்டர் மீட்டர்.
456	1	456-101	H		8-3	5	2 00	0 45.5	0 57	460 மீட்டர். மீட்டர்.
	2	456-102	H		8-3	5	2 00	0 55.5	1 11	1091 மீட்டர். மீட்டர்.
	3	456-103	H		8-3	5	2 00	0 91.0	1 83	899 மீட்டர். மீட்டர்.
								1 90.0	3 81	
457	1	457-101	H		8-3	5	2 00	1 25.0	2 46	460 மீட்டர். மீட்டர்.
	2	457-102	H		8-3	5	2 00	0 94.0	1 38	1091 மீட்டர். மீட்டர்.
	3	457-103	H		8-3	5	2 00	2 06.0	4 12	899 மீட்டர். மீட்டர்.
								4 23.0	8 46	
458		458	H		8-3	5	2 00	5 53.0	11 06	1821 மீட்டர். மீட்டர்(1), மீட்டர்(2), மீட்டர்(3).
459	1	459-101	H		8-4	6	1 38	1 50.0	2 07	1206 கி.மீ. மீட்டர் மீட்டர்.
		459-102	H		8-4	6	1 38	2 05.0	2 84	326 மீட்டர். மீட்டர்.
								3 55.0	4 91	
460	A	460-A	H		8-4	6	1 38	2 39.5	3 32	1207 மீட்டர். மீட்டர்.

452  
18-VII  
36

As per

454  
10

455  
10

456  
10

457  
10

458  
10

459  
10

460  
10

பி. ஏ. சி. பி. கார்ட்டுகள்  
பி. ஏ. சி. பி. கார்ட்டுகள்  
பி. ஏ. சி. பி. கார்ட்டுகள்

பி. ஏ. சி. பி. கார்ட்டுகள்  
பி. ஏ. சி. பி. கார்ட்டுகள்  
பி. ஏ. சி. பி. கார்ட்டுகள்

Handwritten signature



வட்டார செயர் அலுவலக இணைய சேவை - நில உயர்வு

<http://eservices.tn.gov.in/eservicesnew/land/chi/indexabstracts.html?>



தமிழக அரசு  
வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : கரூர்

வருவாய் திராசம் : உ.பி.சம்.பா.30

பட்டாள எண் : 766

உரிமையாளர்கள் பெயர்

1.	மருதப்பாளன்		மகன்		பெரியசாமி	
	நகர்ப்பகுதி		நகர்ப்பகுதி		மற்றவை	
	முன்பு	தீர்வை	முன்பு	தீர்வை	முன்பு	தீர்வை
புள்ளி	சுட்டி	மொத்த - ரூ	சுட்டி	மொத்த - ரூ	சுட்டி	மொத்த - ரூ
417	11	--	--	0-21.00	0.42	--
417	33	--	--	1-26.00	2.40	--
417	5	--	--	0-29.00	0.78	--
417	7	--	--	0-65.00	1.30	--
417	9	--	--	0-20.00	0.40	--
				2-65.00	5.30	

குறிப்பு 2:

1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் பின் பதிவேட்டில் உள்ளது. பெறப்பட்டவை: திரைக்காட்சி தளங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/01/044/00766/70475 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

2. இது தகவல்கள் 04-06-2019 ஆண்டு 01:32:50 PM நேரத்தில் அச்சடிக்கப்பட்டது.

3. மைக்ரோபி செயர்வின் 2D barcode படிவங்கள் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

நாள் 04-06-2019

M. G. Sanyal  
R. S. Mani

L.T. of Vellaiyammal

மாவட்ட செயர் அலுவலகம்  
தமிழக அரசு வருவாய்த் துறை  
புதுச்சேரி



*[Handwritten signature]*



வட்டாளியர் அலுவலக இணைய சேவை - நில உ...

http://eservices.tn.gov.in/eservicesnew/and/chennai/str...html?



தமிழக அரசு  
வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : கரூர்

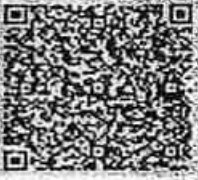
வருவாய் பிராந்தம் : உயிச்சம்பட்டி

பட்டாள எண் : 801

உரிமையாளர்கள் பெயர்

1. மருதப்பிள்ளை		மகன்		பெரியசாமி	
நட்செய்		புக்கெய்		மற்றவை	
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல-எண்	உட்பிரிவு	ஒற்றக்-ஏ	சூ-எய்	ஒற்றக்-ஏ	சூ-எய்
254	5	0	87.00	1.19	
		0 - 87.00		3.19	

குறிப்பு 2 :



1. பெற்ற உரிமை தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் முறையில் கிடைக்கும் பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/01/044/00801/80429 என்ற குறியீடு எண்ணை உடனடி செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 04-06-2019 அன்று 01:33:45 PM கோரத்தில் அச்சடிக்கப்பட்டது.
3. அகப்பெயர் கோரலின் 2D barcode படிபடாத மூலம் படித்து 3G/GPRS வழி இணைய தளத்தில் சரிபார்க்கவும்.

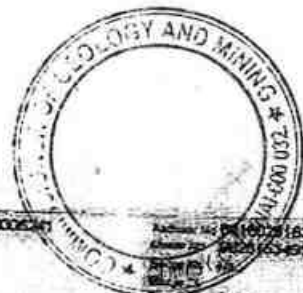
நில உரிமை அலுவலர் பெயர்

M. Pragasam  
Bulmani  
L. V. Vellayammal

பதிவு செய்துள்ள அலுவலர் பெயர்: M. Pragasam  
 பதிவு செய்துள்ள அலுவலர் பெயர்: Bulmani  
 பதிவு செய்துள்ள அலுவலர் பெயர்: L. V. Vellayammal  
 பதிவு செய்துள்ள அலுவலர் பெயர்: M. Pragasam



M. Pragasam



**India Driving License (Tamil Nadu)**

TN47 2012 000241

Date of Issue: 14-09-2012

Valid: 18-03-2022

Date of Birth: 20-03-1967

Sex: Unknown

Name: PERYASAMY M

Address: MARUTHAPILLAI

TN47 2012 000241

Address No: 11-3, K. Pichampatti, Kara, Tamil Nadu - 631115

Phone No: 9820 653 499

Issue Date: 21-03-2017

Employment In: TN47 KLR00018632017

Employment Address: VELLAGOUNDANPATTIL K PICHAMPATTI, KARAIKUDI DISTRICT, TAMIL NADU, INDIA

**GOVERNMENT OF INDIA**

Passport Photo

Passport No: 2291 0542 8629

Father: PERYASAMY MARUTHAPILLAI

Date of Birth: 2003

Gender: Male

ஆதாரம் - கல்யாண இலாபகரம் அபிப்பிராயம்

**BIOMETRIC IDENTIFICATION AUTHORITY OF INDIA**

Address: S/O Periyasamy, 11-3, K. PICHAMPATTIL, VELLAGOUNDANPATTIL, K. Pichampatti, Kara, Tamil Nadu, 631115

மார் 20 ல் பிறப்பிட்டுள்ளது

M. Periyasamy  
 Bul Dani  
 List Vellaiyammal

1. கல்யாண இலாபகரம் அபிப்பிராயம்

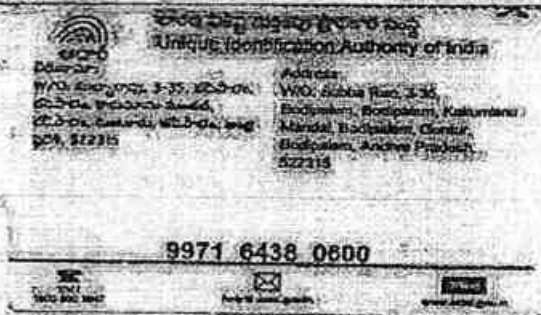
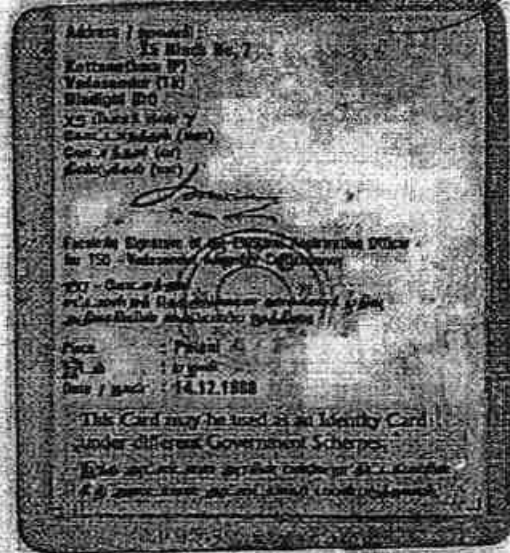
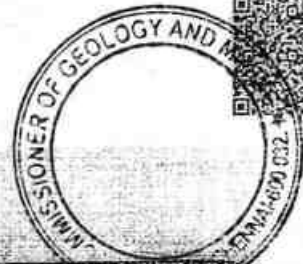
2. கல்யாண இலாபகரம் அபிப்பிராயம்

3. கல்யாண இலாபகரம் அபிப்பிராயம்

பிரதம அமைச்சர்



Handwritten signature



காத்தாபாட்டி சேஷ மய்யவாலை

M. Arjun  
Ravi Dani  
L. T. V. Vellaiyammal

சென்னை, 14.12.2018  
பிரதமர் அலுவலகம்  
பிரதமர் அலுவலகம்  
பிரதமர் அலுவலகம்



*[Handwritten signature]*



**ELECTION COMMISSION OF INDIA**  
**IDENTITY CARD**  
**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**  
**IN 0207284**



Elector's Name: **Chandrakamathi Ambalal**  
 Elector's Name: **சந்திரா காமாட்சி அம்பலாள்**  
 Electoral District: **Chennai**  
 Electoral Constituency: **Chennai**  
 Date of Issue: **11.25.2015**

Address: **31F**  
**17th St, Anna Nagar**  
**Tiruchirappalli - 620001**

Address: **31F**  
**17th St, Anna Nagar**  
**Tiruchirappalli - 620001**

For the use of the Officer in Charge of the Electoral Office  
 For **438 - TIRUCHIRAPPALLI - I**  
 Assembly Constituency

**7951 6984 8115**

சிறப்பிப்புகள்

**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**

**7951 6984 8115**

சந்திரா காமாட்சி அம்பலாள்

**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**  
**சந்திரா காமாட்சி அம்பலாள்**

**7951 6984 8115**

சந்திரா காமாட்சி அம்பலாள்

- 1 M. Adams
- 1 Ruel Dair

**LIST Vellaiyammal**

1	சந்திரா காமாட்சி அம்பலாள்	சந்திரா காமாட்சி அம்பலாள்
1b	சந்திரா காமாட்சி அம்பலாள்	
1b	சந்திரா காமாட்சி அம்பலாள்	

சந்திரா காமாட்சி அம்பலாள்



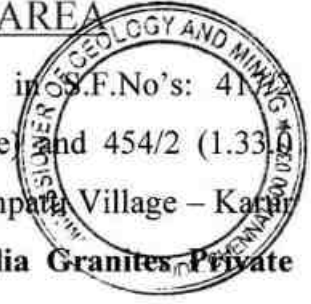
சந்திரா காமாட்சி அம்பலாள்  
 சந்திரா காமாட்சி அம்பலாள்  
 சந்திரா காமாட்சி அம்பலாள்  
 சந்திரா காமாட்சி அம்பலாள்

11.25.2015



PHOTOCOPY OF THE APPLIED LEASE AREA

Field photos in respect of Multi-colour granite quarry lease in S.F.No's: 417/5 (0.67.5hectare), 417/5 (0.39.0hectare), 417/7 (Part) (0.25.5hectare) and 454/2 (1.33.0 hectare) – over an extent of 2.65.0hectares - Patta land – K.Pitchampatti Village – Karur Taluk – Karur District Tamil Nadu State belongs to **M/s. Dahlia Granites Private Limited.**



*M. S. J.*



सत्यमेव जयते

GOVERNMENT OF INDIA  
MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

## Certificate of Incorporation



-293-

[Pursuant to sub-section (2) of section 7 and sub-section (1) of section 8 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

hereby certify that DAHLIA GRANITES PRIVATE LIMITED is incorporated on this Twelfth day of February Two thousand twenty-one under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U14290TZ2021PTC035561.

The Permanent Account Number (PAN) of the company is AAICD3089R \*

The Tax Deduction and Collection Account Number (TAN) of the company is CHED12682F \*

Given under my hand at Manesar this Twelfth day of February Two thousand twenty-one .

DS MINISTRY OF  
CORPORATE AFFAIRS

Digital Signature Certificate

SHIVARAJ C RANJERI

ASST. REGISTRAR OF COMPANIES

For and on behalf of the Jurisdictional Registrar of Companies

Registrar of Companies

Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on [www.mca.gov.in](http://www.mca.gov.in)

Mailing Address as per record available in Registrar of Companies office:

DAHLIA GRANITES PRIVATE LIMITED

OF NO.468/1A, R VELLAGOUNDANPATTI, K PITCHAMPATTI POST

AND VILLAGE, KARUR, Karur, Tamil Nadu, India, 639118

\* as issued by the Income Tax Department



# DAHLIA GRANITES PVT LTD

S.I NO 448/1A, B, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

Email: dahliagranites@gmail.com

**DATE: 22-02-2021**

### TO WHOMSOEVER IT MAY CONCERN

With pursuance to the Board Meeting held at Karur on 22-02-2021, The Board of Directors of Dahlia Granites Pvt Ltd, herby pass a resolution to appoint Sri PRABU MAYALAGU (Director), hereby authorizing him to sign on the documents relating to the Mining Lease application (K.Pitchampatti Village, Karur Dt) and other allied activities in all Govt Offices / Quasi Govt offices / Regulatory Bodies on behalf of Dahlia Granites Pvt Ltd.

#### DIRECTORS

#### AUTHORIZED SIGNATORIES

For DAHLIA GRANITES PRIVATE LIMITED,

Managing Director / Director.





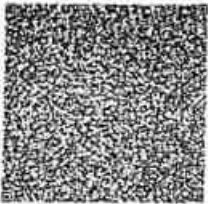




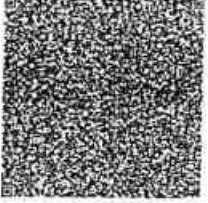
For DAHLIA GRANITES PRIVATE LIMITED,

Managing Director / Director.

For DAHLIA GRANITES PRIVATE LIMITED,

Managing Director / Director.



 	 
<p>இந்திய அரசாங்கம் Government of India</p>	
<p>இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு Unique Identification Authority of India</p>	<p>தகவல்</p> <ul style="list-style-type: none"> <li>■ ஆதார் அடையாளத்திற்கான சான்று குடியறிமெக்கு அவ்வ.</li> <li>■ பாதுகாப்பான OR குறியீடு ஆப்லைவ் XML / ஆன்லைவ் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்</li> <li>■ இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.</li> </ul>
<p>பதிவேட்டு எண்/ Enrolment No.: 2726/12176/03200</p> <p>Download Date: 09/11/2020</p> <p>To பிரபு மாயழகு Prabu Mayalagu S/O: Mayalagu 19/2 SHAKTHI NAGAR GANDHIGRAMMAM SOUTH PASUPATHIPALAYAM Thanthoni Pasupathipalayam Karur Tamil Nadu - 639004 9626655777</p> <p>Issue Date: 11/03/2020</p> <p>Signature valid</p>  <p>உங்கள் ஆதார் எண் / Your Aadhaar No. : XXXX XXXX 3347 VID : 9106 9325 5779 5284</p> <p>எனது ஆதார், எனது அடையாளம்</p>	<p>INFORMATION</p> <ul style="list-style-type: none"> <li>■ Aadhaar is a proof of identity, not of citizenship.</li> <li>■ Verify identity using Secure QR Code/ Offline XML/ Online Authentication.</li> <li>■ This is electronically generated letter.</li> </ul> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>■ ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.</li> <li>■ பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.</li> <li>■ உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் இடங்கள் ஆதாரில் புதுப்பிக்கவும்</li> <li>■ mAadhaar செயலியைப் பயன்படுத்தி உங்கள் ஸ்மார்ட் போனில் ஆதாரை எடுத்துச் செல்லுங்கள்</li> </ul> <ul style="list-style-type: none"> <li>■ Aadhaar is valid throughout the country.</li> <li>■ Aadhaar helps you avail various Government and non-Government services easily.</li> <li>■ Keep your mobile number &amp; email ID updated in Aadhaar.</li> <li>■ Carry Aadhaar in your smart phone – use mAadhaar App.</li> </ul> </div>
  <p>பிரபு மாயழகு Prabu Mayalagu பிறந்த நாள்/DOB: 25/06/1980 ஆண்/ MALE</p> <p>Download Date: 09/11/2020</p> <p>Issue Date: 11/03/2020</p> <p>XXXX XXXX 3347 VID : 9106 9325 5779 5284</p> <p>எனது ஆதார், எனது அடையாளம்</p>	  <p>முகவரி: S/O: மாயழகு, 19/2, சக்தி நகர், பசுபதிபாளையம், சாந்திகிராமம் தெற்கு, தாந்தோணி, கரூர், தமிழ் நாடு - 639004</p> <p>Address: S/O: Mayalagu, 19/2, SHAKTHI NAGAR, PASUPATHIPALAYAM, GANDHIGRAMMAM SOUTH, Thanthoni, Karur, Tamil Nadu - 639004</p>  <p>XXXX XXXX 3347 VID : 9106 9325 5779 5284</p> <p>1047   help@uidai.gov.in   www.uidai.gov.in</p>



## Sri Krishnaa Explosives

"Sri Vishnu Kiruba"

Plot No. 7, (Door No. 47/9/1)

Indane Nagar Extension

Jagir Reddipatti, SALEM - 636302

Phone : 0427-2340736, 9442044073

E-mail: srivishnumohan.2008@gmail.com



Prop. **G. MOHAN, B.E.,**

Date : ..... 17.10.2022

To  
M/s. Dahlia Granites Private Limited,  
S.No.468/1A, R.Vellagoundanpatti,  
K.Pitchampatti Post, Karur Tk  
Karur District -639 118.

Sir

Sub: Regarding blasting work using explosives in your proposed quarry.  
.oOo.

We are having explosives license in Form LE-3 holding No. E/SC/TN/22/515(E47493) Situated in survey SF No.18/2, Kadiripuram Village, Pappireddipatti Tk, Dharmapuri Dt. Our Office functioning at address Sri Krishnaa Explosives, "Sri Vishnu Kiruba", Plot No.7, Indane Nagar Extension, Jagir Reddipatti, Salem -636302, Tamilnadu.

We are enacting 2 Explosive vans for transporting Detonators and class 2 separately for our magazine to your work site and well experienced licensed blasters and shot firer for safe blasting work since 5 Year without untoward incident.

We are willing to undertake work on contract basis at your S.F.Nos. 417/2 (0.67.50 hectare) , 417/5 (0.39.0 hectare) , 417/7 (Part) (0.25.5 hectare) and 454/2 (1.33.0 hectare) over an extent 2.65.0 Hectares at K.Pitchampatti Village, Karur Tk, Karur District, Tamil Nadu State.

Thanking you,

Enclosure: Licence Copy

Yours faithfully  
For Sri Krishnaa Explosives

  
(G.Mohan, B.E.) \*  
Proprietor.



## अनुज्ञप्ति प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) तक)

(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति

Licence to possess : (c) for use, explosives of class 1, 2, 3, 4, 5, 6 or 7 in a maga

अनुज्ञप्ति सं. (Licence No.) : E/SC/TN/22/515(E47493)

वार्षिक फीस रुपए (Annual Fee Rs): 4800/-

1. Licence is hereby granted to

**Shri G. MOHAN, Proprietor M/s. Sri Krishna Explosives (अधिभोगी / Occupier : Shri G. Mohan), Sri Vishnu Kiruba, Plot No. 7, (Door No. 4/197), Indane Nagar Extension, Jagir Reddipatti, Salem-636302, state: Tamilnadu., Town/Village - Salem, District-SALEM, State-Tamil Nadu, Pincode - 636302**

को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रास्थिति | Status of licensee : Individual

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है। Possess for use of Nitrate Mixture, Safety Fuse, Detonating Fuse, Detonators, - के उपयोग के लिए  
Licence is valid only for the following purpose.

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।

Licence is valid for the following kinds and quantity of explosives: -- (क) (a)

क्र. सं. (Sr. No.)	नाम और विवरण (Name and Description)	वर्ग और प्रभाग (Class & Division)	उप-प्रभाग (Sub-division)	मात्रा किसी एक समय में (Quantity at any one time)
1.	Nitrate Mixture	2, 0	0	750 Kg.
2.	Safety Fuse	6, 1	0	10000 Mtrs
3.	Detonating Fuse	6, 2	0	25000 Mtrs
4.	Detonators	6, 3	0	20000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए]

23 times as above.

(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)]:

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्त परिसर की पुष्टि होती है। रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/515(E47493)  
दिनांक (Dated) 17/10/2008  
The licensed premises shall conform to the following drawing(s):6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:  
Survey No(s). 18/2, ग्राम (Town/Village): Kadripuram village, Harur Taluk पुलिस थाना (Police Station): Bommidi  
जिला (District) DHARMAPURI राज्य (State) Tamil Nadu पिनकोड (Pincode)  
दूरभाष (Phone) ई.मेल (E-Mail) फैक्स (Fax)7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्भूक्त हैं। : A Main Magazine room, Lobby and a Detonator Room  
The licensed premises consist of following facilities.8. अनुज्ञप्ति समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों के अधीन रहते हुए अनुदत्त की जाती है।  
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

- उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।  
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तों और अतिरिक्त शर्तों।  
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख 31 मार्च 2010 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2010.

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निदिष्ट सेट-VII के अधीन तथा उपबंधित इस अनुज्ञप्ति की शर्तों का अधिकरण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिबंधित की जा सकती है, जहां वह लागू हो।

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 17/10/2008

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives

292



South Circle, Chennai

**Amendments :**

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 06/01/2019
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 13/06/2019
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 05/10/2019
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 25/04/2014

**Transfers :**

- Change in Licensee Name/Address/Status dated : 15/04/2014

नवीनीकरण के पृष्ठांकन के लिए स्थान  
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
25/01/2019	31/03/2024	Controller of Explosives, Vellore विस्फोटक नियंत्रक, वेल्लूर Controller Of Explosives, Vellore

**कानूनी चेतावनी :** विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडिक अपराध होगा।  
**Statutory Warning :** Mishandling and misuse of explosives shall constitute serious criminal offence under the law.



*Signature of Shri S. Karuppannan*

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

श्री एस. करुपन्नण, मॉगनीकाडू, मुत्तमंपट्टी पोस्ट, बोम्मीडी वर्यो, ओमलूर तालुक, सेलम डीस्टीक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

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

उनकीपंजीयन संख्या है

His registration number is

RQP /MAS/263/2014/A

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

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

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

स्थान/ Place : Chennai

दिनांक/ Date : 16.12.2014.

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





**PLATE NO-I**

**APPLICANT:**  
**M/s.DAHLIA GRANITES PRIVATE LIMITED,**  
 S.F.No.468/1A, R.VELU GOUNDANPATTI,  
 K.PITCHAMPATTI POST,  
 KARUR DISTRICT - 639 118.

**LOCATION:**  
 EXTENT : 2.65.0Hect,  
 S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
 VILLAGE : K.PITCHAMPATTI,  
 TALUK : KARUR,  
 DISTRICT : KARUR,  
 STATE : TAMIL NADU.

**INDEX**

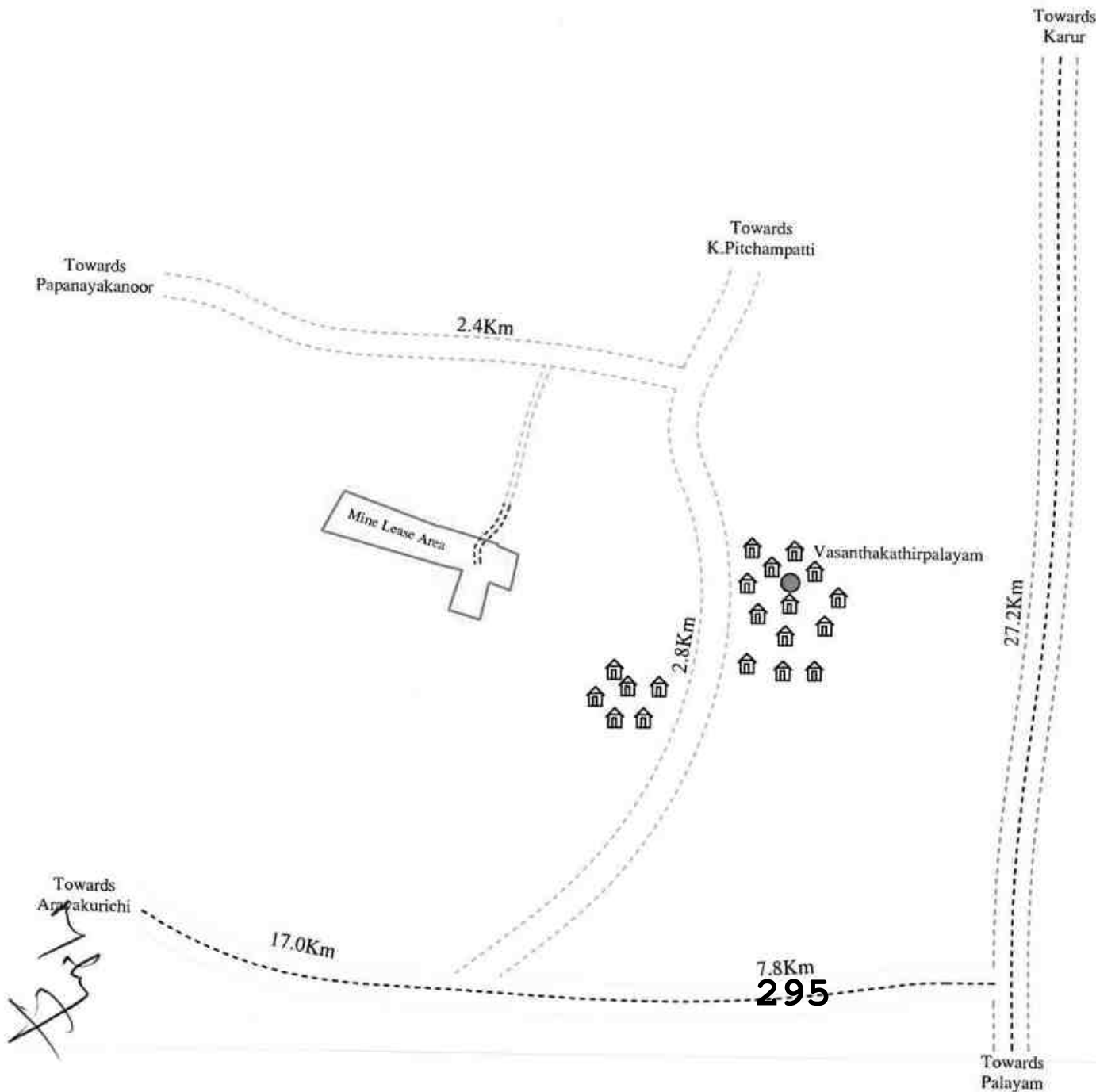
QUARRY LEASE AREA	
APPROACH ROAD	
VILLAGE ROAD	
CART ROAD	
MDR 418 ROAD	
SH 74 ROAD	

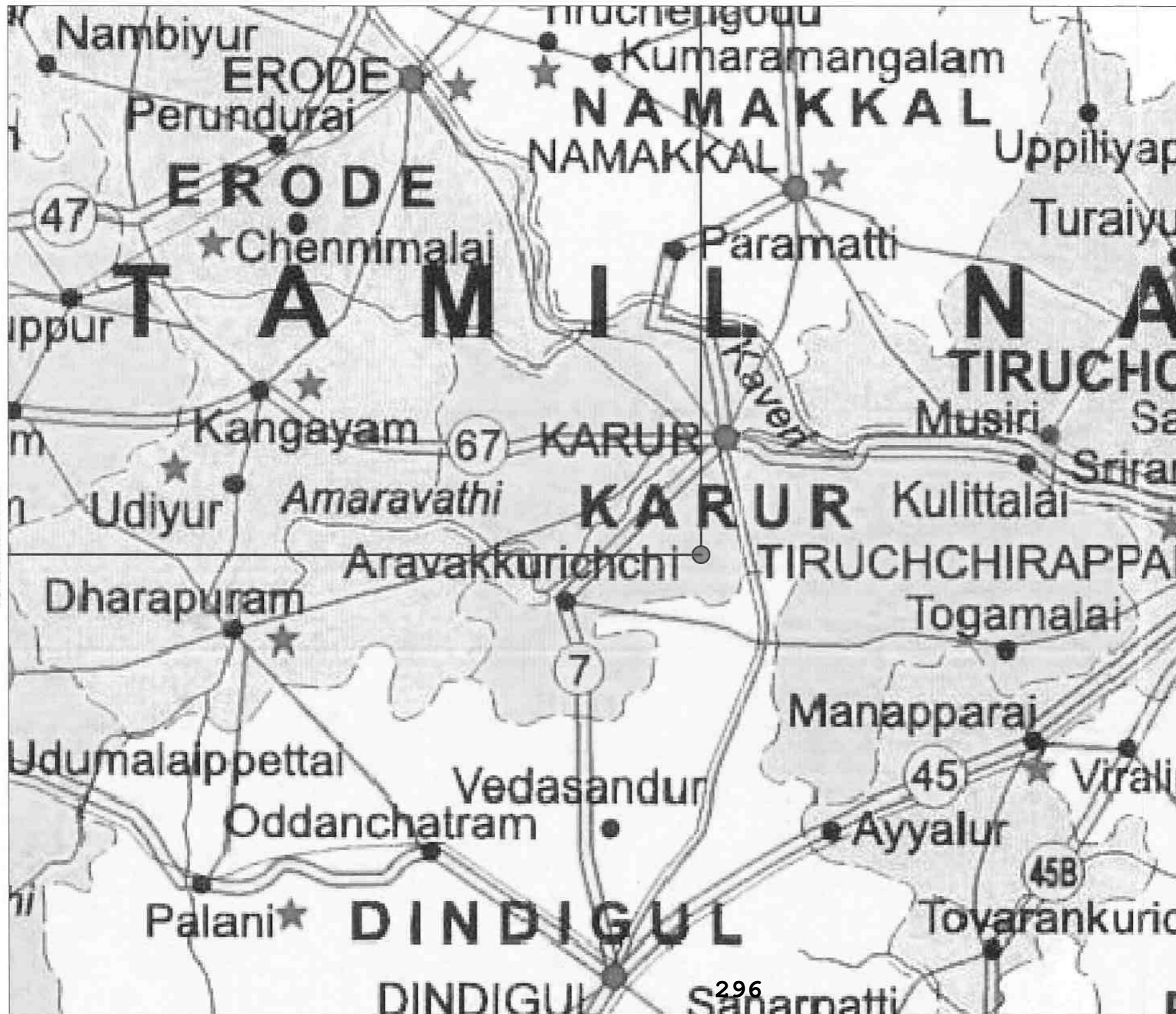
**ROUTE MAP**

*Not to Scale*

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

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





78°03'49.61161"E

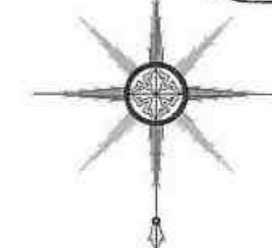


PLATE NO-IA

**APPLICANT:**  
 M/s.DAHLIA GRANITES PRIVATE LIMITED,  
 S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
 K.PITCHAMPATTI POST,  
 KARUR DISTRICT - 639 118.

**LOCATION:**  
 EXTENT : 2.65.0Hect,  
 S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
 VILLAGE : K.PITCHAMPATTI,  
 TALUK : KARUR,  
 DISTRICT : KARUR,  
 STATE : TAMIL NADU.

INDEX

QUARRY LEASE AREA: ●  
 TOPO SHEET NO : 58-J/01  
 LATITUDE: 10°46'32.82782"N-10°46'40.35742"N  
 LONGITUDE: 78°03'49.61142"E-78°04'0.85412"E

LOCATION PLAN

Not to Scale

PREPARED BY :

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

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



10°46'40.21252"N

Towards  
K.Pichampatti



78°03'49.61161"E

298

Towards  
VASANTHAKATHIRPALAYAM



PLATE NO-IC

**APPLICANT:**

M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.

**LOCATION:**

EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.

**INDEX**

TOPO SHEET NO : 58-J/01

LATITUDE: 10°46'32.82782"N-10°46'40.35742"N

LONGITUDE: 78°03'49.61142"E-78°04'0.85412"E

**INDEX**

QUARRY LEASE AREA	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
VILLAGE ROAD	
CART ROAD	
EXISTING QUARRY PIT	

SATELLITE IMAGE FOR 1KM  
RADIUS

SCALE- 1:10000

**PREPARED BY:**

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

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

OCTOBER TO DECEMBER



PLATE NO-ID

**APPLICANT:**

M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R. VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.

**LOCATION:**

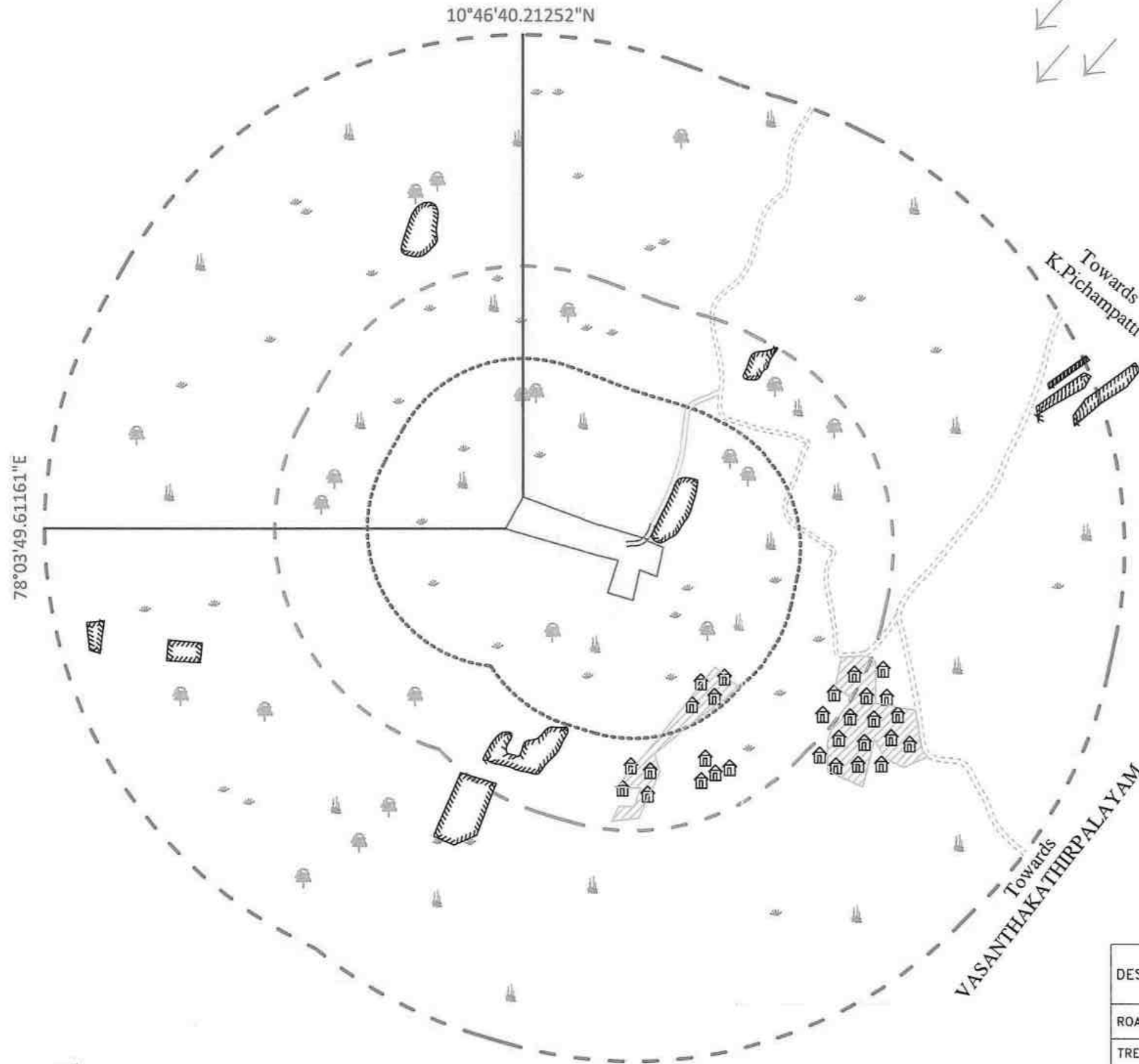
EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.

**INDEX**

TOPO SHEET NO : 58-J/01  
LATITUDE: 10°46'32.82782"N-10°46'40.35742"N  
LONGITUDE: 78°03'49.61142"E-78°04'0.85412"E

**INDEX**

QUARRY LEASE AREA	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
VILLAGE ROAD	
CART ROAD	
EXISTING QUARRY PIT	
HABITATIONS	



DESCRIPTION	AREA IN (%)
ROAD	07
TREES	20
BARREN LAND	37
AGRICULTURAL LAND	22
EXISTING QUARRY PIT	05
DUMP	04
HABITATIONS	05

**ENVIRONMENTAL AND LAND USE PLAN FOR 1KM RADIUS**

SCALE- 1:10000

**PREPARED BY:**

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

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

JULY TO SEPTEMBER



SCALE PLAN 1 : 2000  
SCALE SECTION-HOR 1 : 1000  
VER 1 : 500

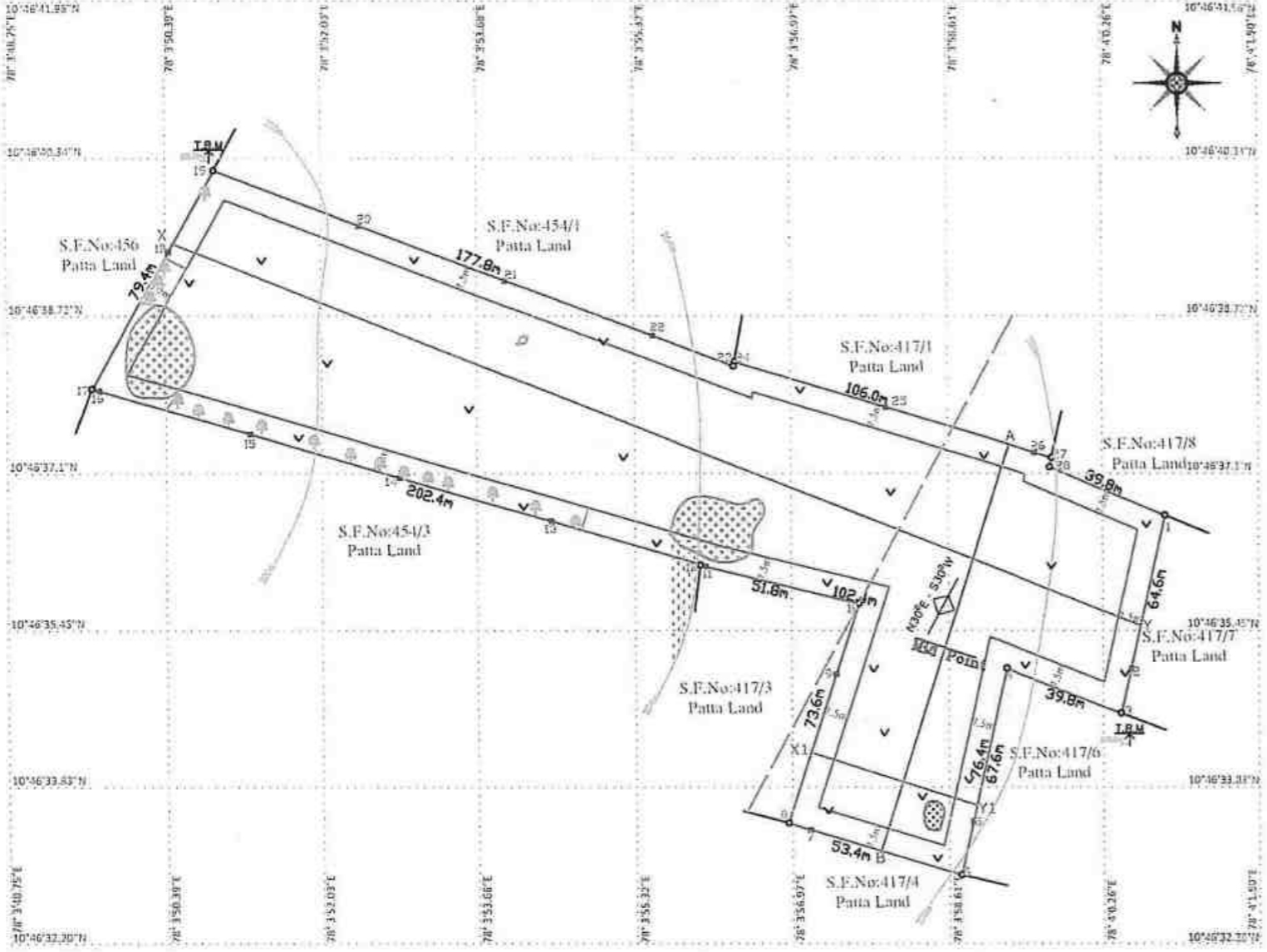
DATE OF SURVEY: 11.10.2022

**APPLICANT:**  
M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.

**LOCATION:**  
EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.

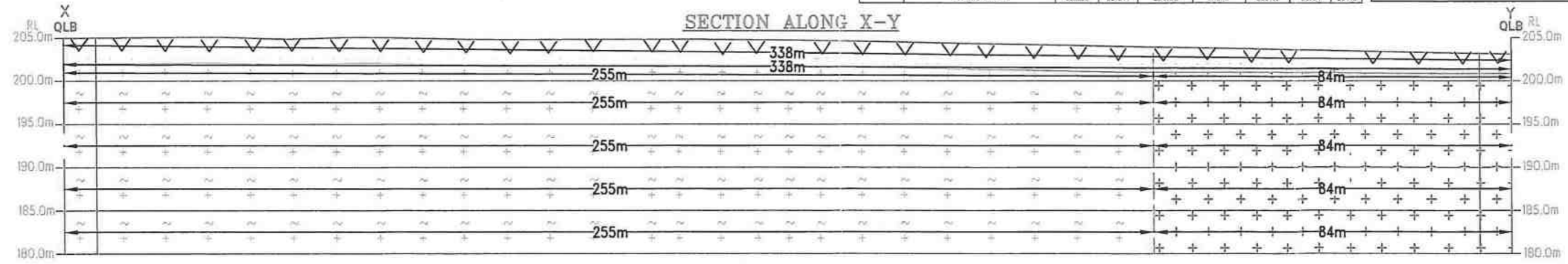


- LEASE BOUNDARY
- SAFETY DISTANCE
- APPROACH ROAD
- PILLAR STONES
- TEMPORARY BENCH MARKS
- STRIKE & DIP
- SHRUBS
- TREES
- CONTOUR LINES
- OUTCROPS
- TOP SOIL
- WEATHERED ROCK
- MULTICOLOUR GRANITE
- BIOTITE GNEISS
- MINERAL CONTACT LINE

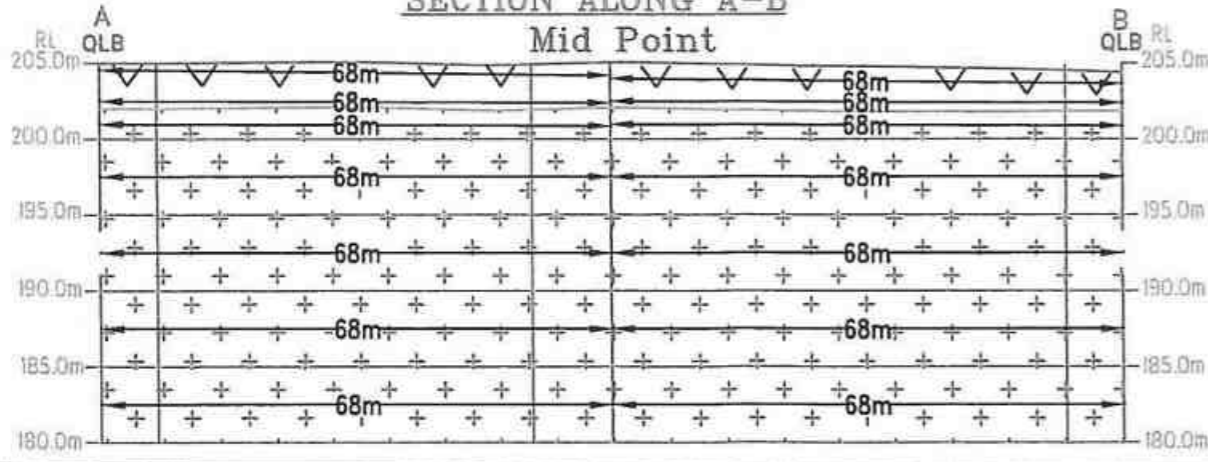


GEOLOGICAL RESOURCES											
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Ram in (m <sup>3</sup> )	Geological Reserves in m <sup>3</sup>	Multi colour Granite 60% Recovery in m <sup>3</sup>	Granite Waste 40% in m <sup>3</sup>	Side Burden in m <sup>3</sup>	Weathered rock in m <sup>3</sup>	Top Soil in m <sup>3</sup>
XY-AB	I	338	68	2	45968	---	---	---	---	---	45968
		338	68	1	22984	---	---	---	---	22984	---
	II	84	68	2	11424	11424	6854	4570	---	---	---
		255	68	2	34580	---	---	---	34580	---	---
	III	84	68	5	28560	28560	17136	11424	---	---	---
		255	68	5	86700	---	---	---	86700	---	---
	IV	84	68	5	28560	28560	17136	11424	---	---	---
		255	68	5	86700	---	---	---	86700	---	---
	V	84	68	5	28560	28560	17136	11424	---	---	---
		255	68	5	86700	---	---	---	86700	---	---
TOTAL					376096	125664	75398	50266	381480	22984	45968
XIV-AB	I	55	68	2	7480	---	---	---	---	---	7480
		55	68	1	3740	---	---	---	---	3740	---
	II	55	68	2	7480	7480	4488	2992	---	---	---
		55	68	5	18700	18700	11220	7480	---	---	---
	III	55	68	5	18700	18700	11220	7480	---	---	---
55		68	5	18700	18700	11220	7480	---	---	---	
TOTAL					93500	82280	49368	32912	0	3740	7480
GRAND TOTAL					669596	207544	124766	83178	381480	26724	53448

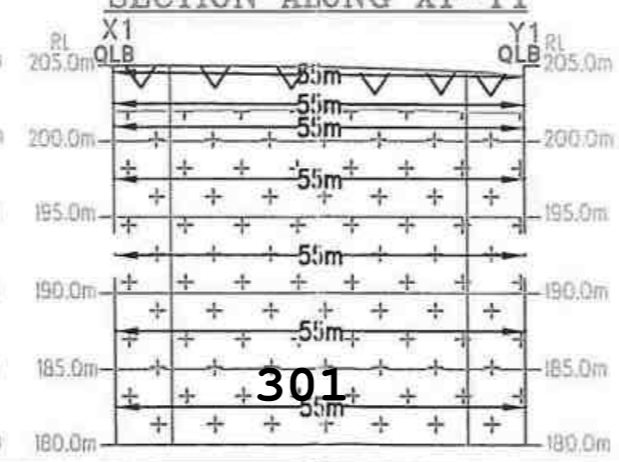
SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG X1-Y1



Prepared By:  
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE  
*[Signature]*  
Dr.S.KARUPPANNAN, M.Sc., Ph.D.,  
RECOGNIZED QUALIFIED PERSON  
RQP/MAS/263/2014/A

**YEARWISE DEVELOPMENT,  
PRODUCTION PLAN AND SECTION**

SCALE PLAN 1 : 2000  
SCALE SECTION- HOR 1 : 1000  
VER 1 : 500

**PLATE NO-IV**

DATE OF SURVEY: 11.10.2022

**APPLICANT:**

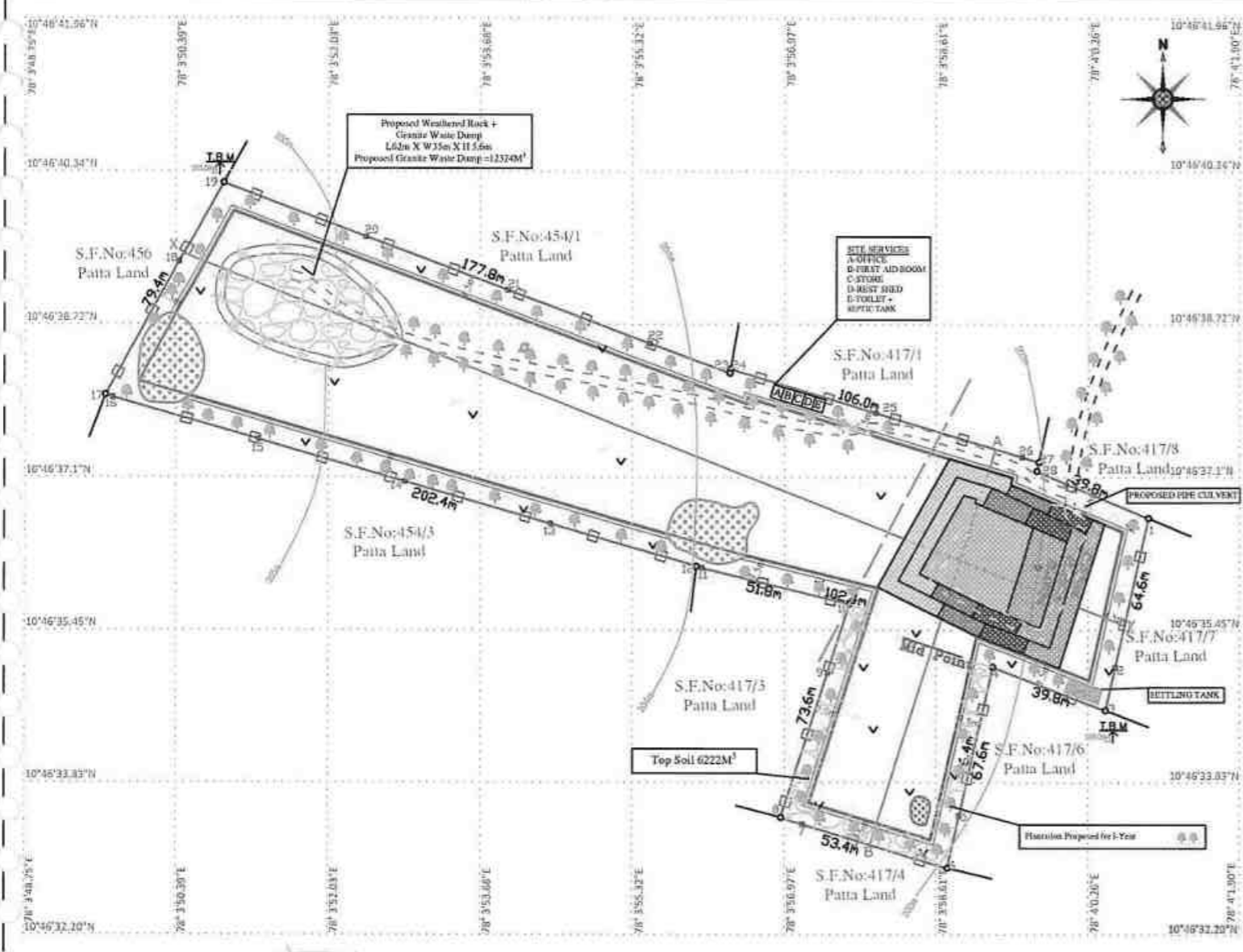
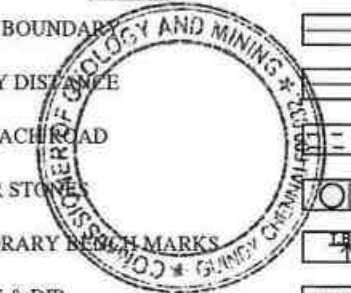
**M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.**

**LOCATION:**

**EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.**

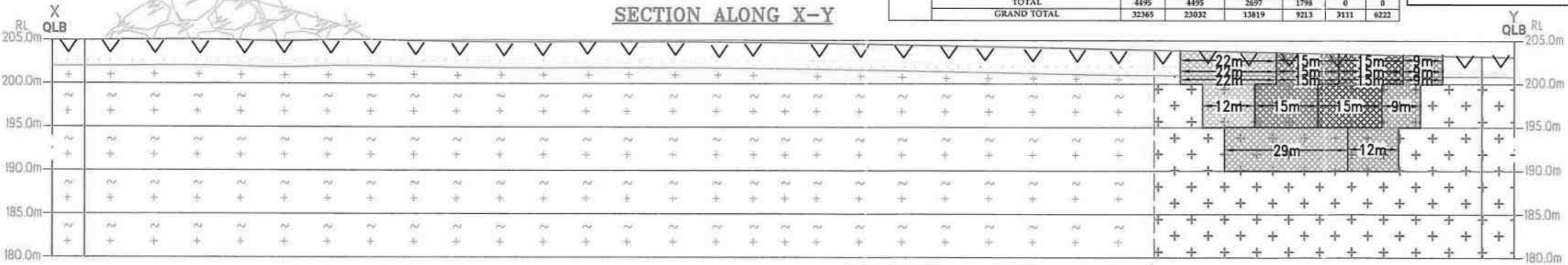
**INDEX**

LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONE	
TEMPORARY BENCH MARKS	
STRIKE & DIP	
SHRUBS	
TREES	
CONTOUR LINES	
OUTCROPS	
TOP SOIL	
WEATHERED ROCK	
MULTICOLOUR GRANITE	
BIOTITE GNEISS ROCK	
MINERAL CONTACT LINE	
PROPOSED DUMP	
PROPOSED BENCH	
SETTLING TANK & DRAINAGE	
FENCING	



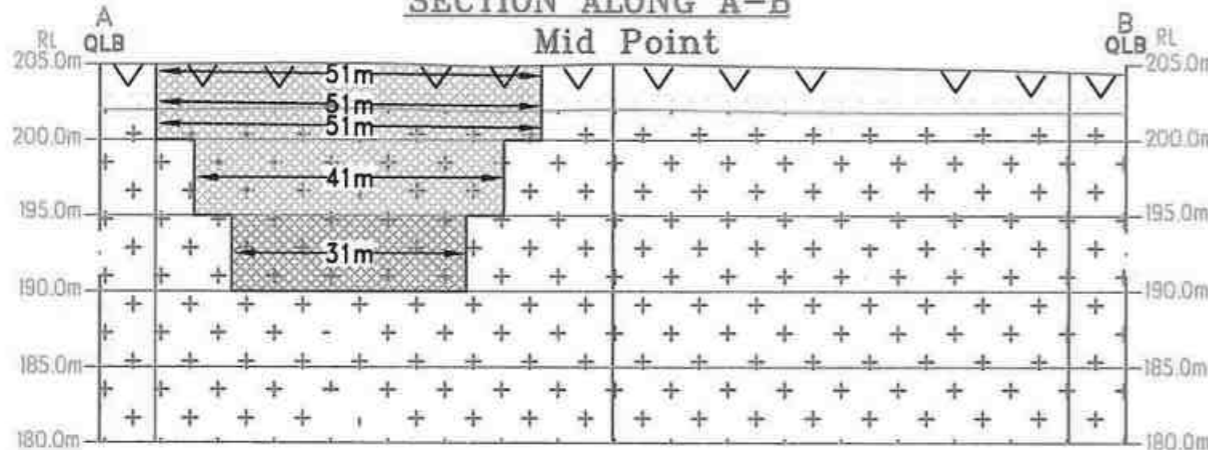
YEARWISE PRODUCTION												
Section	Year	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m <sup>3</sup> )	Production Reserves in m <sup>3</sup>	Multicolour Granite 60% Recovery in m <sup>3</sup>	Granite Waste 40% in m <sup>3</sup>	Weathered rock in m <sup>3</sup>	Top Soil in m <sup>3</sup>	
XY-AB	I - YEAR	I	22	51	2	2244	.....	.....	.....	1122	2244	
		II	12	41	5	2460	2460	1346	898	.....	.....	
	TOTAL						8070	4704	2822	1882	1122	2244
	II - YEAR	I	15	51	2	1530	.....	.....	.....	.....	.....	1530
		I	15	51	1	765	.....	.....	.....	.....	765	.....
		II	15	41	5	3075	3075	1845	1230	.....	.....	.....
TOTAL						6900	4605	2763	1842	765	1530	
III - YEAR	I	15	51	2	1530	.....	.....	.....	.....	.....	1530	
	I	15	51	1	765	.....	.....	.....	.....	765	.....	
	II	15	41	5	3075	3075	1845	1230	.....	.....	.....	
TOTAL						6900	4605	2763	1842	765	1530	
IV - YEAR	I	9	51	2	918	.....	.....	.....	.....	.....	918	
	I	9	51	1	459	.....	.....	.....	.....	459	.....	
	II	9	41	5	1845	1845	1107	738	.....	.....	.....	
TOTAL						6000	4623	2774	1849	459	918	
V - YEAR	III	29	31	5	4495	4495	2697	1798	.....	.....	.....	
	TOTAL						4495	4495	2697	1798	0	0
GRAND TOTAL						32365	23032	13819	9213	3111	6222	

**SECTION ALONG X-Y**



**SECTION ALONG A-B**

Mid Point



<b>I-YEAR EXCAVATION</b>	
I- L22m X W51m X D3m W. ROCK & TOP SOIL	
I- L22m X W51m X D2m COLOUR GRANITE	
II-L12m X W41m X D5m COLOUR GRANITE	
<b>II-YEAR EXCAVATION</b>	
I- L15m X W51m X D3m W. ROCK & TOP SOIL	
I- L15m X W51m X D2m COLOUR GRANITE	
II-L15m X W41m X D5m COLOUR GRANITE	
<b>III-YEAR EXCAVATION</b>	
I- L15m X W51m X D3m W. ROCK & TOP SOIL	
I- L15m X W51m X D2m COLOUR GRANITE	
II-L15m X W41m X D5m COLOUR GRANITE	
<b>IV-YEAR EXCAVATION</b>	
I- L9m X W51m X D3m W. ROCK & TOP SOIL	
I- L9m X W51m X D2m COLOUR GRANITE	
II- L9m X W41m X D5m COLOUR GRANITE	
III- L22m X W31m X D5m COLOUR GRANITE	
<b>V-YEAR EXCAVATION</b>	
III-L29m X W31m X D5m COLOUR GRANITE	

Prepared By:  
**COMMISSIONER**  
**GEOLOGY AND MINING**  
GUINDY, CHENNAI-600 032.

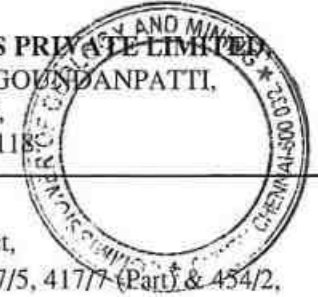
I DO HEREBY CERTIFY THAT THE PLATE  
HAS BEEN CHECKED BY ME AND IS CORRECT  
TO THE BEST OF MY KNOWLEDGE

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



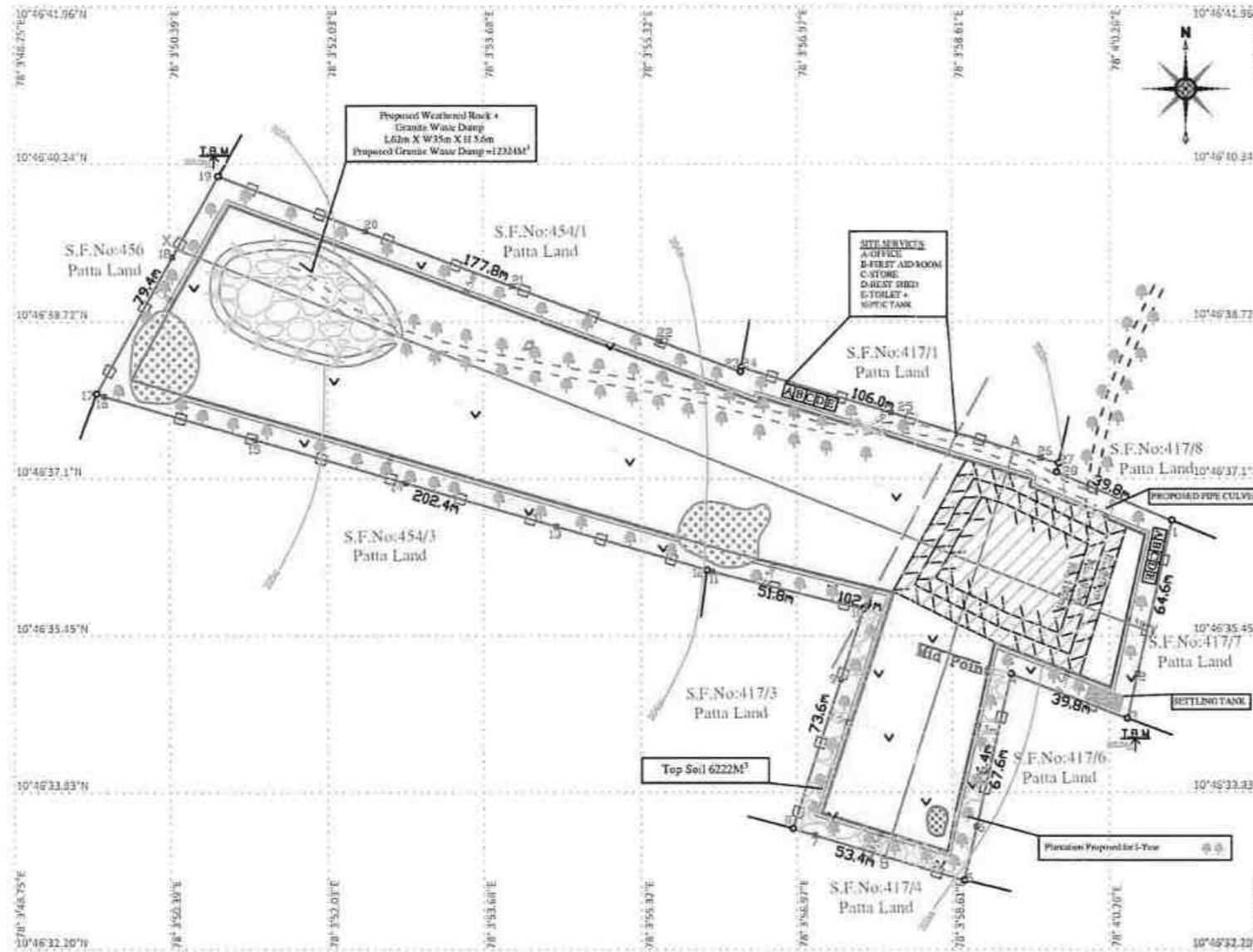
**APPLICANT:**

M/s.DAHLIA GRANITES PRIVATE LIMITED  
 S.F.No.468/1A, R.VELLAGOBIANPATTI,  
 K.PITCHAMPATTI POST,  
 KARUR DISTRICT - 639 118



**LOCATION:**

EXTENT : 2.65.0Hect,  
 S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
 VILLAGE : K.PITCHAMPATTI,  
 TALUK : KARUR,  
 DISTRICT : KARUR,  
 STATE : TAMIL NADU.



INDEX	
LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH ROAD	
PILLAR STONES	
TEMPORARY BENCH MARKS	
STRIKE & DIP	
SHRUBS	
TREES	
CONTOUR LINES	
OUTCROPS	
TOP SOIL	
WEATHERED ROCK	
MULTICOLOUR GRANITE	
BIOTITE GNEISS ROCK	
MINERAL CONTACT LINE	
PROPOSED DUMP	
PROPOSED BENCH	
SETTLING TANK & DRAINAGE	
FENCING	

QUARRY LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA IN (Ha)	AREA IN USE DURING THE MINING PERIOD (Ha)	COLOUR CODE
AREA UNDER MINING	NIL	0.30.00	
INFRASTRUCTURE	NIL	0.02.0	
ROAD	NIL	0.07.0	
GREEN BELT	0.11.50	0.70.00	
WASTE DUMP	NIL	0.21.70	
DRAINAGE & SETTLING TANK	NIL	0.09.30	
UN-UTILIZED AREA	2.53.50	1.25.00	.....
GRAND TOTAL	2.65.00	2.65.0	.....

QUARRY LAYOUT &  
 LAND USE PATTERN PLAN  
 SCALE PLAN 1 : 2000

**Prepared By:**

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

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

**PROGRESSIVE QUARRY CLOSURE PLAN AND SECTION**

SCALE PLAN 1 : 2000  
SCALE SECTION- HOR 1 : 1000  
VER 1 : 500

**PLATE NO-VI**

DATE OF SURVEY 11.10.2022

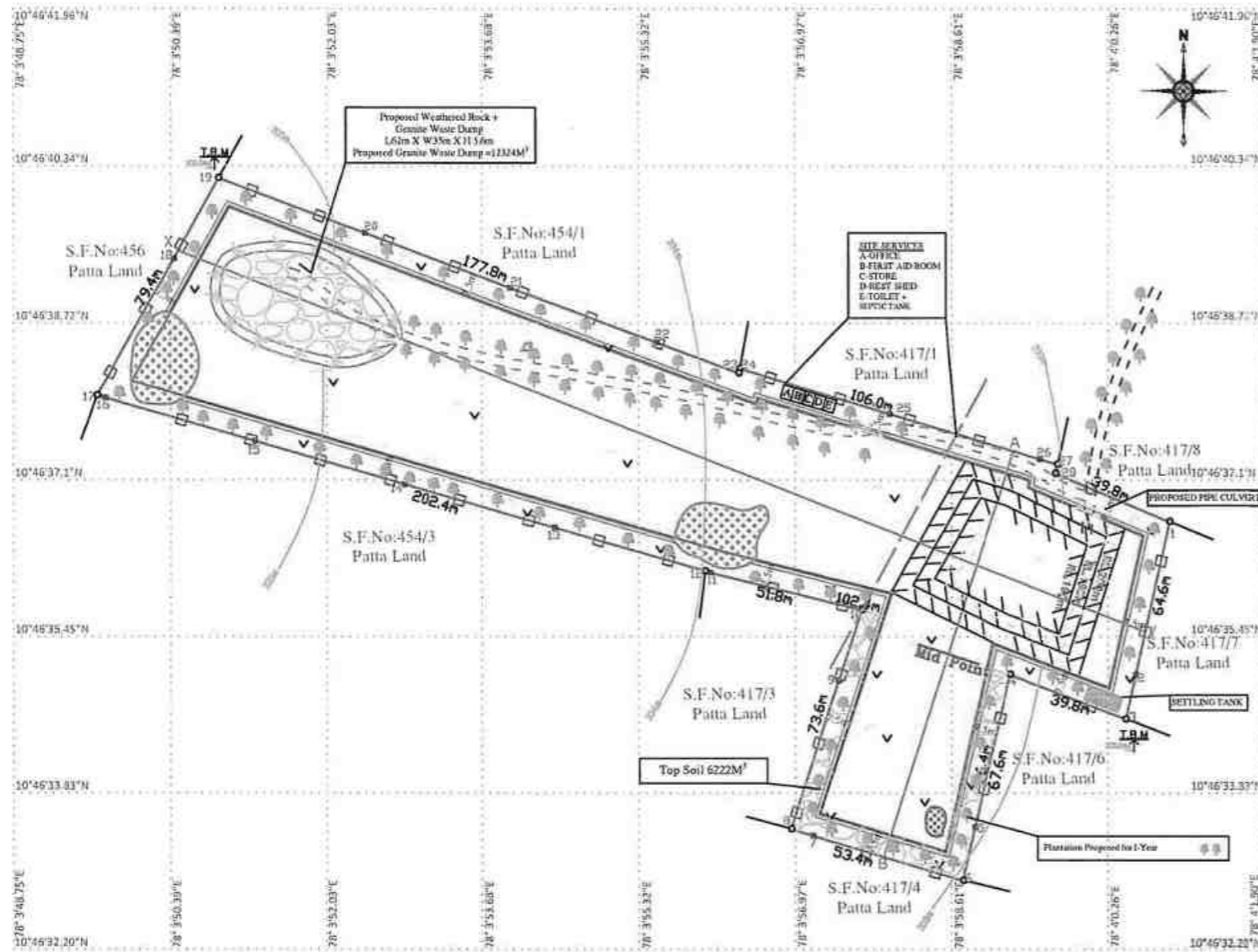
**APPLICANT:**

M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.

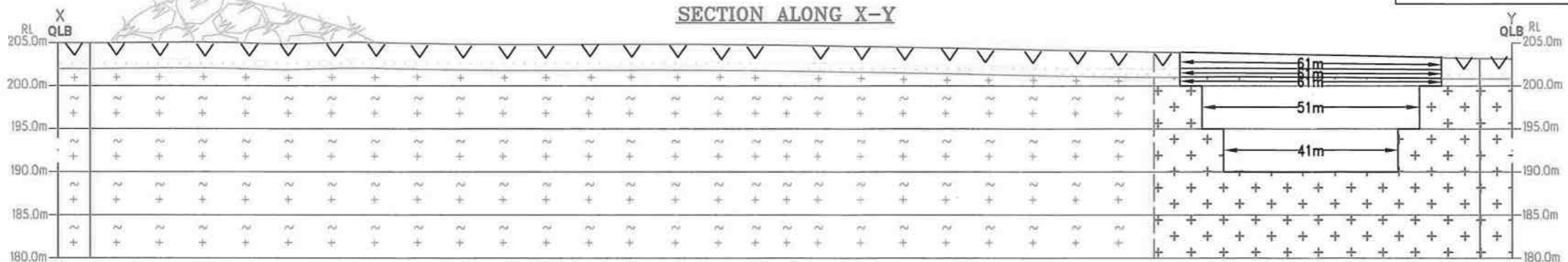
**LOCATION:**

EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.

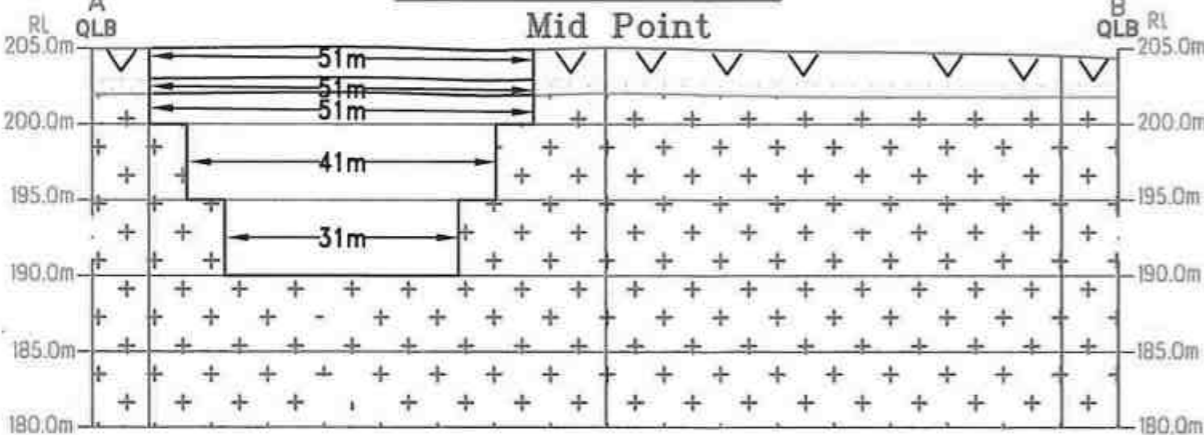
- INDEX
- LEASE BOUNDARY
  - SAFETY DISTANCE
  - APPROACH ROAD
  - PILLAR STONES
  - TEMPORARY BENCH MARKS
  - STRIKE & DIP
  - SHRUBS
  - TREES
  - CONTOUR LINES
  - OUTCROPS
  - TOP SOIL
  - WEATHERED ROCK
  - MULTICOLOUR GRANITE
  - BIOTITE GNEISS ROCK
  - MINERAL CONTACT LINE
  - PROPOSED DUMP
  - PROPOSED BENCH
  - SETTLING TANK & DRAINAGE
  - FENCING



**SECTION ALONG X-Y**



**SECTION ALONG A-B**



PRODUCTION RESERVES										
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m³)	Production Reserves in m³	Multicolour Granite 60% Recovery in m³	Granite Waste 40% in m³	Weathered rock in m³	Top Soil in m³
XY-AB	I	61	51	2	6222	.....	.....	.....	.....	6222
	I	61	51	1	3111	.....	.....	.....	3111	.....
	II	61	51	2	6222	6222	3733	2489	.....	.....
	III	31	41	5	10455	10455	6273	4182	.....	.....
<b>TOTAL</b>					32365	23032	13819	9213	3111	6222

Prepared By:

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

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

CONCEPTUAL PLAN AND SECTION

SCALE PLAN 1 : 2000

SCALE SECTION- HOR 1 : 1000

VER 1 : 500

PLATE NO-VII

DATE OF SURVEY: 11.10.2022

APPLICANT:

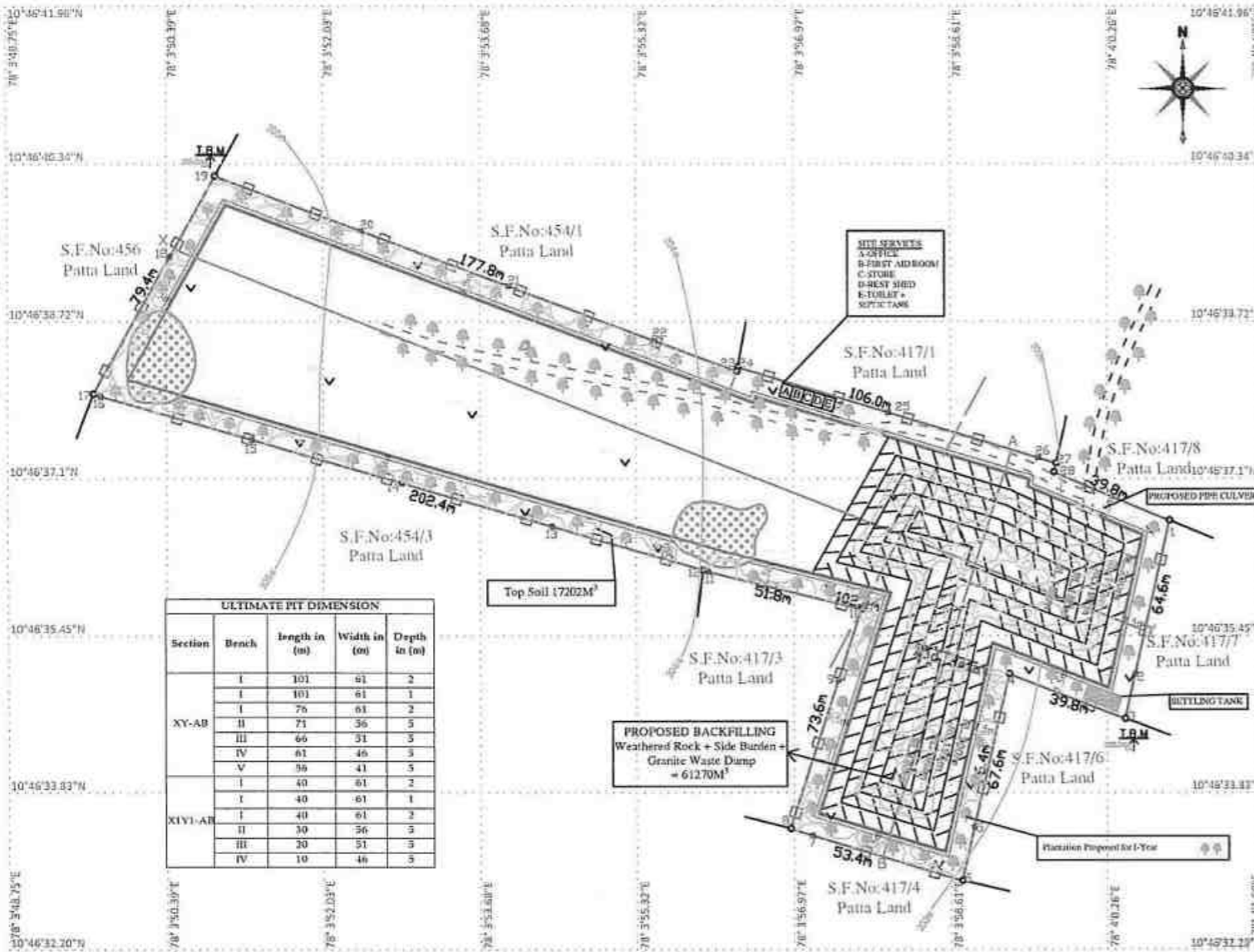
M/s.DAHLIA GRANITES PRIVATE LIMITED,  
S.F.No.468/1A, R.VELLAGOUNDANPATTI,  
K.PITCHAMPATTI POST,  
KARUR DISTRICT - 639 118.

LOCATION:

EXTENT : 2.65.0Hect,  
S.F.NO : 417/2, 417/5, 417/7 (Part) & 454/2,  
VILLAGE : K.PITCHAMPATTI,  
TALUK : KARUR,  
DISTRICT : KARUR,  
STATE : TAMIL NADU.

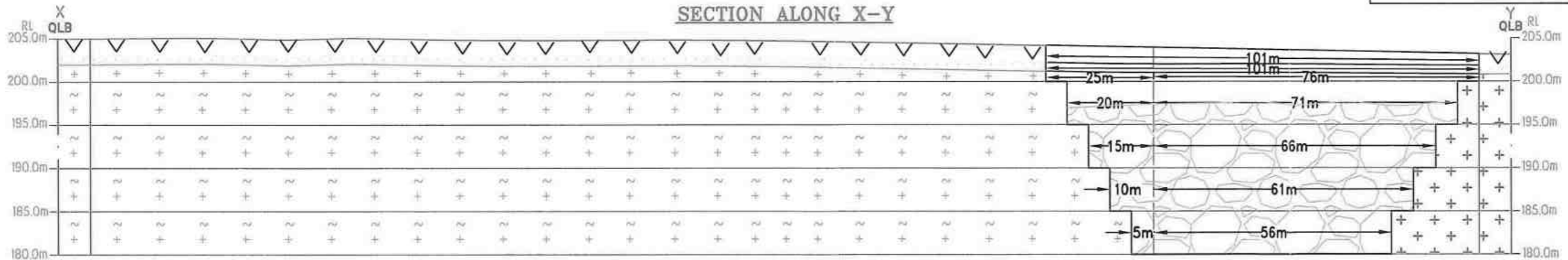


- LEASE BOUNDARY
- SAFETY DISTANCE
- APPROACH ROAD
- PILLAR STONES
- TEMPORARY BENCH MARKS
- STRIKE & DIP
- SHRUBS
- TREES
- CONTOUR LINES
- OUTCROPS
- TOP SOIL
- WEATHERED ROCK
- MULTICOLOUR GRANITE
- BIOTITE GNEISS ROCK
- MINERAL CONTACT LINE
- PROPOSED DUMP
- PROPOSED BENCH
- SETTLING TANK & DRAINAGE
- FENCING



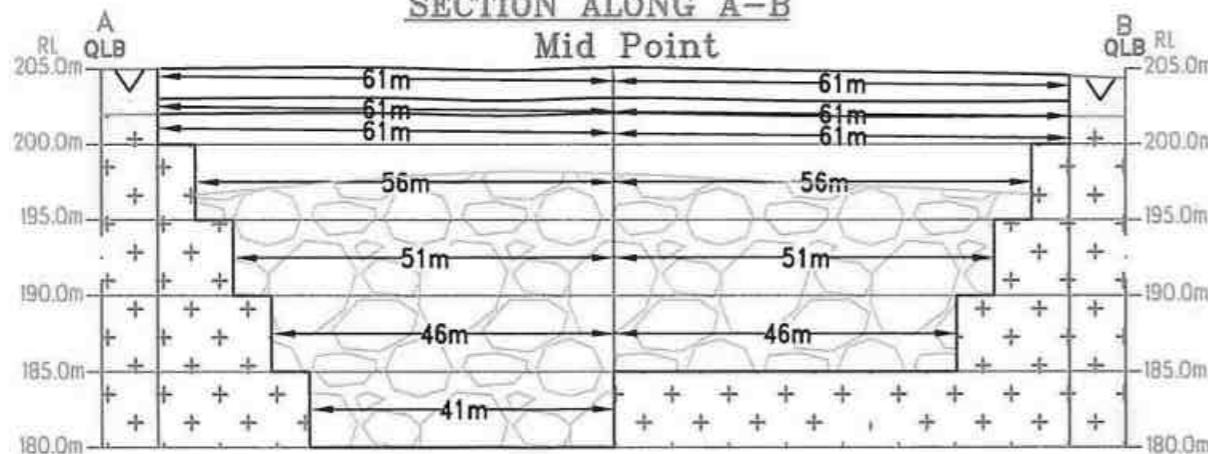
MINEABLE RESERVES											
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Rom in (m <sup>3</sup> )	Mineable Reserves in m <sup>3</sup>	Multicolour Granite 60% Recovery in m <sup>3</sup>	Granite Waste 40% in m <sup>3</sup>	Side Burden in m <sup>3</sup>	Weathered rock in m <sup>3</sup>	Top Soil in m <sup>3</sup>
XY-AB	I	101	61	2	12322	.....	.....	.....	.....	.....	12322
		76	61	2	9272	9272	5563	3709	.....	6161	.....
	II	25	61	2	3050	.....	.....	.....	3050	.....	.....
		71	56	5	19880	19880	11928	7952	.....	.....	.....
	III	20	56	5	5600	.....	.....	.....	5600	.....	.....
		66	51	5	16830	16830	10098	6732	.....	.....	.....
	IV	15	51	5	3825	.....	.....	.....	3825	.....	.....
		61	46	5	14030	14030	8418	5612	.....	.....	.....
		10	46	5	2300	.....	.....	.....	2300	.....	.....
	V	56	41	5	11480	11480	6888	4592	.....	.....	.....
5		41	5	1025	.....	.....	.....	1025	.....	.....	
TOTAL					105775	71492	42895	28597	15800	6161	12322
XIVY-AB	I	40	61	2	4880	.....	.....	.....	.....	.....	4880
		40	61	1	2440	.....	.....	.....	.....	2440	.....
	II	40	61	2	4880	4880	2928	1952	.....	.....	.....
		30	56	5	8400	8400	5040	3360	.....	.....	.....
	IV	20	51	5	5100	5100	3060	2040	.....	.....	.....
10		46	5	2300	2300	1380	920	.....	.....	.....	
TOTAL					28000	20680	12408	8272	0	2440	4880
GRAND TOTAL					135775	92172	55303	36869	15800	8601	17202

SECTION ALONG X-Y

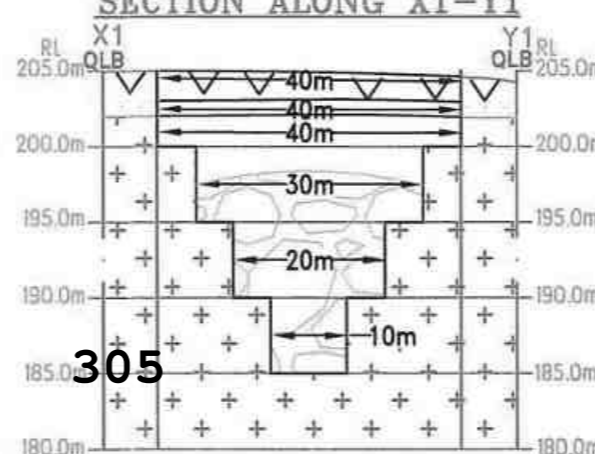


SECTION ALONG A-B

Mid Point



SECTION ALONG X1-Y1



Prepared By:

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

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

சான்றிதழ்

கருநீர் மாவட்டம், கருநீர் வட்டம்,  
 கா.பி.கீ.கீ.மட்டி கிராமம், ஹஸ்தாண் : 417/2,  
 417/5, 417/7, 454/2 ஆகிய ஹஸ்தாண் களில்  
 300-மீட்டர் சுற்றளவில் இடக்கிராமங்கள்  
 ஏதுமின்மை எனத் தயவுசெய்து கிராம நிர்வாக அலுவலர்  
 ஹஸ்தாண் களில் உள்ள கிராமங்களில்

தி. சீனிவாசன் 08/11/2022  
 கிராம நிர்வாக அலுவலர்  
 18-அ. பிச்சம்பட்டி கிராமம்,  
 கருநீர் வட்டம், கருநீர் மாவட்டம்.

M. by 306  
 7

ந.க.எண்.4153/2022 வ

மாவட்ட வன அலுவலகம்,  
கரூர் வனக்கோட்டம்,  
கரூர்.  
நாள்.06.12.2022

பொருள் : கலீமம் - கிராண்ட் குவாரி - கரூர் மாவட்டம், கரூர் வட்டம்,  
R.வெள்ளகவுண்டம்பட்டி கிராமத்தில் உள்ள கிராண்ட்  
குவாரிக்கும் காப்புக்காடு பகுதிக்கும் இடைப்பட்ட தூர  
விபரங்களை தெரிவித்தல் - தொடர்பாக.

- பார்வை : 1. திள்.தாலியா கிராண்ட்ஸ் பிரைவேட் லிமிடெட், கரூர்,  
கடித எண்.இல்லை நாள்.02.12.2022.  
2. வனச்சரக அலுவலர், கரூர் வனச்சரகம் கடித  
எண்.180/2022 நாள்.06.12.2022.

\*\*\*\*\*

பார்வை 1-ல் காணும் கடிதத்தில் கரூர் மாவட்டம், கரூர் வட்டம்,  
R.வெள்ளகவுண்டம்பட்டி கிராம புல எண்.468/1A-ல் 2.65.0 ஏக்கர் பரப்பளவில்  
திள்.தாலியா கிராண்ட்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்தின் கிராண்ட்  
குவாரியை அமைக்க மாநில சுற்றுச்சூழல் ஆணையத்திற்கு விண்ணப்பித்துள்ளதால்,  
மேற்படி கிராண்ட் குவாரியின் புலத்திலிருந்து 25 கி.மீ சுற்றளவுக்குள் உள்ள  
காப்புக்காடுகளின் விபரங்களை தெரிவிக்குமாறும் கோரப்பட்டது.

பார்வை-3ல் கண்ட கரூர் வனச்சரக அலுவலரின் அறிக்கையின்படி கரூர்  
மாவட்டம், கரூர் வட்டம், R.வெள்ளகவுண்டம்பட்டி கிராம புல எண்.468/1A-ல் 2.65.0  
ஏக்கர் பரப்பளவில் திள்.தாலியா கிராண்ட்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்தின்  
மூலம் அமைக்கப்படவுள்ள கிராண்ட் குவாரியிலிருந்து 15.00 கிலோமீட்டர் தூரத்தில்  
செம்பியநாத்தம் காப்புக்காடும், 15.00 கிலோமீட்டர் தூரத்தில் கடவுர் தேவாங்கு  
சரணாலயமும் அமைந்துள்ளது என தெரிவிக்கப்படுகிறது.

ஓம்/- வி.ஏ.சரவணன்,  
மாவட்ட வன அலுவலர்,  
கரூர் வனக்கோட்டம்,  
கரூர்.

பெறுநர்

திள்.தாலியா கிராண்ட்ஸ் பிரைவேட் லிமிடெட்,  
புல எண்.468/1A, R.வெள்ளகவுண்டம்பட்டி,  
P.பிச்சம்பட்டி அஞ்சல்,  
கரூர் - 639 118.

// உ.ந.உ.ப //

கண் காண்ப்பாளர்  
6/12/22 6.12.22

307



**National Accreditation Board  
for Education and Training**



**Certificate of Accreditation**

**Geo Technical Mining Solutions**

1/213B, Natesan Complex, Dharmapuri Salem Main Road, Oddapatti, Collectorate post office,  
Dharmapuri, Tamil Nadu-636705

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining.	1	1 (a) (i)	B

**Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated September 13, 2022 posted on QCI-NABET website.**

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2641 dated January 19, 2023. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions following due process of assessment.

Sr. Director, NABET  
Dated: January 19, 2023

Certificate No.  
NABET/EIA/2124/SA 0184

Valid up to  
Dec 31, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

