

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

**Environmental Clearance under EIA Notification – 2006**

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

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

**CLUSTER EXTENT = 6.29.10hectares**

**Multi Colour Granite Quarry**

**At**

**Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State  
TOR File No. 13429 and ToR Identification No. TO26B0107TN5610893N, Dated: 11.05.2026**

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

| <b>Name and address</b>                                                                                                             | <b>Extent &amp; S.F.No.</b>                                                | <b>Production in MT</b>                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>M/s. ANANTRA GRANITES,</b><br>S.No.733/5, Jakkeri Village,<br>Denkanikottai Taluk,<br>Krishnagiri District.<br>Tamil Nadu State. | 3.77.0ha &<br>S.F.No's. 202/2,<br>203/2A, 203/2B, 733/1,<br>733/3 & 733/5. | Multi- Colour-<br>ROM- 3,04,114MT<br>Recovery 40%- 1,21,646MT<br>Waste 60%- 182468MT<br>Top soil- 61272MT<br>Depth- 30m (BGL) |

**ENVIRONMENTAL CONSULTANT  
GEO TECHNICAL MINING SOLUTIONS**



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

Valid till: 31.12.2026

**ENVIRONMENTAL LAB**

**GREEN LINK ANALYTICAL & RESERCH LAB**

NABL Accredited and MoEF notified Laboratory

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

Syndicate, Civil Aerodrome Post,

Coimbatore, Tamil Nadu- 641014,

NABL Certificate Number: TC- 15901,

Valid till: 18.05.2029

**Baseline Study Period – March to May- 2026**

**JUNE-2026**

## TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No. 13429

ToR Identification No. TO26B0107TN5610893N, dated. 11/05/2026

M/s. Anantra Granites, Multi Colour Granite Quarry

Specific Terms of Reference s for (Mining of Minerals)

### 1. Seac Conditions - Site Specific

| S. No |       | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Remarks                                                                                                                                                  |
|-------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1   | 1     | A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting methodology, etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: | The Cluster Management Committee (CMC) regarding following these conditions and same affidavit will be submitted during the final EIA appraisal meeting. |
|       | (i)   | Copy of the agreement forming CMC.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                          |
|       | (ii)  | The Organization chart of the Committee with defining the role of the members                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                          |
|       | (iii) | The 'Standard Operating Procedures' (SOP) executing the planned activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                          |
|       | 2     | The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/ video graphic evidence along with the EIA report.                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The Photocopy of CCTV installation will be submitted final EIA report.                                                                                   |

## 2.Seac Standard Conditions

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Remarks |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 2.1   | After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of <b>3,04,114MT</b> of RoM Granite which includes <b>1,21,646MT</b> of <b>Multi Colour Granite Recovery @40%</b> and <b>1,82,468MT</b> of <b>Reject @ 60%</b> upto the <b>depth of 30m BGL</b> and the annual peak production shall not exceed <b>24,454MT</b> of <b>Recovery @ 40%</b> as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the SEIAA Standard conditions. |         |

## 3. Seiaa Standard Conditions

| S. No                               | Terms of Reference | Remarks                                                                                                                                                                                                                                                   |
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| <b>Cluster Management Committee</b> |                    |                                                                                                                                                                                                                                                           |
| 3.1                                 | 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                                                                                                                                           |
|                                     |                    | A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc. |
|                                     |                    | The members of the cluster management committee will be instructed to carry out EMP in coordination.                                                                                                                                                      |
|                                     |                    | The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.                                                                                                                                           |

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|  |   | 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.                                                                                              | All the information has been discussed in Section 2.7 under Chapter II in the EIA report page 16.                                                                                                                                                                  |
|  | 5 | The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. | 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.                                                                                                                                                                                  |



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|  | 8                                           | The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.                                                                                       | The information on the health of the workers and the local people will be updated periodically.                                                                                                                                                                                                                                                                      |
|  | <b>Agriculture &amp; Agro- Biodiversity</b> |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                      |
|  | 9                                           | Impact on surrounding agricultural fields around the proposed mining Area.                                                                                                                                                          | There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6 under Chapter IV in the EIA report page 104-105.                                              |
|  | 10                                          | Impact on soil flora & vegetation around the project site.                                                                                                                                                                          | The details on flora have been provided in Section 3.6 under Chapter III in the EIA report page 64-80. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. |
|  | 11                                          | Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP. | Details of vegetation in the lease area have been provided in Section 3.6 under Chapter III in the EIA report page 64-80. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 104-105.                                                                                                                 |
|  | 12                                          | The Environmental Impact Assessment should study the agro- biodiversity,                                                                                                                                                            | The ecological details have been provided in Section 3.6 under Chapter                                                                                                                                                                                                                                                                                               |

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|                |    | agro- forestry, horti cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. | III in the EIA report page 64-80 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 104-105.                                                                                 |
|                | 13 | Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.                                     | All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore the ecosystem, as discussed in Chapter IV in the EIA report page 95-111. |
|                | 14 | The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.                      | The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV in the EIA report page 95-96.                                                                                   |
| <b>Forests</b> |    |                                                                                                                                                                            |                                                                                                                                                                                                                  |
|                | 15 | The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.                                                                   | The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site.                                                               |
|                | 16 | The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.                              | The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 104 -105.                                                                      |
|                | 17 | The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.                   | The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV in the EIA report page 104-105.                                                          |
|                | 18 | The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks,                                                               | The Protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius has been                                                                                              |

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|                          | Corridors and Wildlife pathways, near project site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                | provided in Table 3.40 under Chapter III in the EIA report page 93.                                                                                                      |
| <b>Water Environment</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                          |
| 19                       | Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. | The detailed hydro-geology study is discussed in section 3.3.2 under chapter III in the EIA report page 42-48.                                                           |
| 20                       | Erosion Control measures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.1 under Chapter IV in the EIA report page 95-96. |
| 21                       | Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.                                                                                                                                                                                                                                                                                                                                | The matter has been discussed under Chapter IV in the EIA report page 95 - 111.                                                                                          |
| 22                       | The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.                                                                                                                                                                                                                                                                                                                                                                                            | An analysis for food chain in aquatic ecosystem has been discussed in Section 3.6 under Chapter III in the EIA report page 78-79.                                        |

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| 23 | The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.                                                                                                                                | The impacts of the proposed project on the surrounding environment have discussed in Chapter IV in the EIA report page 99-121.                                                                                |
| 24 | The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts. | The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV in the EIA report page 104 -05.                                           |
| 25 | The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.                                                                                                                | The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 101-102.                                                                                   |
| 26 | The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.                                                                                                                                                   | The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV in the EIA report page 96-97.                                                                                 |
| 27 | The EIA shall include the impact of mining activity on the following:                                                                                                                                                                                                 |                                                                                                                                                                                                               |
|    | a. Hydrothermal / Geothermal effect due to destruction in the Environment.                                                                                                                                                                                            | a. The average geothermal gradient of earth is 25 <sup>0</sup> C/km. As the proposed depth of mining is 35m BGL, the temperature will increase by 1.875 <sup>0</sup> C at the depth of mining.                |
|    | b. Bio-geochemical processes and its foot prints including environmental stress.                                                                                                                                                                                      | b. No, Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and |

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|                       |                                                                                                                                                                                                                                                                                | allowed to collect rain water and shall enrich the ecosystem.                                                                                                                                                               |
|                       | c. Sediment geochemistry in the surface streams                                                                                                                                                                                                                                | c. The details of sediment geochemistry are discussed in the Table 3.6 under Chapter III in the EIA report page 38.                                                                                                         |
| <b>Energy</b>         |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                             |
| 28                    | The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.                                                                                                                                          | The measures taken to control noise, air, water, and dust have been given under Chapter IV in the EIA report page 95-111.                                                                                                   |
| <b>Climate Change</b> |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                             |
| 29                    | The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. | The carbon emission to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV in the EIA report page 104-107.                                                                                         |
| 30                    | The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.                                                                | The matter has been discussed in Chapter IV in the EIA report page 95-111.                                                                                                                                                  |
| 31                    | Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.                                                                                                                                                                    | There is no emission impact to local livelihood from this quarry project. All the vehicles used for transportation of the quarry materials will be maintained regularly to keep the GHGs emissions within statutory limits. |

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| <b>Mine Closure Plan</b>        |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| 32                              | Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.                                                                                                                                                   | A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.10 under Chapter II in the EIA report page 19. |
| <b>EMP</b>                      |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| 33                              | Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.                                                | A detailed Environment Management plan has been given under Chapter X in the EIA report page 132-139.                                                                                                                                |
| 34                              | The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.                                                                                             | A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X in the EIA report page 132-139.                                                                                                          |
| <b>Risk Assessment</b>          |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| 35                              | To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.                                                                                                                     | The risk assessment and management plan for this project has been provided in Section 7.1 under Chapter VII in the EIA report page 119-121.                                                                                          |
| <b>Disaster Management Plan</b> |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                      |
| 36                              | To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable accidents in & around the proposed mine lease area due to the proposed method of mining | The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 121-122.                                                                                                     |

|    |                                                                                                                                                                                                                                                                                                                     |                                                                                                              |
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|    | activity & its related activities covering the entire mine lease period as per precise area communication order issued.                                                                                                                                                                                             |                                                                                                              |
|    | <b>Others</b>                                                                                                                                                                                                                                                                                                       |                                                                                                              |
| 37 | The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.                                           | The VAO certificate is attached in the attached in the Annexure IV.                                          |
| 38 | As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.                                                      | The concerns raised during the public consultation will be submitted in the final EIA report.                |
| 39 | The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported. | The plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 126-127. |

## 1. Standard Terms of Reference for (Mining of minerals)

| S.No | Terms of Reference                                                                                                                                                                                                                                                                                                                     | Remarks                                                                                                                                                                          |
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| 1.1  | 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.                                                                                 |
| 1.2  | 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 in the name of proponent as in approved mining plan.                                                                           |
| 1.3  | All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.                                                                      | All the documents are in the name of the lessee.                                                                                                                                 |
| 1.4  | All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).        | All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.2 under Chapter II in the EIA report page 12. |
| 1.5  | Information should be provided in Survey of India Toposheet in 1:50,000                                                                                                                                                                                                                                                                | Toposheets of Survey of India have been used for showing sampling locations of air,                                                                                              |



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|     | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | soil, water, and noise, as shown in Chapter III in the EIA report page 23-94.                                                                                                         |
| 1.6 | 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. |
| 1.7 | 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 | The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 132-133.                                                                             |

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|      | large, may also be detailed in the EIA Report                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.8  | 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 900 bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.                                                                                  |
| 1.9  | 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.                                                                                                                                                                                                                                 |
| 1.10 | Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. | Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1 under Chapter III in the EIA report page 27-34. The details of surrounding sensitive ecological features have been provided in Table 3.40 under Chapter III in the EIA report page 93. Land use plan of the project area showing pre- operational, operational and post- operational phases are |

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|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | discussed in Table 2.9 under Chapter II in the EIA report page 18.                                                                                                                    |
| 1.11 | 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.                           |
| 1.12 | A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the 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 3.40 under Chapter III in the EIA report page 93. |
| 1.13 | 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.                                                                                                   |

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| 1.14 | 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.                                                                                                                                                                                                                                                              | <p>Not Applicable.</p> <p>The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.</p> |
| 1.15 | The vegetation in the RF / PF areas in the study area, with necessary details, should be given.                                                                                                                                                                                                                                                                                                                                                   | There is no any reserve forest in the study area. The details of reserve forest is discussed in the Table 3.40 under Chapter III in the EIA report page 93.                                                                                                                                                                                                                 |
| 1.16 | 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 3.40 under Chapter III in the EIA report page 93.                                                                                                                                                                |
| 1.17 | 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 | <p>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 3.40 under Chapter III in the EIA report page 93.</p>                                                                                                |

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|      | obtained from the Standing Committee of National Board of Wildlife and copy furnished.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                              |
| 1.18 | A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost. | A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.6 under Chapter III in the EIA report page 64-80. |
| 1.19 | 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                                                                                                                                                                                                                                                                                                                                            | Not Applicable.<br>Project area/ Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.                                          |

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|      | proposed mining activities could be considered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                              |
| 1.20 | 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<br>The project doesn't attract the C.R.Z. Notification, 2018.                                                                                                                                 |
| 1.21 | 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 aspect should be discussed in the Report | Not Applicable.<br>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. |

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| 1.22 | <p>One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p> | <p>Baseline data were collected for the period of March 2025 – May 2026 as per CPCB notification and MoEF &amp; CC Guidelines. Primary baseline data and the results have been included in Sections 3.2-3.9 under Chapter III in the EIA report page 23-94.</p> |
| 1.23 | <p>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</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 95-111.</p>                                    |

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|      | 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      |                                                                                                                                                                                                                                                                                                                                                                         |
| 1.24 | The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated. | The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II in the EIA report page 19.                                                                                                                                                                                                                         |
| 1.25 | Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.                                                                          | Not Applicable.<br>Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.                                                    |
| 1.26 | 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. |
| 1.27 | Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard                                                                                   | Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in                                                                                                                                                                                                                                             |



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|      | measures, if any required, should be provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Section 4.3 under Chapter IV in the EIA report page 96-97.                                                                                                                                                                                                                                                                  |
| 1.28 | Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished. | The ground water table is found at the depth of 60m below ground level. The ultimate depth of quarry is 35m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in table 3.13 under Chapter III in the EIA report page 49. |
| 1.29 | Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out                                                                                                                                                                                                                                                                                                                                                                                                       | Not Applicable.<br>There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated                                                                                                                                             |
| 1.30 | Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.                                                                                                                                                                                                                                                                                                                                                                                                                                | The highest elevation of the project area is 814m AMSL. Ultimate depth of the mine is 35m BGL. Depth to the water level in the area is 60m below the ground level.                                                                                                                                                          |
| 1.31 | A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and                                                                                                                                                                                                                                                                                                                                                                                                                                         | Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 104-108.                                                                                                                                                                                                                   |

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|      | <p>time frame) and submitted, keeping in mind, the same will have to be executed up. Front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p> |                                                                                                                                                                                                                                                                                                                                                |
| 1.32 | <p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p>              | <p>Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.9 under Chapter III in the EIA report page 92-93.</p> |

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| 1.33 | 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 2.7. under Chapter II in the EIA report page 16.  |
| 1.34 | 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 4.10 under chapter IV in the EIA report page 110-111.                                                      |
| 1.35 | Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. | Occupational health impacts of the project and preventive measures detail have been explained in Section 4.8 under Chapter IV in the EIA report page 108-109.                                       |
| 1.36 | Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.                                                                                                                                                          | No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 129-130. |
| 1.37 | 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                                                                                                                                                                                      | 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 23 people directly as    |

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|      | given with time frames for implementation.                                                                                                                                                                                                                                                | discussed in Section 8.1 under Chapter VIII 128.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.38 | Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project. | A detailed Environment Management Plan has been prepared and provided in Table 10.1 & 10.2 under Chapter X in the EIA report page 133-138.                                                                                                                                                                                                                                                                                                                          |
| 1.39 | Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.                                   | The outcome of public hearing will be submitted during the final EIA report.                                                                                                                                                                                                                                                                                                                                                                                        |
| 1.40 | 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.                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1.41 | 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.482.23lakhs<br>CER Cost is Rs. 5,00,000/-<br>In order to implement the environmental protection measures, an amount of Rs. 30.98lakhs as capital cost and recurring cost as Rs. 13.68Lakhs as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 482.23 Lakhs as shown |

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|      |                                                                                                                                                                                                                                                 | in Tables 10.1 & 10.2 under Chapter X, pp.138-139.                                                                               |
| 1.42 | A disaster management plan shall be prepared and included in the EIA/EMP Report.                                                                                                                                                                | The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 121-122. |
| 1.43 | Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.                                                       | Benefits of the project details have been given under Chapter VIII in the EIA report page 128-130.                               |
| 1.44 | Besides the above, the below mentioned general points are also to be followed                                                                                                                                                                   |                                                                                                                                  |
| a)   | All documents to be properly referenced with index and continuous page numbering                                                                                                                                                                | All the documents have been properly referenced with index and continuous page numbering                                         |
| b)   | Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated                                                                                                    | List of tables and source of the data collected have been mentioned.                                                             |
| c)   | Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. | Original Baseline monitoring report will be submitted in final EIA report.                                                       |
| d)   | Where the documents provided are in a language other than English, an English translation should be provided.                                                                                                                                   | All the documents provided here are in English language.                                                                         |
| e)   | The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.                                                                                                         | The questionnaire will be submitted in final EIA report.                                                                         |

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| f) | While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.                                                                                                                                                                                                                       | Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 <sup>th</sup> August, 2009 have been followed while preparing the EIA report. |
| g) | Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. | No changes are made in the basic scope and the project parameters.                                                                                         |
| h) | As per the circular no. J 11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.                                                                                                                                         | It is a new lease area, the condition is not applicable.                                                                                                   |
| i) | The EIA report should also include<br>(i) surface plan of the area indicating contours of main topographic features,                                                                                                                                                                                                                                                                                                                                                                   | All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.                                       |

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|  | 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. |  |
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## STANDARD TERMS OF REFERENCE

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| 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 in the name of proponent as in approved mining plan.                                                                            |
| 3. | All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.                                                                      | All the documents are in the name of the lessee.                                                                                                                                  |
| 4. | All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area                                                                                                                 | All corner coordinates of the mine lease area have been superimposed on a high- resolution Google Earth Image, as shown in Figure 2.2 under Chapter II in the EIA report page 12. |

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|    | should clearly show the land use and other ecological features of the study area (core and buffer zone).                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                       |
| 5. | Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.                                                                                                                                                                                                                                                            | Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III in the EIA report page 23-94.                     |
| 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 | The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 132-139.                                                                             |



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|     | system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8.  | Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided                                                                         | It is an opencast quarrying operation proposed to operate in Manual method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90 <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, | Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1 under Chapter III in the EIA report page 27-34. The details of surrounding sensitive ecological features have been                                                                                                         |

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|     | operational and post operational phases and submitted. Impact, if any, of change of land use should be given.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | provided in Table 3.40 under Chapter III in the EIA report page 93. Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.9 under Chapter II in the EIA report page 18. |
| 11. | Details of the land for any over burden dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.                                                                                                                                                                                                                                                                                                                                                                                                                                                 | It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.                                                                                     |
| 12. | Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees. | It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.39 under Chapter III in the EIA report page 97.                                                           |
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                          | It is not applicable as the proposed project area does not involve any forest land.                                                                                                                                                             |

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|     | 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.                                                                                                                                                  | <p>Not Applicable.</p> <p>The project doesn't attract Recognition of Forest Rights Act, 2006 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.</p> |
| 15. | The vegetation in the RF / PF areas in the study area, with necessary details, should be given.                                                                                                                                                                                                                                       | <p>There is no any reserve forest in the study area.</p> <p>The details of reserve forest is discussed in the Table 3.40 under Chapter III in the EIA report page 93.</p>                                                                                                                                                                                                   |
| 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. | <p>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 3.40 under Chapter III in the EIA report page 93.</p>                                                                                                                                                         |
| 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    | <p>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 3.40 under Chapter III in the EIA report page 93.</p>                                                                                                |

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|     | 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. | A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.6 under Chapter III in the EIA report page 64-80. |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Not Applicable.<br>Project area / Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.                                         |

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|     | <p>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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                             |
| 20. | <p>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).</p>                                                                                                                                                                                                                                                                                                              | <p>Not Applicable</p> <p>The project doesn't attract the C.R.Z. Notification, 2018.</p>                                                                                                                                     |
| 21. | <p>R&amp;R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&amp;R Plan, the relevant State/National Rehabilitation &amp; 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</p> | <p>Not Applicable.</p> <p>There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&amp;R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.</p> |

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|     | shifting of village(s) including their R&R and socio-economic aspect should be discussed in the Report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                        |
| 22  | <p>One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the predominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the predominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p> | <p>Baseline data were collected for the period of December 2025- February 2026 as per CPCB notification and MoEF &amp; CC Guidelines. Primary baseline data and the results have been included in Sections 3.2-3.9 under Chapter III in the EIA report page 23-95.</p> |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 97-99.</p>                                            |

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|     | and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map |                                                                                                                                                                                                                                                                                                                                                                         |
| 24. | The water requirement for the project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the project should be indicated.                                                                                                            | The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II in the EIA report page 19.                                                                                                                                                                                                                         |
| 25. | Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.                                                                                                                                                                                     | Not Applicable.<br>Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.                                                    |
| 26. | Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.                                                                                                                            | Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season. |
| 27. | Impact of the Project on the water quality, both surface and groundwater,                                                                                                                                                                                                                                         | Impact studies and mitigation measures of water environment including surface water and                                                                                                                                                                                                                                                                                 |

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|     | should be assessed and necessary safeguard measures, if any required, should be provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ground water have been discussed in Section 4.3 under Chapter IV in the EIA report page 96-97.                                                                                                                                                                                                                                 |
| 28. | Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished. | The ground water table is found at the depth of 60m below ground level. The ultimate depth of quarry is 35m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.4.2 under Chapter III in the EIA report page 51. |
| 29. | Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out                                                                                                                                                                                                                                                                                                                                                                                                       | Not Applicable.<br><br>There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated                                                                                                                                            |
| 30. | Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.                                                                                                                                                                                                                                                                                                                                                                                                                                | The highest elevation of the project area is 814m AMSL. Ultimate depth of the mine is 35m (BGL). Depth to the water level in the area is 80m below the ground level.                                                                                                                                                           |
| 31. | A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 104-107.                                                                                                                                                                                                                      |



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|     | <p>quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up. Front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p> |                                                                                                                                                                                                                                                                                                                                                |
| 32. | <p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p>                                                       | <p>Traffic density survey was carried out to analyses the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.9 under Chapter III in the EIA report page 92-93.</p> |

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| 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 2.7 under Chapter II in the EIA report page 16.                 |
| 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 4.10 under chapter IV in the EIA report 110-111 and budgetary details discussed in table 2.10 in the EIA report page 19. |
| 35. | Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. | Occupational health impacts of the project and preventive measures detail have been explained in Section 4.8 under Chapter IV in the EIA report page 108-109.                                                     |
| 36. | Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.                                                                                                                                                          | No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 129-130.               |
| 37. | Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be                                                                                                                                                                                                                                                    | No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering                                                       |

|     |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|     | indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.                                                                                                                                                                                  | employment for 23 people directly as discussed in Section 8.1 under Chapter VIII page 128.                                                                                                                                                                                                                                                                                                                                                |
| 38. | Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project. | A detailed Environment Management Plan has been prepared and provided in Table 10.1 & 10.2 under Chapter X in the EIA report page 133-138.                                                                                                                                                                                                                                                                                                |
| 39. | Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.                                   | The outcome of public hearing will be submitted during the final EIA report.                                                                                                                                                                                                                                                                                                                                                              |
| 40. | Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given                                                                                                                                           | No litigation is pending in any court against this project.                                                                                                                                                                                                                                                                                                                                                                               |
| 41  | The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.                                                                                                                                                  | <p>Project Cost is Rs.482.23/-</p> <p>CER Cost is Rs. 5,00,000/-</p> <p>In order to implement the environmental protection measures, an amount of Rs. 30.98 Lakhs as capital cost and recurring cost as Rs. 13.68 Lakhs as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10</p> |

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|     |                                                                                                                                                                                                                                                   | years will be Rs. 9482.23Lakhs as shown in Tables 10.1 & 10.2 under Chapter X, pp.133-138.                                       |
| 42. | A disaster management plan shall be prepared and included in the EIA/EMP Report.                                                                                                                                                                  | The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 121-125. |
| 43. | Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.                                                         | Benefits of the project details have been given under Chapter VIII in the EIA report page 137-139.                               |
| 44  | Besides the above, the below mentioned general points are also to be followed:                                                                                                                                                                    |                                                                                                                                  |
| a)  | Executive Summary of the EIA/EMP Report.                                                                                                                                                                                                          | Executive summary has been enclosed as a separate booklet.                                                                       |
| b)  | All documents to be properly referenced with index and continuous page numbering.                                                                                                                                                                 | All the documents have been properly referenced with index and continuous page numbering.                                        |
| c)  | Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.                                                                                                     | List of tables and source of the data collected have been mentioned.                                                             |
| d)  | Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. | Original Baseline monitoring reports will be submitted in the final EIA report.                                                  |
| e)  | Where the documents provided are in a language other than English, an English translation should be provided.                                                                                                                                     | All the documents provided here are in English language.                                                                         |
| f)  | The Questionnaire for environmental appraisal of mining projects as devised                                                                                                                                                                       | The questionnaire will be submitted in the final EIA report.                                                                     |

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|    | 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.                                                                                                                                                                                                                    | Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 <sup>th</sup> August, 2009 have been followed while preparing the EIA report |
| h) | Changes, if any made in the basic scope and project parameters (as submitted in Form- I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation | No changes are made in the basic scope and the project parameters.                                                                                        |
| i) | As per the circular no. J-11011/618/2010- IA. II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.                                                                                                                                        | As it is a new lease area, the condition is not applicable.                                                                                               |

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| j) | The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area. | All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III. |
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# **CHAPTER- I**

## **INTRODUCTION**

### **1.0 PREAMBLE**

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision- making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14<sup>th</sup> September 2006 and its subsequent amendments the projects are categorized into A, B1 & B2 to determine the level of scrutiny and process. The mining projects whose extent is  $\geq 5$  ha or the cluster of quarries (if homogeneous mineral) within 500m radius extent is greater than 5ha falls under Category- B1. These projects require preparation and submission of an EIA report after public consultation to SEIAA to obtain environmental clearance as per the Office Memorandum F.No. L-11011/175/2018-IA-II (M), Dated: 12.12.2018.

### **1.1 PURPOSE OF THE REPORT**

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

### **1.2 ENVIRONMENTAL CLEARANCE**

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

#### ***Screening***

The project had applied in PARIVESH 2.0 proposal no. SIA/TN/MIN/569803/2026, Dated: 20.02.2026 to obtain terms of reference.

#### ***Scoping***

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



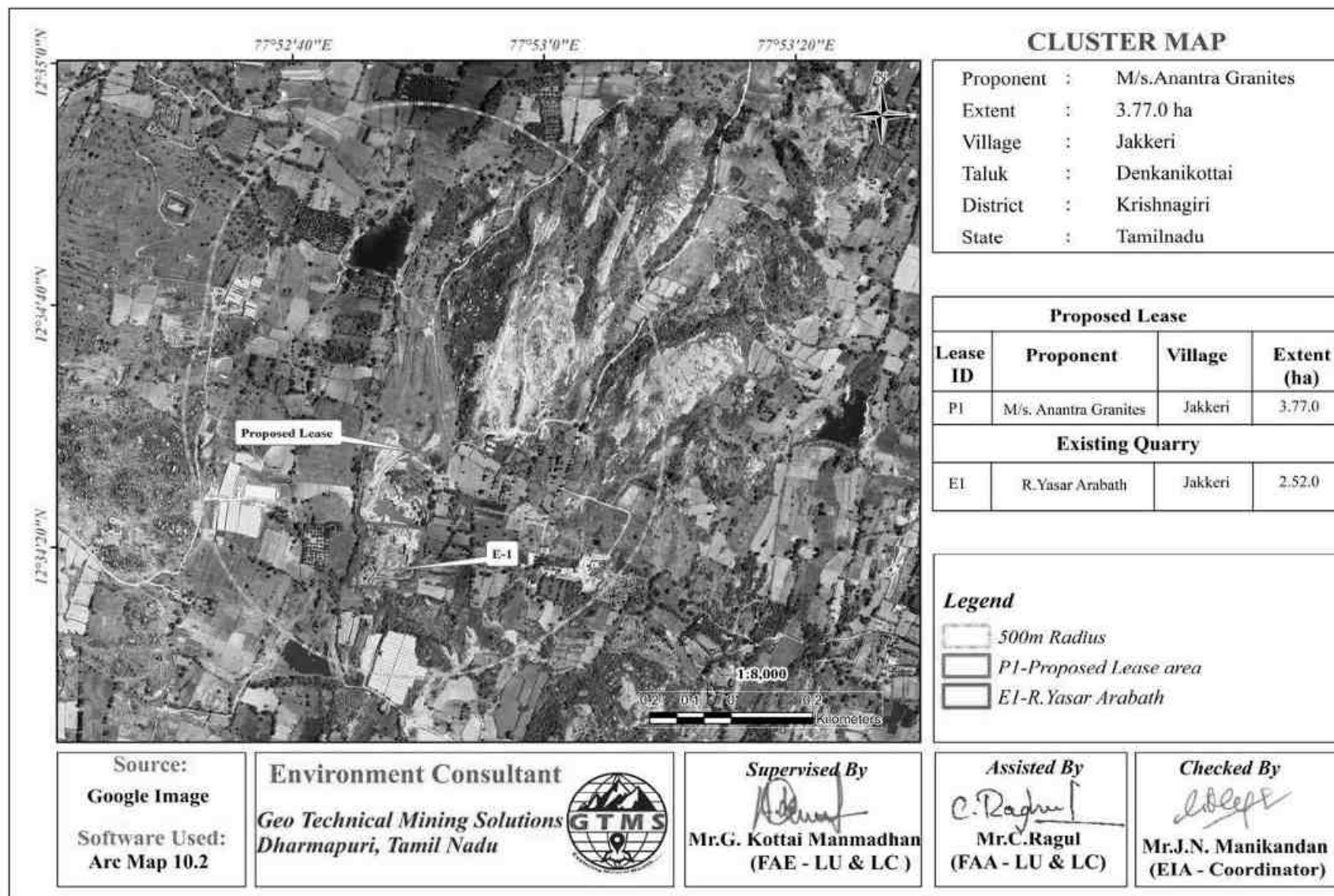


Figure 1.1 Location of Proposed and Existing Quarries in the Cluster of 500m Radius

### ***Public Consultation***

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

### ***Appraisal***

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

### **1.3 TERMS OF REFERENCE (ToR)**

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

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

| <b>Proposed Quarries</b>    |                          |                                             |                |                    |                          |
|-----------------------------|--------------------------|---------------------------------------------|----------------|--------------------|--------------------------|
| <b>Code</b>                 | <b>Name of the Lease</b> | <b>S.F. No</b>                              | <b>Village</b> | <b>Extent (ha)</b> | <b>Lease Period</b>      |
| <b>P1</b>                   | M/s. Anantra Granites    | 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 | Jakkeri        | 3.77.0             | Proposed Area            |
| <b>Existing Quarries</b>    |                          |                                             |                |                    |                          |
| <b>E1</b>                   | R. Yasar Arabath         | 320/3, 374/6A, 374/6B & 374/6C              | Jakkeri        | 2.52.0             | 21.08.2025 to 20.08.2045 |
| <b>Total Cluster Extent</b> |                          |                                             |                | <b>6.29.0</b>      | ---                      |

**Source:** AD Letter– Rc.No.6324/MM4/2025, dated: 12.02.2026

The file was appraised in 707<sup>st</sup> SEAC meeting on 20.04.2026 and issued terms of reference (ToR) identification no **TO26B0107TN5610893N** on **11.05.2026** by SEIAA, TN.

### **1.4 POST ENVIRONMENT CLEARANCE MONITORING**

- The project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of the website where it is displayed.

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

### 1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

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

### 1.6 IDENTIFICATION OF THE PROJECT PROPONENT

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

**Table 1.2 Details of Project Proponent**

|                                      |                                                                               |
|--------------------------------------|-------------------------------------------------------------------------------|
| <b>Name of the Project Proponent</b> | <b>M/s. Anantra Granites</b>                                                  |
| Address                              | S.No. 733/5, Jakkeri Village,<br>Denkanikottai Taluk,<br>Krishnagiri District |
| Status                               | Proprietor                                                                    |

### 1.7 BRIEF DESCRIPTION OF THE PROJECT

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

The overall extent of the project site is 3.77.0ha and it is located in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu.

The proposed project deals with excavation of multi colour granite which is primarily used in construction projects. The increasing demand for multi colour granite fuelled by a booming construction industry presents a valuable opportunity. This project will not only meet the rising demand for multi colour granite but also create jobs for the surrounding villages.

### 1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster and formulate the effective mitigation measures. The baseline monitoring study has been carried out during the period of **March to May 2026** for various environmental components such as land, soil, air, water, noise, ecology, etc. to assess the anticipated impacts

of the cluster on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

### **1.9 Legislation Applicable to Mining of Mineral Sector**

A few important legislations are given below:

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

## **CHAPTER II**

### **PROJECT DESCRIPTION**

#### **2.0 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. Anantha Granites, Multi Colour Granite 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 27.06.2025 to extract granite and produce dimension stones. The precise area communication letter 26/MMB.2/2025, Dated 23.01.2026, to furnish approved mining plan 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. The overall view of the project site is shown in Figure 2.1.

#### **2.2 HISTORY OF THE PROJECT**

It's a fresh quarry lease.

**Table 2.1 Proposed project area and excavation details**

|                                        |                                             |                |
|----------------------------------------|---------------------------------------------|----------------|
| Name of the Quarry                     | M/s. Anantra Granites                       |                |
| Type of Land                           | Patta Land                                  |                |
| Extent                                 | 3.77.0ha                                    |                |
| S.F. No                                | 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 |                |
| Toposheet No                           | 57- H/14                                    |                |
| Highest Elevation                      | 814m AMSL                                   |                |
| Latitude                               | 12°34'25.47134"N to 12°34'40.41361"N        |                |
| Longitude                              | 77°52'47.90331"E to 77°52'53.17461"E        |                |
| Proposed depth for five Years          | 30m BGL                                     |                |
| As per ToR ultimate depth for 20 years | 35m BGL                                     |                |
| Geological Resources                   | ROM (MT)                                    | Recovery @ 40% |
|                                        | 29,96,598MT                                 | 11,98,639MT    |
| Mineable Reserves                      | 8,13,100MT                                  | 3,25,240MT     |
| Proposed production for 5 years        | 3,04,114MT                                  | 1,21,646MT     |
| Method of Mining                       | Open cast mechanized mining method          |                |
| Topography                             | Elevated Topography                         |                |
| Machinery requirements                 | Jack hammer                                 | 4              |
|                                        | Excavator                                   | 1              |
|                                        | Compressor                                  | 2              |
|                                        | Tipper                                      | 2              |
| Proposed Manpower Deployment           | 23 Nos                                      |                |
| Project Cost                           | Rs.74,40,655/-                              |                |
| Proposed Water Requirement             | 3.2KLD                                      |                |

## 2.3 LOCATION AND ACCESSIBILITY

The proposed project area is Jakkeri Village, Denkanikottai Taluk, Krishnagiri District as shown in Figure 2.2. The area is located between a latitude of 12°34'25.47134"N to 12°34'40.41361"N and a longitude of 77°52'47.90331"E to 77°52'53.17461"E. Accessibility details to the proposed project site have been given in Table 2.2.

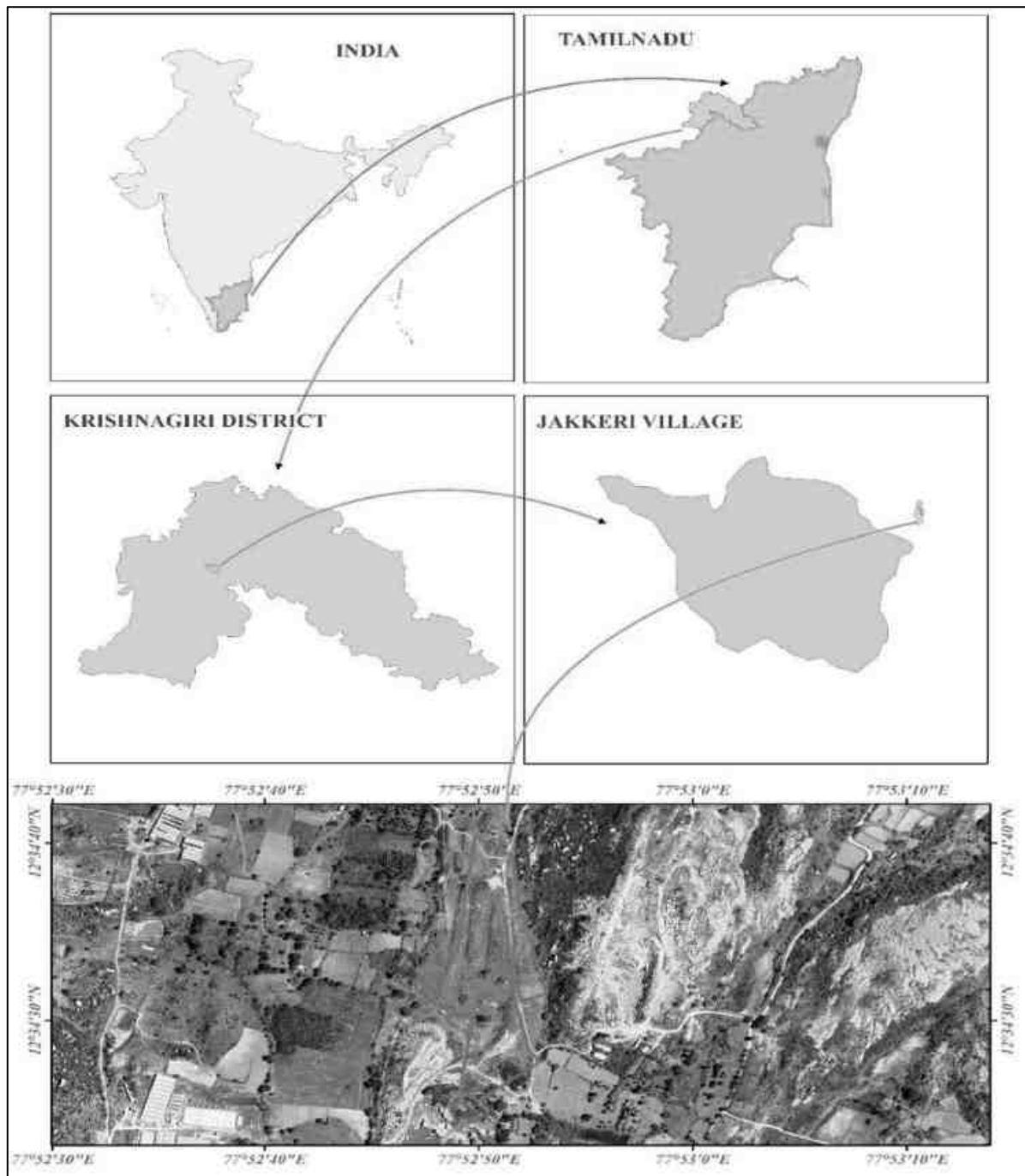


**Figure 2.1 Key Map Showing Location of Project Site**

**Table 2.2 Site Connectivity to the Project Area**

|                          |                                   |  |         |           |
|--------------------------|-----------------------------------|--|---------|-----------|
| Nearest Road             | SH-85 (Royakottai - Hosur         |  | 0.84km  | North     |
|                          | NH 844 (Krishnagiri – Dharmapuri) |  | 7.43 km | East      |
| Nearest Railway Station  | Periya Nagathunai                 |  | 3.6km   | Southeast |
| Nearest Medical Facility | Kelamangalm                       |  | 4.0Km   | Northwest |
| Nearest Town             | Kelamangalm                       |  | 3.87km  | Northwest |
| Nearest Airport          | Bangalore                         |  | 70km    | Northwest |
| Nearest Port             | Chennai                           |  | 281km   | Northeast |
| Nearest Village          | Jakkeri                           |  | 1.1km   | North     |
|                          | Anusonai                          |  | 1.7km   | East      |
|                          | Bommathathanur                    |  | 1.8km   | South     |
|                          | Vanagiri                          |  | 1.3km   | West      |

## 2.4 LEASEHOLD AREA

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

**Table 2.3 Lease hold area details**

| Survey No.          | Sub division | Total Extent in Hect | Patta No | Name of the Land Owner              | Mine lease Applied S.F. No. | Mine lease Applied Area out of total area in hect. |
|---------------------|--------------|----------------------|----------|-------------------------------------|-----------------------------|----------------------------------------------------|
| 202                 | 2            | 0.81.00              | 9162     | 1.M/s. Anantra Granites             | 202/2                       | 3.77.00                                            |
| 203                 | 2A           | 0.44.00              |          |                                     | 203/2A                      | 0.44.00                                            |
| 203                 | 2B           | 0.10.00              |          |                                     | 203/2B                      | 0.10.00                                            |
| 733                 | 1            | 0.37.00              |          | 2.Mr.R. Adalarasu<br>3.Mr.R. Subash | 733/1                       | 0.37.00                                            |
| 733                 | 3            | 0.86.50              |          |                                     | 733/3                       | 0.86.50                                            |
| 733                 | 5            | 1.18.50              |          |                                     | 733/5                       | 1.18.50                                            |
| <b>Total Extent</b> |              | <b>3.77.00</b>       |          | <b>Total lease area extent</b>      |                             | <b>3.77.00</b>                                     |

The proposed project is site specific. There is no mineral beneficiation or processing proposed inside the project area. There is no forest land involved in the proposed area and is devoid of major vegetation and trees. The overall extent of the project area is 3.77.0Ha as per the precise



area communication letter vide Roc. No. 26/MMB.2/2025, dated 23.01.2026 issued by Dept of Geology and Mining, Krishnagiri District, Tamil Nadu. The breakup of the existing land use for mining and ancillary feature is given in Table 2.3 & 2.3a.

**Table 2.3a Present Land use pattern of the project area**

| Sl. No. | Land Use                     | Present area (Hect.) |
|---------|------------------------------|----------------------|
| 1.      | Area under Mining            | Nil                  |
| 2       | Infrastructure               | Nil                  |
| 3       | Roads                        | Nil                  |
| 4       | Unutilized                   | 3.77.00              |
| 5       | Greenbelt + Earth bund+ Dump | Nil                  |
|         | <b>Grand Total</b>           | <b>3.77.00</b>       |

#### 2.4.1 Geo- Coordinates

The extent of the proposed project site is **3.77.0ha**. The boundary corner coordinates are given in Table 2.4 and the location of 6 boundary corners are shown in Figure 2.2.

**Table 2.4 Corner Coordinates of Proposed Project**

| Pillar ID | Latitude            | Longitude          | Pillar ID | Latitude            | Longitude          |
|-----------|---------------------|--------------------|-----------|---------------------|--------------------|
| 1         | 12° 34' 39.35825"N  | 77° 52' 51.57785"E | 20        | 12° 34' 28.30614"N  | 77° 52' 52.34474"E |
| 2         | 12° 34' 37.74220"N  | 77° 52' 51.75963"E | 21        | 12° 34' 27.70553"N  | 77° 52' 52.87321"E |
| 3         | 12° 34' 36.36133"N  | 77° 52' 51.91504"E | 22        | 12° 34' 26.70730"N  | 77° 52' 51.56683"E |
| 4         | 12° 34' 34.78625"N  | 77° 52' 52.32493"E | 23        | 12° 34' 25.70910"N  | 77° 52' 50.26044"E |
| 5         | 12° 34' 33.21110"N  | 77° 52' 52.73491"E | 24        | 12° 34' 25.47134"N  | 77° 52' 49.94914"E |
| 6         | 12° 34' 31.63606"N  | 77° 52' 53.14481"E | 25        | 12° 34' 26.13802"N  | 77° 52' 49.13595"E |
| 7         | 12° 34' 31.52140" N | 77° 52' 53.17461"E | 26        | 12° 34' 27.74785"N  | 77° 52' 49.36698"E |
| 8         | 12° 34' 31.06082"N  | 77° 52' 51.96410"E | 27        | 12° 34' 29.35774"N  | 77° 52' 49.59790"E |
| 9         | 12° 34' 31.94524"N  | 77° 52' 51.76732"E | 28        | 12° 34' 30.07896"N  | 77° 52' 49.70147"E |
| 10        | 12° 34' 33.54993"N  | 77° 52' 51.50184"E | 29        | 12° 34' 30.78990"N  | 77° 52' 48.21292"E |
| 11        | 12° 34' 35.15462"N  | 77° 52' 51.23643"E | 30        | 12° 34' 30.93775" N | 77° 52' 47.90331"E |
| 12        | 12° 34' 36.75941"N  | 77° 52' 50.97101"E | 31        | 12° 34' 32.47883"N  | 77° 52' 48.43073"E |
| 13        | 12° 34' 37.09633" N | 77° 52' 50.91530"E | 32        | 12° 34' 33.98442"N  | 77° 52' 48.94601"E |
| 14        | 12° 34' 36.58504"N  | 77° 52' 50.86435"E | 33        | 12° 34' 35.59494"N  | 77° 52' 49.17214"E |
| 15        | 12° 34' 34.96765"N  | 77° 52' 51.03251"E | 34        | 12° 34' 37.20540"N  | 77° 52' 49.39835"E |
| 16        | 12° 34' 33.35025"N  | 77° 52' 51.20063"E | 35        | 12° 34' 38.81592"N  | 77° 52' 49.62441"E |

|    |                     |                     |    |                    |                    |
|----|---------------------|---------------------|----|--------------------|--------------------|
| 17 | 12° 34' 32.87912"N  | 77° 52' 51.24964" E | 36 | 12° 34' 40.41361"N | 77° 52' 49.84876"E |
| 18 | 12° 34' 31.29651"N  | 77° 52' 51.62862"E  | 37 | 12° 34' 39.43920"N | 77° 52' 51.14874"E |
| 19 | 12° 34' 29.71392" N | 77° 52' 52.00760"E  |    |                    |                    |

*Source: Approved Mining plan*

## 2.5 GEOLOGY

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

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

The topsoil available at a depth of 0-2m, weathered rock is obtained the average of 1-2m and a multi colour granite starts from 2m to 35m.

## 2.6 QUANTITY OF RESERVES

The resources and reserves of multi colour granite were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety margins, as shown in Figure 2.3 and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves of total ROM are calculated up to the depth of 35m (BGL) considering there is no waste/ overburden/ side burden (100% Recovery anticipated) for the proposed project. The results of geological resources and reserves is given in Table 2.5 and the approved year wise development plan is enclosed as Figure 2.4, 2.5.

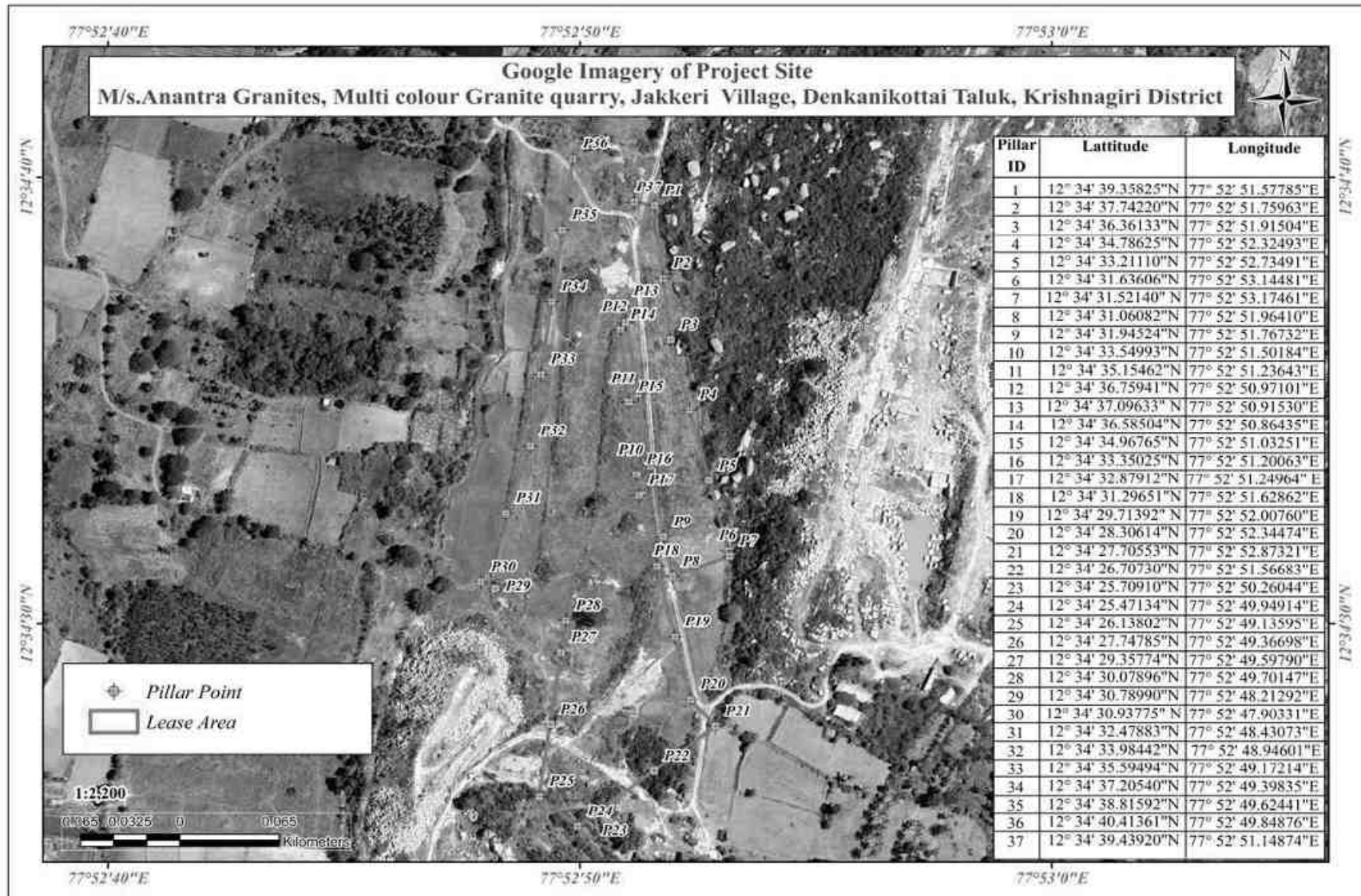


Figure 2.2 Google Earth Image Showing Lease Area with Pillar

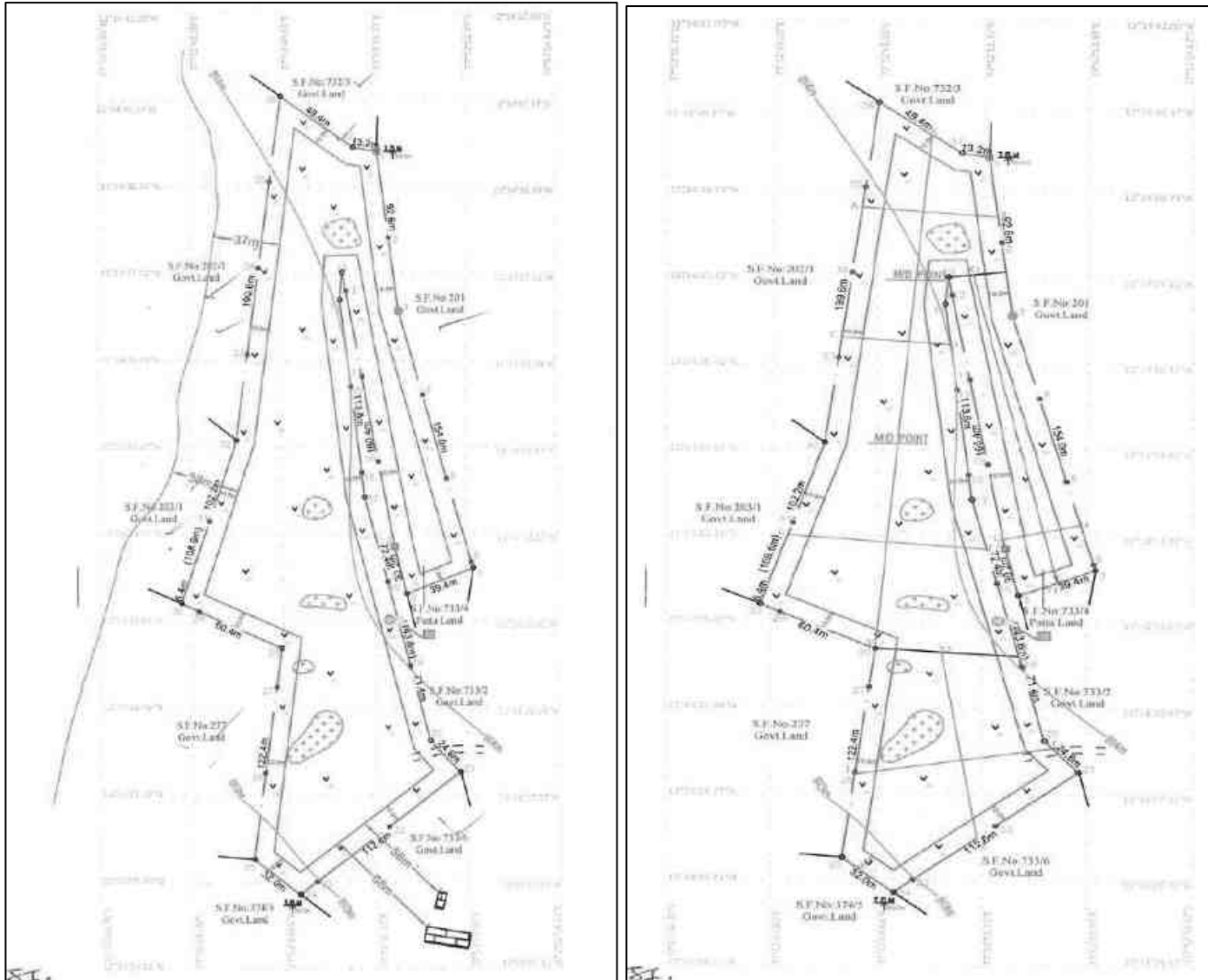


Figure 2.3 Surface Plan & Geological Plan

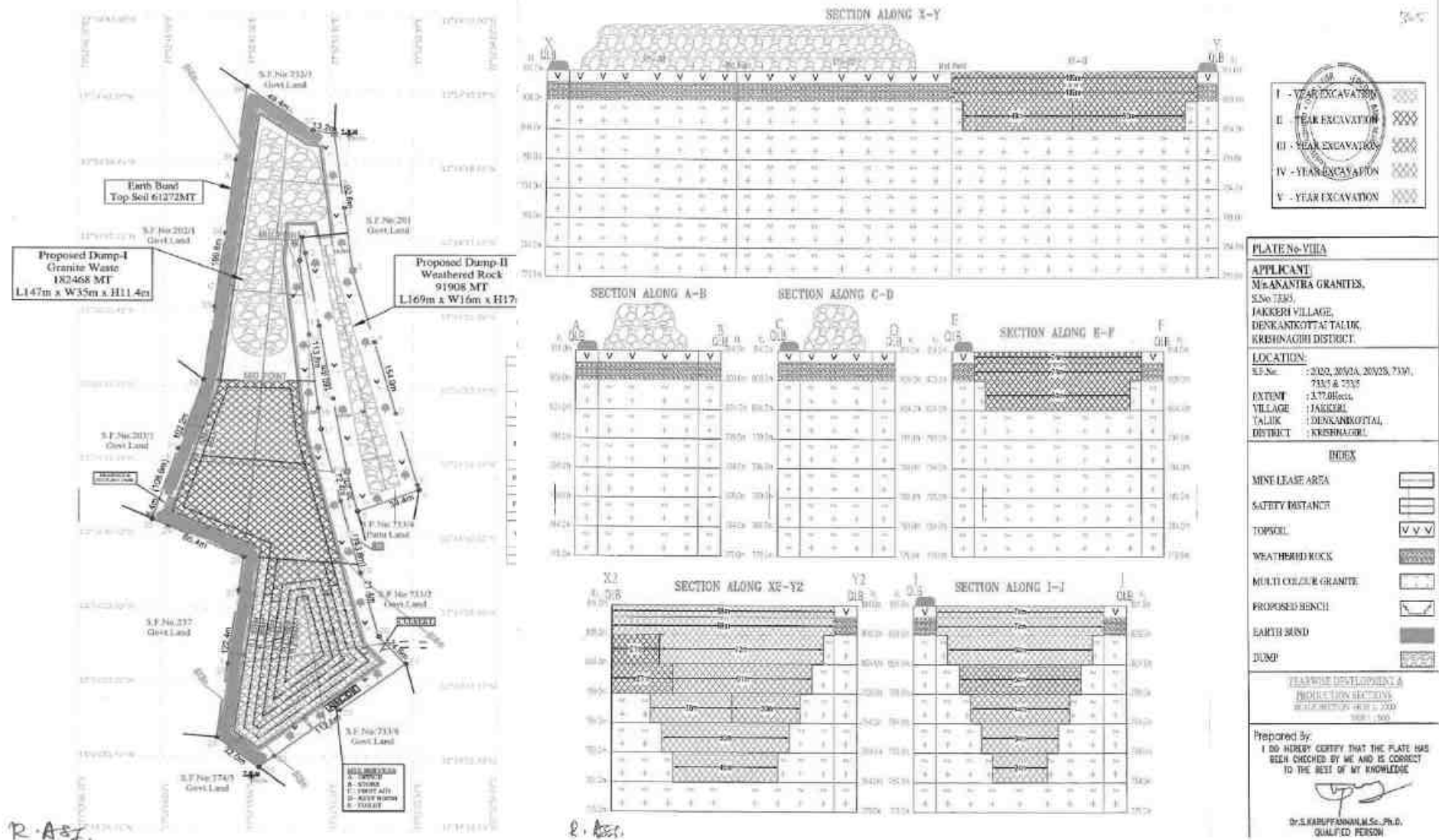


Figure 2.4 Year wise Development Production Plan & Sections



## 2.7 RESOURCES AND RESERVES

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

**Table 2.5 Estimated Resources and Reserves of the Project**

| Description           | ROM in (MT) | Multi Colour Granite @ 40% Recovery (MT) | Multi Colour Granite @ 60% Waste (MT) | Weathered Rock (MT) | Top Soil (MT) |
|-----------------------|-------------|------------------------------------------|---------------------------------------|---------------------|---------------|
| Geological Resources  | 29,96,598MT | 11,98,639MT                              | 17,97,959MT                           | 2,26,158MT          | 1,50,772MT    |
| Mineable Reserves     | 8,13,100MT  | 3,25,240MT                               | 4,87,860MT                            | 149964MT            | 99976MT       |
| Five Years Production | 3,04,114MT  | 1,21,646MT                               | 182468MT                              | 91908MT             | 61272MT       |

*Source: Approved Mining Plan & ToR*

### **Year -Wise Production**

On the basis of year-wise development plan and its sections, as shown in Figures 2.7 year-wise production details are given in Table 2.6.

**Table 2.6 Year wise Production Details**

| Year  | ROM in (MT)   | Multi Colour Granite 40% Recovery (MT) | Multi Colour Granite 60% Waste (MT) | Weathered Rock (MT) | Top Soil (MT) |
|-------|---------------|----------------------------------------|-------------------------------------|---------------------|---------------|
| I     | 61056         | 24422                                  | 36634                               | 43512               | 29008         |
| II    | 60208         | 24083                                  | 36125                               | 48396               | 32264         |
| III   | 60871         | 24349                                  | 36522                               | -                   | -             |
| IV    | 61135         | 24454                                  | 36681                               | -                   | -             |
| V     | 60844         | 24338                                  | 36506                               | -                   | -             |
| Total | <b>304114</b> | <b>121646</b>                          | <b>182468</b>                       | <b>91908</b>        | <b>61272</b>  |

*Source: Approved Mining plans*

## 2.8 MINING METHOD

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°C from horizontal. The multi colour granite is proposed to quarry at 5m bench height & width conventional open cast method.

Drill hole is of diameter 32mm, depth and inclination of drill hole is generally drilled vertically in an alignment, however in primary cutting in the absence of sheet joints to bottom level, horizontal holes also are drilled. 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. The intrusive body will be tackled

with latest technology by deploying diamond wire saw cutting for obtaining the good recovery factor of sizeable blocks.

#### **Blasting pattern:**

It is an Eco-friendly quarry operation, no blasting is proposed, Diamond wire saw cutting method is adopted by the applicant. Nowadays, 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.

#### **Magnitude of Operation**

Based on the results of estimated production for the 5 years as shown in Table 2.7, details about the size of operation have been provided.

**Table 2.7 Operational Details for Proposed Project**

|                                                       | <b>Multi Colour Granite Recovery<br/>@ 40% in MT</b> |
|-------------------------------------------------------|------------------------------------------------------|
| Quantity of Material to be Quarried out in five years | 121646                                               |
| Number of working days/Annum                          | 270                                                  |
| Production of /Day (m <sup>3</sup> )                  | 90                                                   |
| No. of Lorry Loads                                    | 5                                                    |

#### **Extent of Mechanization**

To achieve the above-mentioned production, various machineries are proposed for the quarrying operation, as given in Table 2.8.

**Table 2.8 Machinery Details**

| <b>Type</b> | <b>Nos</b> | <b>Dia of hole (mm)</b> | <b>Size / Capacity</b> | <b>Make</b> | <b>Motive power</b> | <b>H. P</b> |
|-------------|------------|-------------------------|------------------------|-------------|---------------------|-------------|
| Jack Hammer | 4          | 32 mm                   | Hand held              | ---         | Diesel              | --          |
| Compressor  | 2          | ---                     | Air                    | ---         | Diesel              | --          |
| Excavator   | 1          | ---                     | 2.9-4.5m <sup>3</sup>  | ---         | Diesel              | --          |
| Tippers     | 2          | ---                     | ---                    | ---         | Diesel              | --          |



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

The Thickness of 1m topsoil will measure about 61272m<sup>3</sup> of the quarry which will be utilized for construction of bunds, road and afforestation purpose. First five years multi colour granite waste forms nearly 60% of ROM and the quantity of waste in the five years will be around 182468m<sup>3</sup>. The Granite waste material will be proposed to dump in the Southern side of the lease area. The Proposed granite waste (60%) will be dumped in the Southern side of the lease applied area with dimensions 147m (L) X 35m (W) X 11.5m (H). avg Which will also accommodate the waste generated during the first five years. The topsoil is 61272m<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. Multi colour granite may be un sold it will be kept within the lease boundary.

### ***Progressive Quarry closure plan***

The progressive quarry closure plan of the proposed project showing present, and future land use statistics is provided in Table 2.9. According to data shown in the table, at the end of the quarry life, about 1.49.50ha of land would have been utilized for quarrying, 0.78.50ha of land for waste dump, 0.02.00 ha for infrastructures, 0.05.00ha for roads, 1.20.00ha for green belt development for first five years plan period.

**Table 2.9 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>Area to be Required at the present mining plan period (ha)</b> |
|--------------------------|-----------------------------------|-------------------------------------------------------------------|
| Under quarrying area     | Nil                               | 1.49.50                                                           |
| Infrastructure           | Nil                               | 0.02.00                                                           |
| Roads                    | Nil                               | 0.05.00                                                           |
| Waste Dump               | Nil                               | 0.78.50                                                           |
| Green belt               | Nil                               | 1.20.00                                                           |
| Drainage & Settling Tank | Nil                               | 1.10.00                                                           |
| Unutilized               | 3.77.00                           | 0.12.00                                                           |
| <b>Total</b>             | <b>3.77.00</b>                    | <b>3.77.00</b>                                                    |

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

On the basis of conceptual plan and its sections, as shown in Figures 2.9, the ultimate pit dimension of the quarry is 109m in length, 74m in width, and 35m in depth.

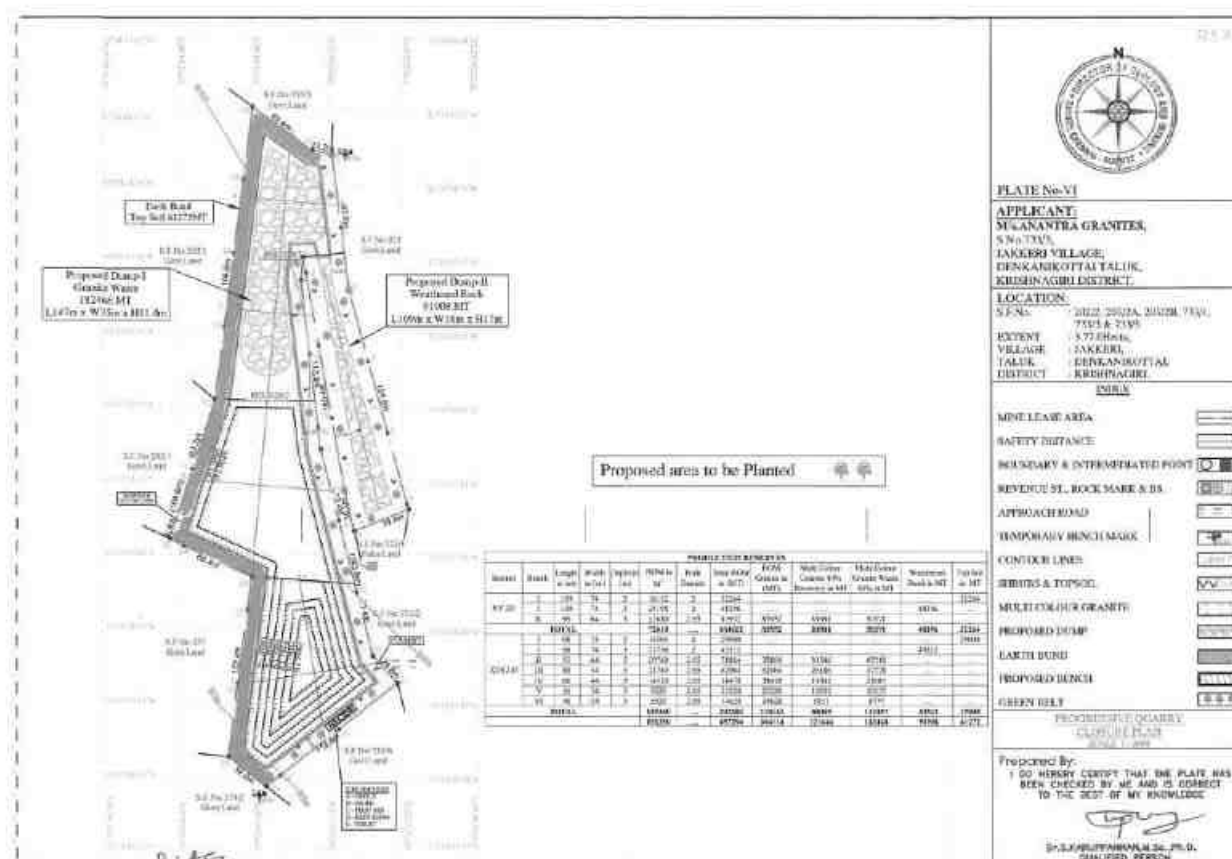
### ***Mine closure***

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 2.6 for the scheme period, the progressive mine closure cost is given in Table 2.10.

### Table 2.10 Progressive Mine Closure Budget

| Activity                           | Capital Cost     |
|------------------------------------|------------------|
| 754 plants inside the lease area   | 1,50,800         |
| 1131 plants outside the lease area | 3,39,300         |
| Wire Fencing                       | 7,54,000         |
| Garland Drain                      | 37,700           |
| <b>Total</b>                       | <b>12,81,800</b> |

*Source: Environment Management Plan*



### Figure 2.6 Progressive Quarry Closure Plan

### *Project Requirement*

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

### i) Water Requirement

Detail of water requirement in 3.2KLD is given in Table 2.11.

### Table 2.11 Water Requirement for the Project

| Purpose             | Quantity<br>Required (KLD) | Source                                                                                                                                                             |
|---------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Domestic & Drinking | 1.2                        | 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>3.2</b>                 |                                                                                                                                                                    |

*Source: Prefeasibility Report*

## ii) Energy Requirement

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

In addition to electricity, around 4,39,480 litres of HSD are used for total diesel consumption for Excavator, Compressor and Tipper. It will be brought to the site from nearby diesel pumps. Details on the estimation of fuel requirements are provided in Table 2.12.

**Table 2.12 Fuel Requirement Details**

| <b>Fuel Requirement for Excavator</b>                               |                                                      |                                                   |                      |                             |
|---------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------|----------------------|-----------------------------|
| <b>Details</b>                                                      | <b>Multi Colour Granite Recovery @40% (121646MT)</b> | <b>Multi Colour Granite Waste @60% (182468MT)</b> | <b>Top Soil --MT</b> | <b>Total Diesel (litre)</b> |
| Average Rate of Fuel Consumption (l/hr)                             | 16                                                   | 16                                                |                      | ---                         |
| Working Capacity (MT/hr)                                            | 55                                                   | 55                                                |                      | ---                         |
| Time Required (hours)                                               | 2212                                                 | 3318                                              |                      | ---                         |
| Total Diesel Consumption for 5 years (litre)                        | 35392                                                | 53088                                             |                      | <b>88,480</b>               |
| <b>Fuel Requirement for Tipper</b>                                  |                                                      |                                                   |                      |                             |
| Average Rate of Fuel Consumption/Trip (litre)                       | 20                                                   | 20                                                | --                   | ---                         |
| Carrying Capacity in MT                                             | 16.5                                                 | 16.5                                              | --                   | ---                         |
| Number of Trips / days                                              | 5                                                    | 8                                                 | --                   | ---                         |
| Number of Trips / 5 years                                           | 6750                                                 | 10,800                                            | --                   | ---                         |
| Total Diesel Consumption for 5 years (litre)                        | 1,35,000                                             | 2,16,000                                          | --                   | <b>3,51,000</b>             |
| <b>Total Diesel Consumption by Excavator, Compressor and Tipper</b> |                                                      |                                                   |                      | <b>4,39,480</b>             |

## 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 2.13.

**Table 2.13 Employment Potential for the proposed project**

| S. No. | Category       | Role                   | Nos. |
|--------|----------------|------------------------|------|
| 1      | Highly Skilled | Quarry Manager         | 1    |
|        |                | Mines Foreman          | 1    |
|        |                | Mechanical Engineer    | 1    |
|        |                | Account cum & admin    | 1    |
| 2      | Skilled        | Earth moving Operator  | 1    |
|        |                | Line drilling Operator | 1    |
|        |                | Wire saw Operator      | 2    |
|        |                | Driver                 | 2    |
| 3      | Semi - Skilled | Helpers, Greaser's     | 1    |
| 4      | Un-Skilled     | Cutter                 | 4    |
|        |                | Musdoor / Labors       | 8    |
| Total  |                |                        | 23   |

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 2.14.

**Table 2.14 Capital Requirement Details**

| S. No.                    | Description      | Cost (Rs.)         |
|---------------------------|------------------|--------------------|
| 1                         | Fixed Asset Cost | 31,90,655/-        |
| 2                         | Machinery Cost   | 25,00,000/-        |
| 3                         | Expenditure Cost | 17,50,000/-        |
| <b>Total Project Cost</b> |                  | <b>74,40,655/-</b> |

Source: Mining plan report

## 2.9 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE will be obtained from the Tamil Nadu State Pollution Control Board. The

conditions imposed during the environmental clearance will be compiled before the start of mining operation. Expected time schedule for the quarrying operation is given Table 2.15.

**Table 2.15 Expected Time Schedule**

| S. No.                                                                                                | Particulars                                                                                             | Time Schedule (in Months) |                 |                 |                 |                 |                 |                 | Remarks if any                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                       |                                                                                                         | 1 <sup>st</sup>           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> |                                                                                                                                                  |
| 1                                                                                                     | Baseline Environmental Study for preparing EIA report based on the Standard and Specific ToR Conditions |                           |                 |                 |                 |                 |                 |                 | Soil, Water, Air, Noise, Socio Economics, Ecological Biodiversity and Traffic studies to be carried out by NABL accredited Laboratory and FAE's. |
| 2                                                                                                     | Draft EIA Report                                                                                        |                           |                 |                 |                 |                 |                 |                 | Submission to TNPCB                                                                                                                              |
| 3                                                                                                     | Public Hearing Meeting                                                                                  |                           |                 |                 |                 |                 |                 |                 | Minutes will be provided by the Tamil Nadu Pollution Control Board.                                                                              |
| 4                                                                                                     | Final EIA Report (including Public reviews)                                                             |                           |                 |                 |                 |                 |                 |                 | Submission to PARIVESH 2.0 Portal for obtaining EC                                                                                               |
| 5                                                                                                     | SEIAA Meeting                                                                                           |                           |                 |                 |                 |                 |                 |                 | For environmental clearance                                                                                                                      |
| <b>Note:</b> 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 **March through May, 2026** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Greenlink Analytical and Research Laboratory (India) Private Ltd** 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 was divided into two zones:

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

Study area covers 5km radius from the mine located at S.F.No's: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu. Except for ecological study, which considers 10km as buffer zone. Both core and buffer zones are taken as the study area briefly given in Table 3.1 & 3.2. The study area map on Topo- sheet is represented in Figure 3.1.

**Table 3.1 Classification of study Area**

| Sl. No | Classification of Study area   | Type of Baseline data collection | Environmental Attributes                                                                               |
|--------|--------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------|
| 1      | Core Zone (Cluster Lease Area) | Primary Data                     | Soil Environment, Water Quality, Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study. |

|   |                                                                       |                            |                                                                                                                                                    |
|---|-----------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Extended Core Zone (upto 500m radius from the Cluster lease boundary) | Primary and Secondary Data | Soil Environment, Water Quality, Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study.                                             |
| 3 | Buffer Zone (Cluster lease boundary of 500m to 10km radius)           | Primary and Secondary Data | Meteorological Data, Soil Environment, Water Quality (Surface/ Groundwater), Ambient Air Quality, Noise Levels, Flora Fauna, Socio Economic study. |

**Table 3.2 Monitoring Attributes and Frequency of Monitoring**

| Attribute               | Parameters                                                                                     | Frequency of Monitoring                                   | No. of Locations                        | Protocol                                                                         |
|-------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------|
| Land Use/<br>Land Cover | Land-use Pattern within 5 km radius of the study area                                          | Once during the study period                              | Study Area                              | Satellite Imagery & Primary Survey                                               |
| *Soil                   | Physico-Chemical characteristics                                                               | Once during the study period                              | 6<br>(1 core & 5 in buffer zone)        | IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi |
| *Water Quality          | Physical, Chemical and Bacteriological Parameters                                              | Once during the study period                              | 6<br>(2 surface water & 4 ground water) | IS 10500 & CPCB Standards                                                        |
| Meteorology             | Wind speed<br>Wind direction<br>Temperature<br>Cloud cover<br>Dry bulb temperature<br>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><br>SO <sub>2</sub> , NO <sub>x</sub> , and Fugitive dust  | 24 hours, twice a week                                    | 6<br>(1 core & 5 buffer)                | IS 5182 Part 1-23                                                                |

|                        |                                                                                                     |                                              |                               |                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|
|                        |                                                                                                     |                                              |                               | National Ambient Air Quality Standards, CPCB                                        |
| *Noise Levels          | Ambient noise                                                                                       | Hourly observation for 24 hours per location | 6<br>(1 core & 5 buffer zone) | IS 9989<br>As per CPCB Guidelines                                                   |
| Ecology                | Existing flora and fauna                                                                            | Through field visit during the study period  | Study area                    | Primary Survey by Quadrate & Transect Study<br>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.*

### **Components and Methodology**

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

**Table No. 3.3 Component of the EIA/EMP studies**

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



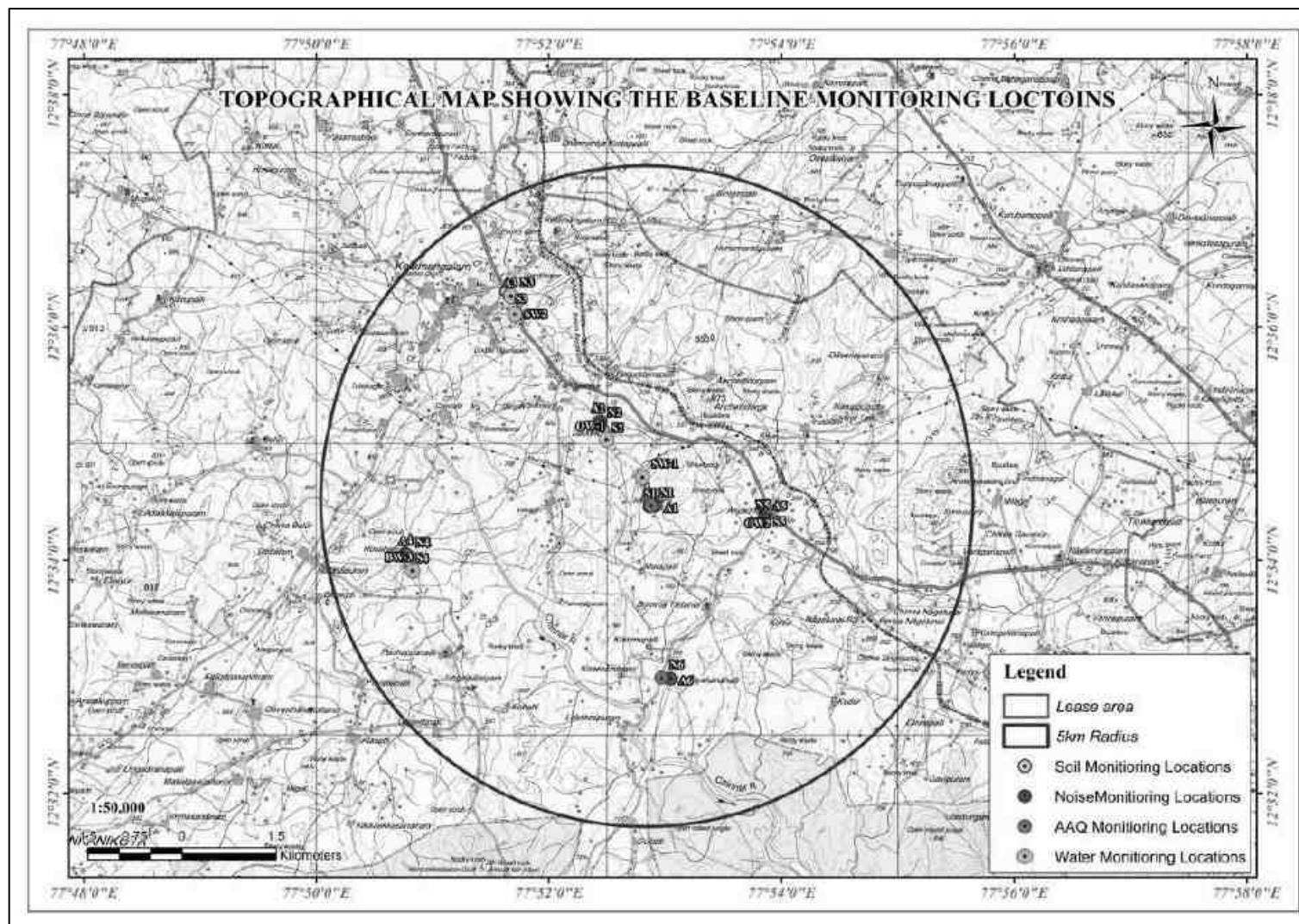


Figure 3.1 The study area map on Toposheet in 5km Radius.

### 3.1 LAND ENVIRONMENT

#### 3.1.1 Geology and Geomorphology

Study area is mainly composed of biotite hornblende genesis and grey hornblende biotite genesis, as shown in Figure 3.3. Among the geomorphic units, shallow weathered/buried pediplain and pediment dominate the study area, as shown in Figure 3.4. The lease area occurs in shallow weathered/buried pediplain terrain.

#### 3.1.2 Land Use/ Land Cover

The study area (5km radius, approximately **8379.12ha**) around the proposed mine site was classified into seven **LULC Classes** using Sentinel-II imagery. The distribution is dominated by **crop land**, which accounts for over two-thirds of the area.

##### Areal Coverage by LULC Class

- Crop Land: The dominant feature, comprising the maximum area of 4744.31ha (56.62%).
- Fallow Land: FL The second largest class covering 2270.29 ha (27.09%).
- Built-up Area: Accounts for 1190.67 ha (14.21%) of the landscape.
- Water Bodies: Including major flows and small tanks totalling 23.42 ha (0.28%).
- Mining Area: Covers 112.19 ha, representing the least percentage of the total area (1.34%).
- Sparse Vegetation: Covers 38.23 ha (0.46%).

**Table 3.4 LULC Statistics of the Study Area**

| S. No        | Classification         | Extent (ha)    | Area (%)     |
|--------------|------------------------|----------------|--------------|
| 1            | Water bodies           | 23.42          | 0.28         |
| 2            | Plantation             | 38.23          | 0.46         |
| 3            | Crop land              | 4744.31        | 56.62        |
| 4            | Builtup land           | 1190.67        | 14.21        |
| 5            | Mining/Industrial area | 112.19         | 1.34         |
| 6            | Fallow land            | 2270.29        | 27.09        |
| <b>Total</b> |                        | <b>8379.12</b> | <b>100.0</b> |

*Source: Sentinel II Satellite Imagery*

The LULC changes within a 5km radius study area between 2020 and 2025 is given in Table 3.4a. The data suggests a notable shift from agricultural land toward industrial/ mining activities and urban development alongside a significant increase in water bodies formed by reclaimed mining pits.

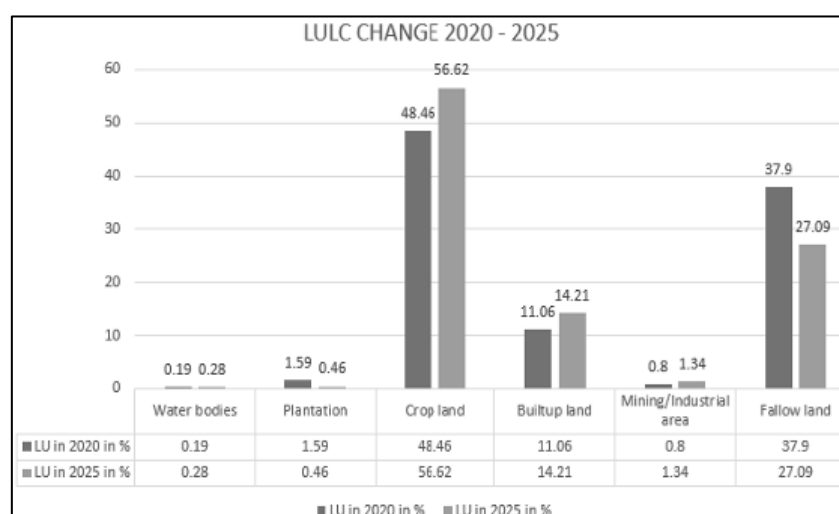
**Table 3.4a Comparison of LULC 2020 - 2025**

| S. No.       | Classification         | LU in 2020 in Ha | LU in 2020 in % | LU in 2025 in Ha | LU in 2025 in % | Change in percentage |
|--------------|------------------------|------------------|-----------------|------------------|-----------------|----------------------|
| 1            | Water bodies           | 15.2             | 0.19            | 23.42            | 0.28            | Increase             |
| 2            | Plantation             | 132.99           | 1.59            | 38.23            | 0.46            | Decrease             |
| 3            | Crop land              | 4060.74          | 48.46           | 4744.31          | 56.62           | Increase             |
| 4            | Builtup land           | 926.75           | 11.06           | 1190.67          | 14.21           | Increase             |
| 5            | Mining/Industrial area | 67.21            | 0.80            | 112.19           | 1.34            | Increase             |
| 6            | Fallow land            | 3175.94          | 37.90           | 2270.29          | 27.09           | Decrease             |
| <b>Total</b> |                        | <b>8379.12</b>   | <b>100</b>      | <b>8379.12</b>   | <b>100</b>      | <b>---</b>           |

**Interpretation of Changes**

The change in LULC in the year 2020 and 2025 in Figure 3.5 and Figure.3.5a shows a

- **Shift in Economy:** The increase in crop lands by over 4744.31 ha and decrease in fallow land areas is attributed to a changing agriculture activity. The study suggests that less profitable farming with uncertain yields is driving people towards other economic activities like mining and related industries.
- **Economic Growth Indicators:** The rise in built-up areas is cited as evidence of an increase in the regional economy level fuelled by demand for building materials (stones and sand) for infrastructure development.
- **Land Use Optimization:** The reduction in barren and fallow lands indicates that previously unproductive areas are being utilized for productive activities.
- **Innovative Water Management:** The significant decrease in unclassified water bodies (a rise of over 0.28 percentage points) is clarified as the use of mined-out open pits as effective rainwater harvesting structures.

**Figure 3.2 Change in LULC chart 2020 and 2025.**

**Shortcomings:**

- A study finds rural settlement growth causes 3.5 times more biodiversity loss than that associated with urban expansion.
- Low- density expansion fragments natural habitats more widely than urban development. Rural expansion tends to be scattered and low-density, spreading indirect impacts (like habitat fragmentation, noise, and light) over a much larger landscape than compact urban growth.
- Rural growth has spread faster into Key Biodiversity Areas than urban expansion.
- Rural expansion often enables small-scale but widespread illegal logging, quarrying, and resource harvesting, whose cumulative impact degrades ecosystems.
- Environmental impact assessments and land-use planning largely focus on cities, industries and large infrastructure projects. Rural settlement growth remains poorly regulated even when it occurs in biodiversity-rich landscapes

**3.1.3 Topography**

The applied lease area exhibits an elevated topography, which is elevation difference of 10m. The highest elevation observed in lease area is (824m) AMSL, whereas the lowest elevation is 814m AMSL.

**3.1.4 Drainage Pattern**

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.6.

**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 Centre of Seismology](#)). The Zone II is defined as the region where only minor damage is expected from seismic events. In this respect, the proposed lease area is located in a low earthquake hazard area.

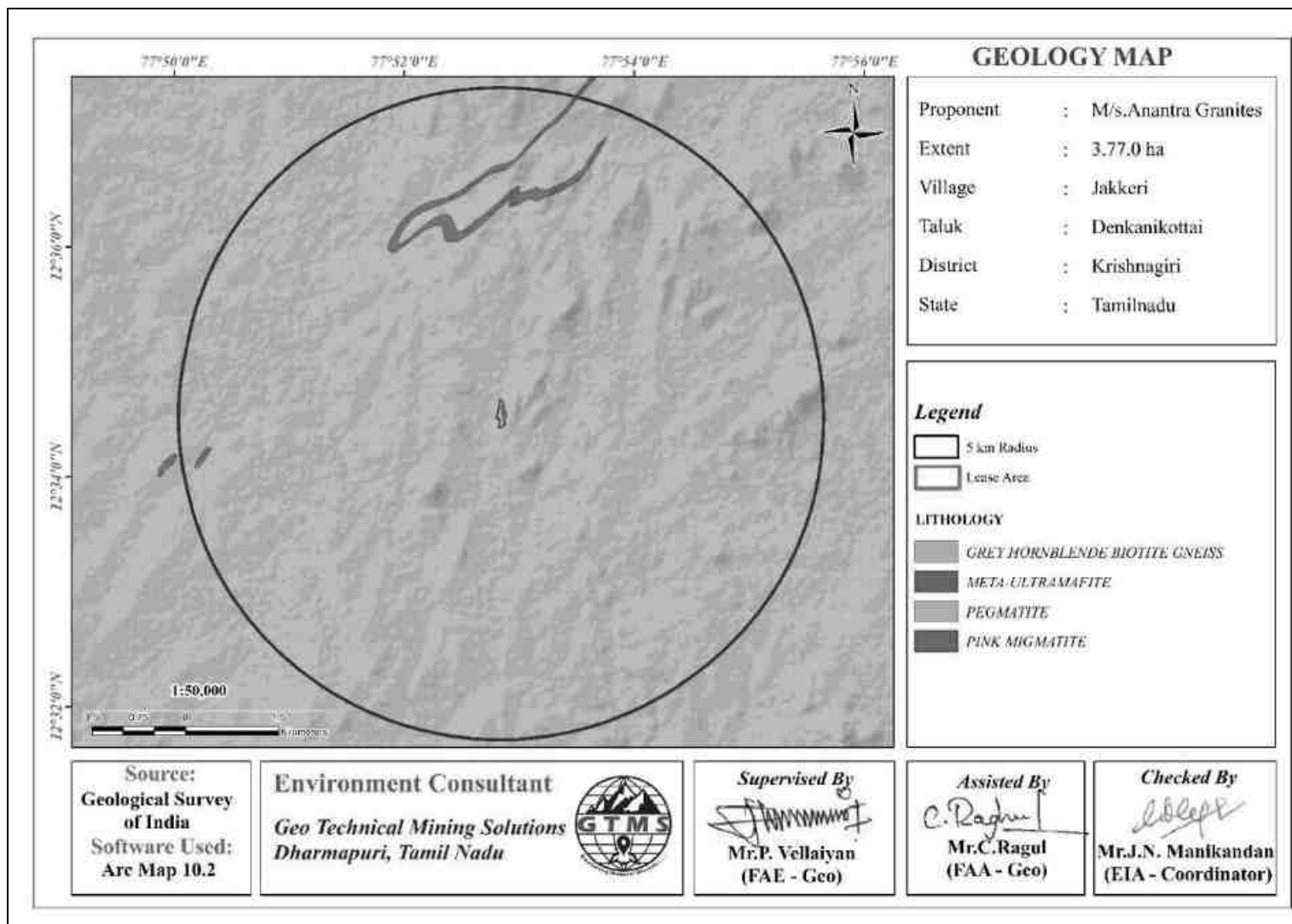


**Figure 3.3 Geology Map of 5 km Radius from the Proposed Project Site**

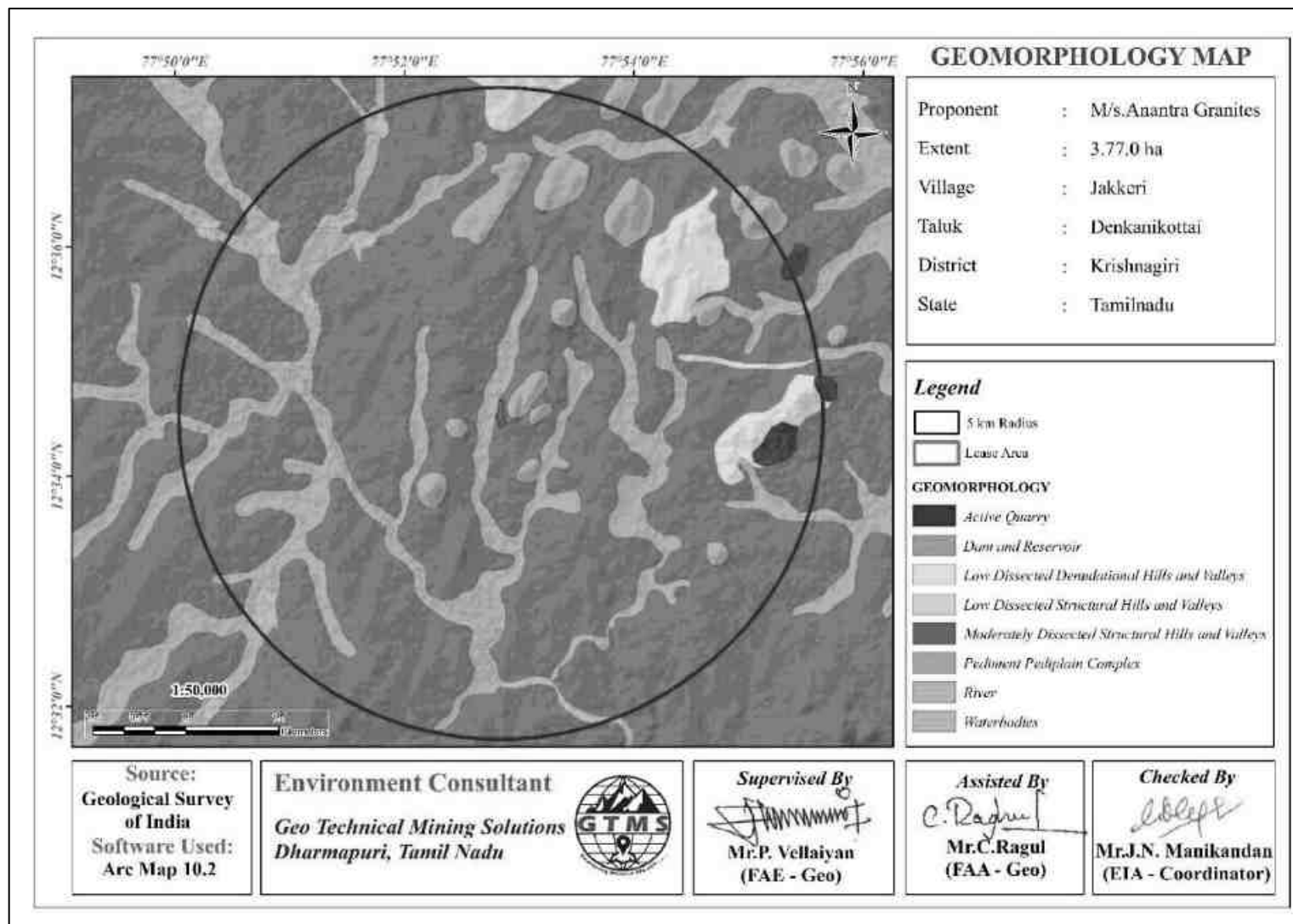


**Figure 3.4 Geomorphology Map of 5 km Radius from the Proposed Project Site**

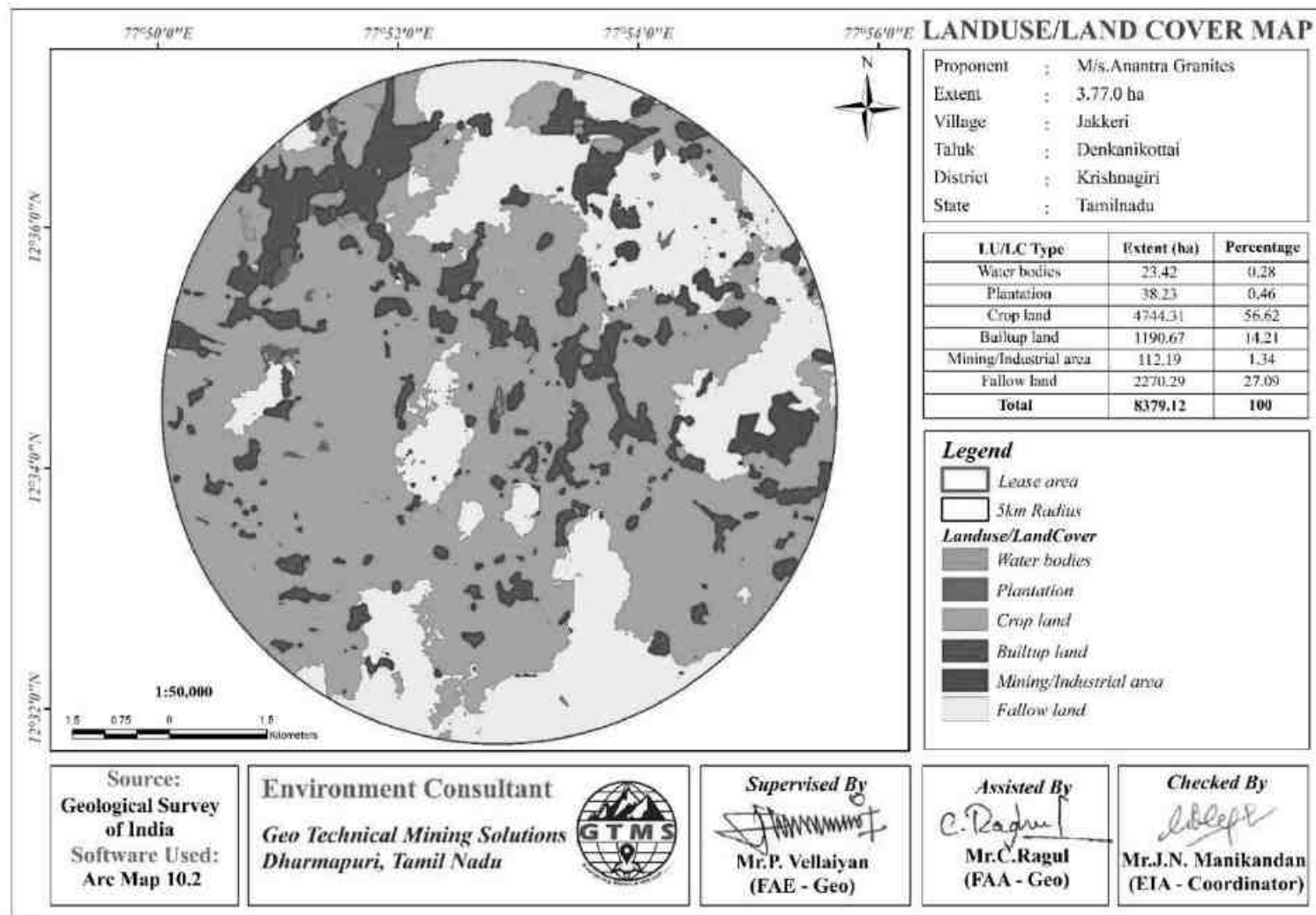


**Figure 3.5 LULC Map of 5 km Radius from the Proposed Project Site**

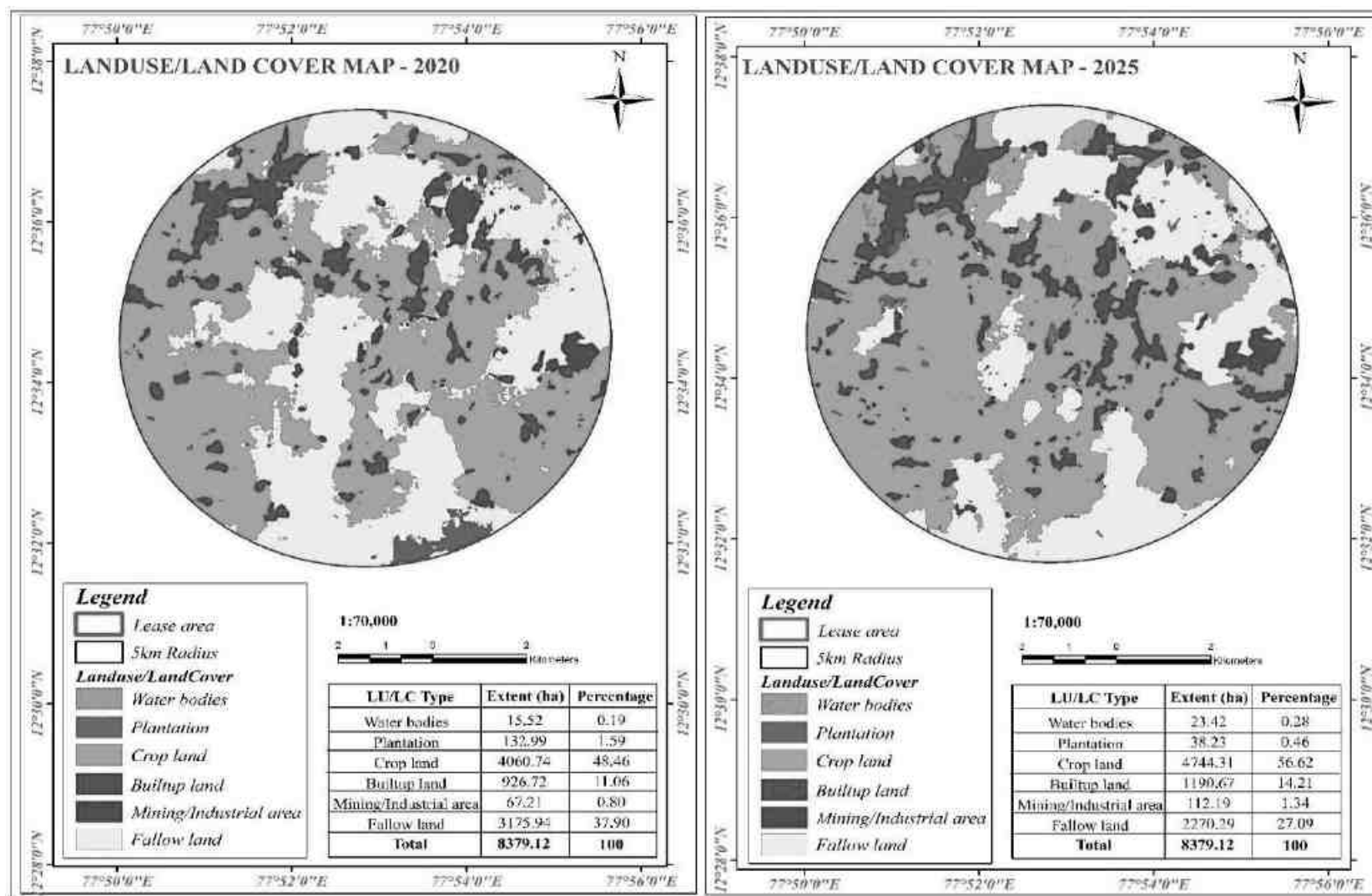


Figure 3.5a LULC Map of 5 km Radius from the Proposed Project Site (2020-2025)



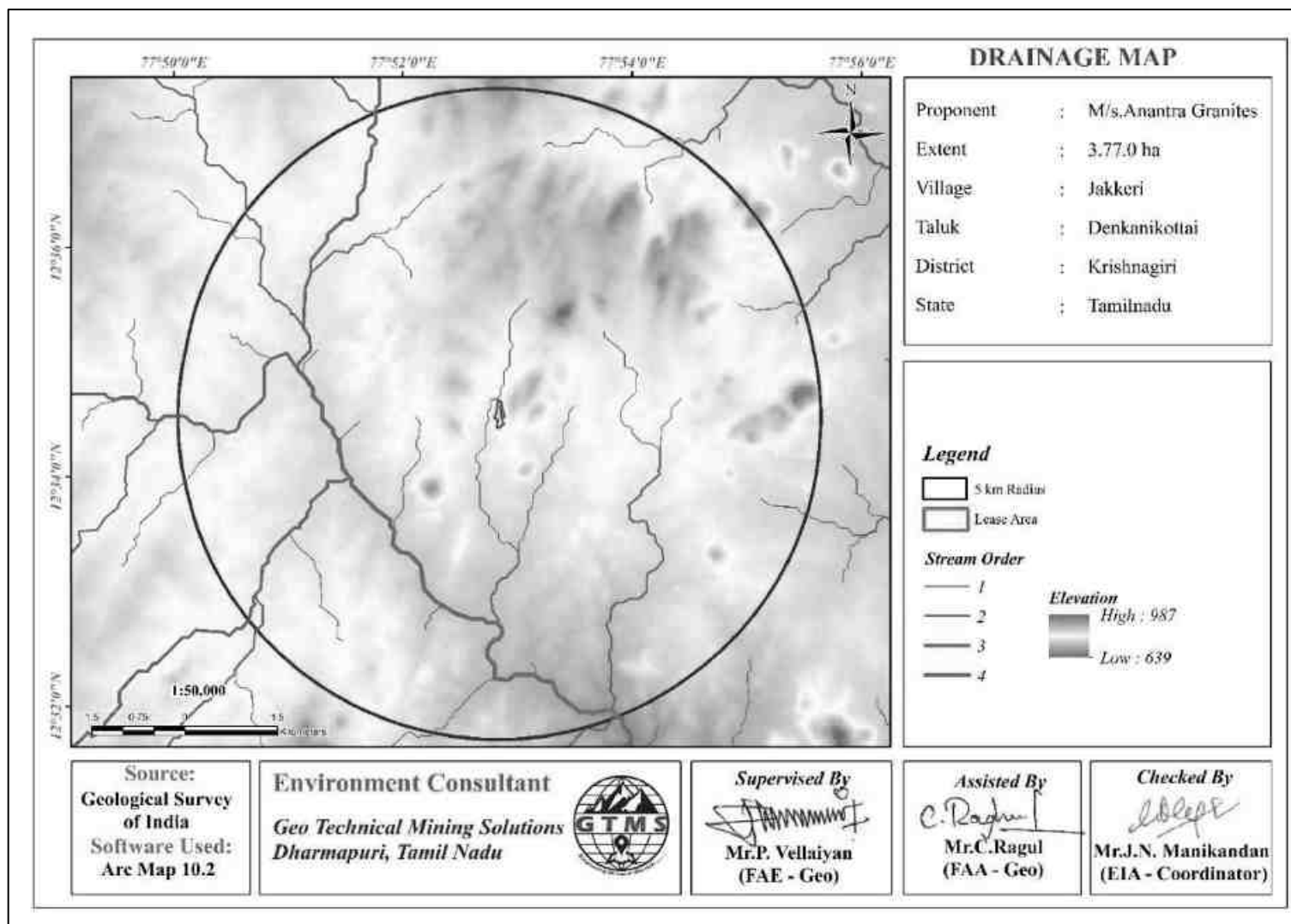


**Figure 3.6 Drainage Map of 5km Radius from the Proposed Project Site Showing Dendritic Pattern**

### 3.2 SOIL ENVIRONMENT

The composite soil samples were collected from the 5 locations of the study area and analysed for different parameters. Auger instrument is used to collect samples at the desired depth typically 6-8 inches. The soil samples were placed in rigid paper bags, labelled and then subjected to air drying and sieving in the laboratory. This process ensures the samples are suitable for assessing macro and micronutrients as well as physicochemical properties. The locations of the sampling sites were given in Table 3.5 and shown in Figure 3.8.

**Table 3.5 Soil Sampling Locations**

| Sampling ID | Location      | Distance | Coordinates                 |
|-------------|---------------|----------|-----------------------------|
| S1          | Nearby Core   | -- --    | 12°34'27.72"N 77°52'52.06"E |
| S2          | Jakkeri       | 1.04 NW  | 12°35'6.76"N 77°52'27.88"E  |
| S3          | Bodichipalli  | 1.78 SE  | 12°33'39.61"N 77°53'25.81"E |
| S4          | D. Kothapalli | 3.76 SW  | 12°34'0.89"N 77°50'47.30"E  |
| S5          | Anusonai      | 1.78 E   | 12°34'22.77"N 77°53'51.50"E |

Source: On-site monitoring/sampling by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS.

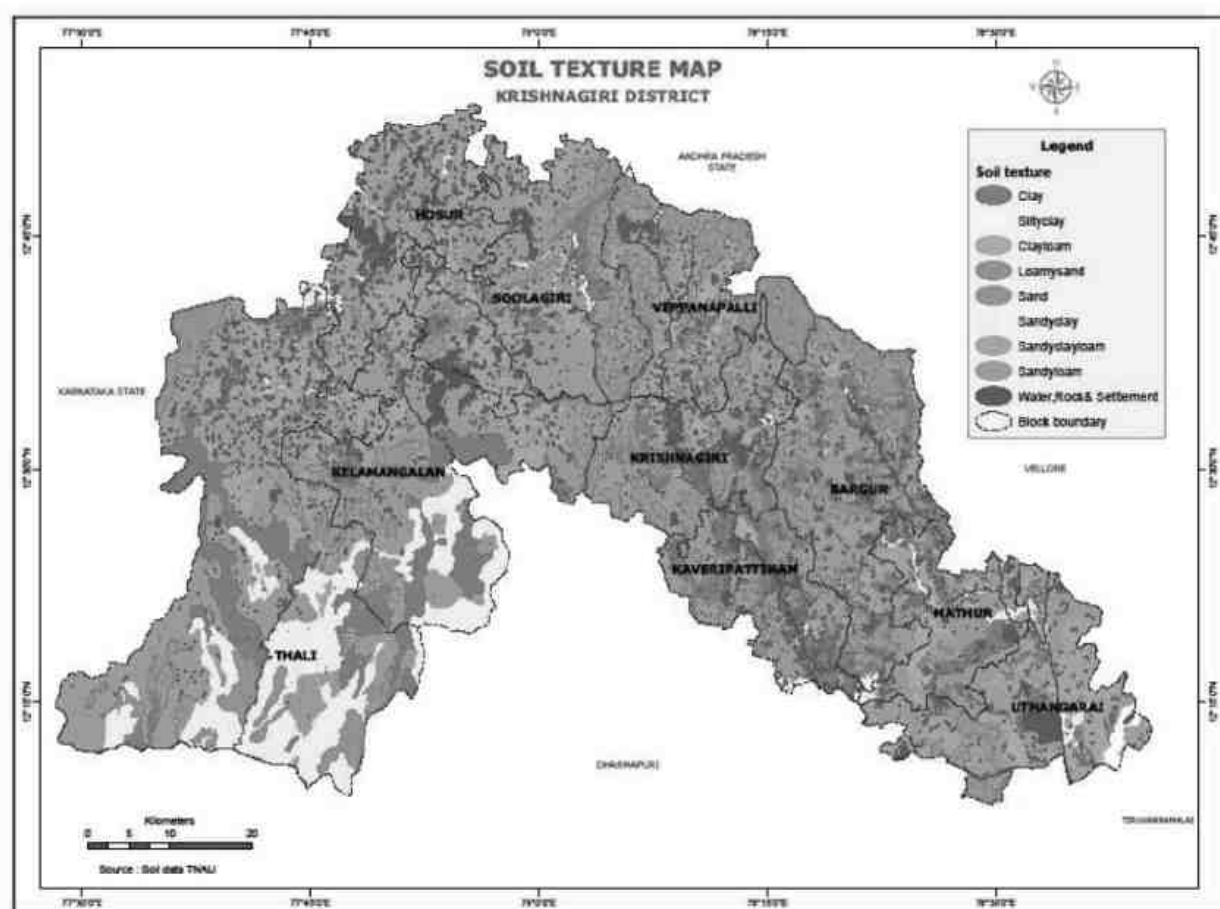


**Figure 3.7 Soil Map of Krishnagiri District**

### **3.2.1 Physical Characteristics & Chemical Characteristics**

#### **1. Soil pH and Electrical Conductivity (EC):**

- **pH** ranged from 7.22 to 7.89 indicating that the soil is **neutral to slightly alkaline**, which is favourable for most crops.
- **EC** value ranged from 69.0 to 860.0 $\mu$ S/cm, suggesting low salt concentration and non- saline soil across the sampling area.

#### **2. Physical Properties**

- **Bulk Density** values ranged from 1.16 to 1.50kg/cm<sup>3</sup>, which are within the typical range for loamy soils and support good root penetration and aeration.

#### **3. Soil Fertility Status:**

- **Total Organic matter** levels ranged from 1.0 to 2.6% by weight, classifying soils as low to moderately fertile in terms of organic matter.
- **Nitrogen (N)** content varied from 110 to 400.0kg/ha by mass indicating moderate nitrogen availability.
- **Potassium (K)** ranged from 68.0 to 200kg/ha by mass moderate fertility potential in terms of potassium.

#### **4. Base Elements and Cation Ratios:**

- **Calcium (Ca)** levels were highest with 200mg/kg and lowest with 350mg/kg.
- **Magnesium (Mg)** ranged from 150 to 396mg/kg.

#### **Conclusion:**

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

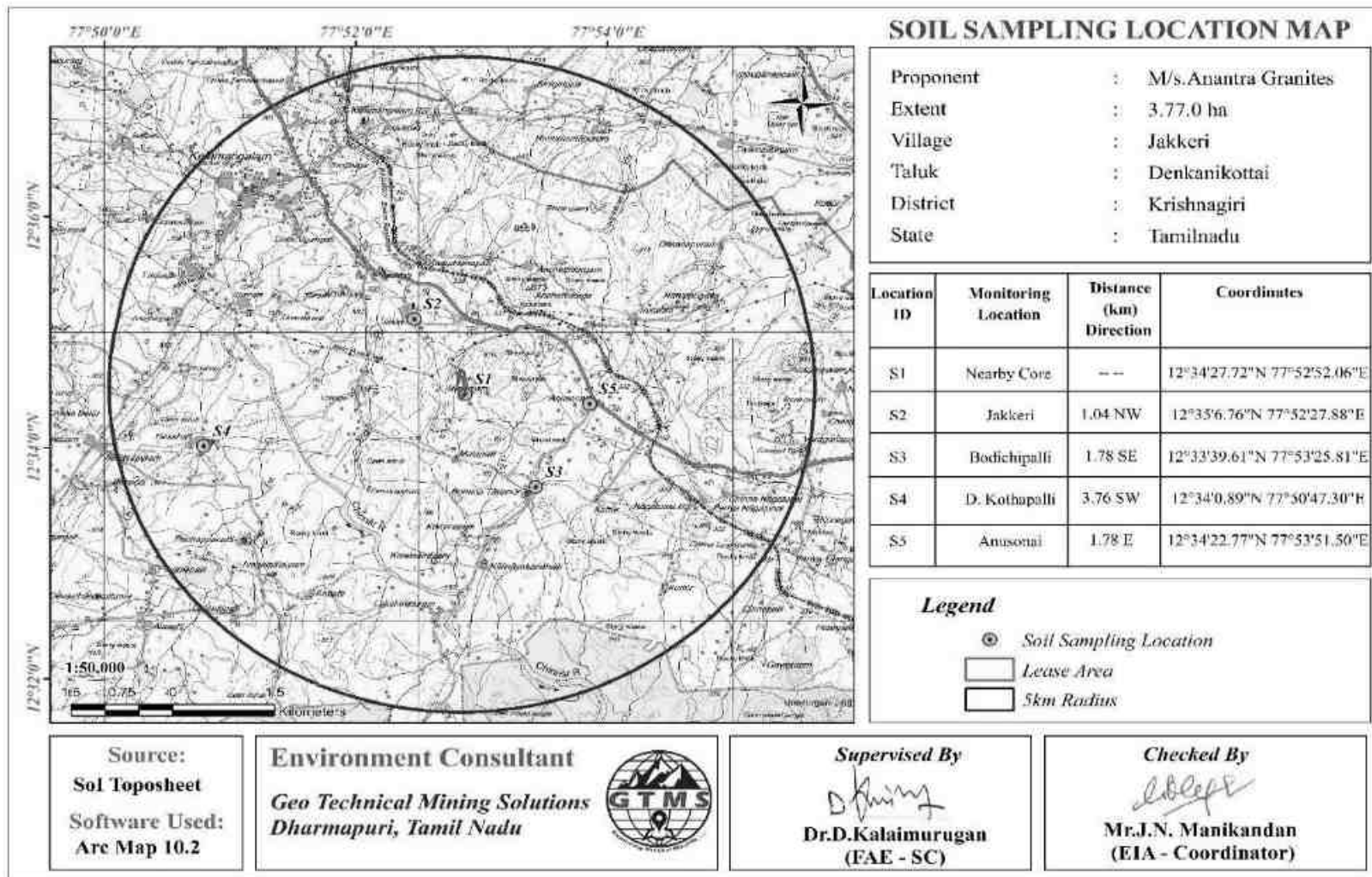


Figure 3.8 Map Showing Soil Sampling Locations within 5 km Radius around the Proposed Project Site

**Table 3.6 Soil Quality of the Study Area**

| S. No | Name of the Test             | Units              | S1<br>Near Core | S2<br>Jakkeri | S3<br>Bodichipalli | S4<br>D. Kothapalli | S5<br>Anusonai |
|-------|------------------------------|--------------------|-----------------|---------------|--------------------|---------------------|----------------|
| 1     | pH value @ 25°C              | ---                | 7.45            | 7.58          | 7.22               | 7.38                | 7.89           |
| 2     | Electrical Conductivity@25°C | μS/Cm              | 69.0            | 310           | 700                | 855                 | 860            |
| 3     | Total Organic Carbon         | %                  | 0.54            | 1.29          | 1.44               | 1.58                | 1.89           |
| 4     | Available Nitrogen           | Kg/ha              | 110.0           | 196           | 200                | 220                 | 400            |
| 5     | Available Potassium          | Kg/ha              | 68.0            | 110           | 100                | 120                 | 200            |
| 6     | Available Phosphorous        | mg/kg              | 12.0            | 26.0          | 125                | 380                 | 148            |
| 7     | Available Calcium as Ca      | mg/kg              | 298.0           | 310           | 350                | 350                 | 200            |
| 8     | Available Magnesium as Mg    | mg/kg              | 396.0           | 220           | 200                | 200                 | 150            |
| 9     | Moisture                     | %                  | 6.45            | 8.56          | 12.1               | 15.4                | 9.8            |
| 10    | Total Organic Matter         | %                  | 1.0             | 1.4           | 2.4                | 2.0                 | 2.6            |
| 11    | Bulk Density                 | Kg/cm <sup>3</sup> | 1.20            | 1.50          | 1.42               | 1.24                | 1.16           |
| 12    | Porosity                     | %                  | 25.24           | 23.52         | 23.20              | 23.20               | 25.96          |
| 13    | Copper as Cu                 | ppm                | 10.87           | 11.54         | 10.56              | 15.45               | 15.42          |
| 14    | Nickel as Ni                 | ppm                | 0.23            | 0.38          | 0.42               | 0.32                | 0.256          |
| 15    | Zinc as Zn                   | ppm                | 10.89           | 14.57         | 15.21              | 14.22               | 12.23          |
| 16    | Total Iron as Fe             | ppm                | 600             | 650           | 600                | 620                 | 550            |
| 17    | Lead                         | ppm                | 12.08           | 11.11         | 12.45              | 10.98               | 11.27          |
| 18    | Texture                      | -                  | Clay Loam       | Clay Loam     | Clay Loam          | Silt Loam           | Silt Clay Loam |
| 19    | Sand                         | %                  | 25.54           | 22.22         | 23.88              | 20.84               | 23.12          |
| 20    | Silt                         | %                  | 23.10           | 25.41         | 26.4               | 22.45               | 23.25          |
| 21    | Clay                         | %                  | 20.15           | 23.11         | 26.12              | 26.12               | 24.05          |

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS

### 3.3 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 3.7 Water Sampling Locations**

| Location ID | Monitoring Locations | Distance & Direction | Coordinates                 |
|-------------|----------------------|----------------------|-----------------------------|
| SW1         | Nearby Core          | 0.9 NW               | 12°34'42.67"N 77°52'48.26"E |
| SW2         | Bodichipalli         | 3.33 NW              | 12°36'6.55"N 77°51'42.37"E  |
| OW1         | Jakkeri              | 0.89 NW              | 12°35'1.98"N 77°52'29.67"E  |
| OW2         | Anusonai             | 1.91 E               | 12°34'27.99"N 77°53'56.29"E |
| BW1         | D. Kothapalli        | 3.73 SW              | 12°33'54.61"N 77°50'49.75"E |

Source: On-site monitoring/sampling *Greenlink Analytical and Research Laboratory (India) Private Ltd*, in association with GTMS.

#### ***Surface Water Resources and Quality***

Mallepalaym Lake and Bodichipalli Lake are the two prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. Three surface water samples, known as SW1 and SW2 were collected from the three surface water bodies to assess the baseline water quality. Table 3.8 summarizes surface water quality data of the three samples. Results for surface water samples in the Table 3.8 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

#### ***Ground Water Resources 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. Four groundwater samples, known as SW1, SW2, BW1 and OW1, OW2 were collected from open well and bore well and analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.7 and the spatial occurrence of water sampling locations is shown in Figure 3.9. Table 3.8 summarizes ground water quality data of the four samples Results for ground water samples in the Table 3.8 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

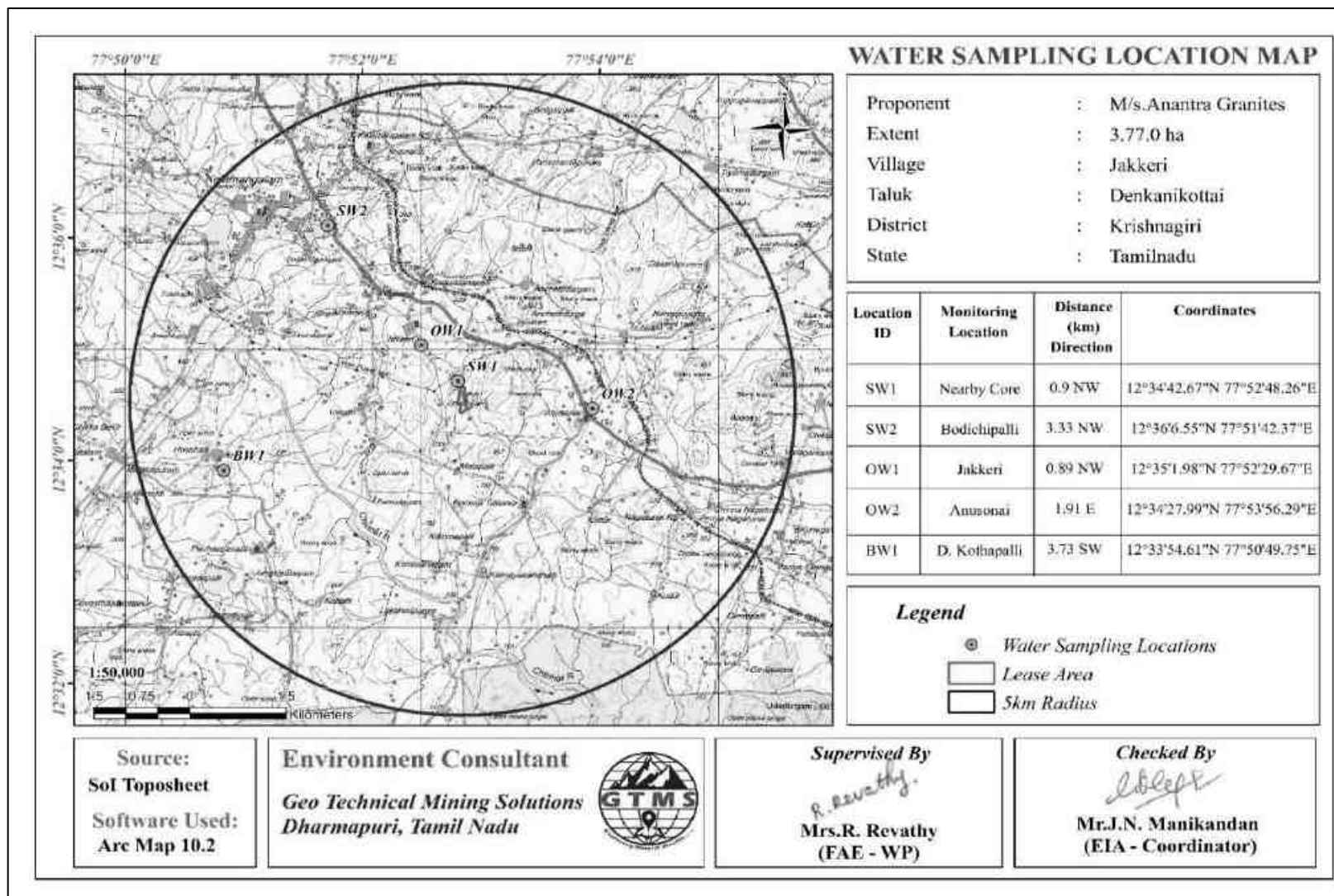


Figure 3.9 Map showing water sampling locations within 5 km radius around the proposed project site

**Table 3.8 Water Quality Result**

| S. No. | Parameters                            | Units  | Results      |              |              |              |              |
|--------|---------------------------------------|--------|--------------|--------------|--------------|--------------|--------------|
|        |                                       |        | SW1          | SW2          | OW1          | OW2          | BW1          |
| 1      | pH value @ 25°C                       | --     | 7.8          | 7.15         | 7.10         | 7.10         | 7.65         |
| 2      | TDS                                   | mg/l   | 620.0        | 580.0        | 750.0        | 790.0        | 590.0        |
| 3      | EC @ 25°C                             | µS/cm  | 990.0        | 940.0        | 1210.0       | 1275.0       | 960.0        |
| 4      | Turbidity                             | NTU    | <0.1         | <0.1         | <0.1         | <0.1         | <0.1         |
| 5      | Colour                                | Hazen  | <1.0         | <1.0         | <1.0         | <1.0         | <1.0         |
| 6      | Calcium (Ca)                          | mg /l  | 56.11        | 48.09        | 100.2        | 100.2        | 64.12        |
| 7      | Magnesium (Mg)                        | mg/l   | 21.88        | 19.45        | 38.91        | 48.64        | 31.61        |
| 8      | Chlorides (Cl)                        | mg /l  | 92.47        | 88.45        | 202.0        | 224.0        | 62.48        |
| 9      | Sulphates (SO <sub>4</sub> )          | mg/l   | 58.75        | 60.12        | 85.0         | 91.0         | 12.50        |
| 10     | Silica (as SiO <sub>2</sub> )         | mg/l   | 19.41        | 18.58        | 18.9         | 15.2         | 17.05        |
| 11     | Total Residual Chlorine               | mg/l   | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  |
| 12     | Sodium (Na)                           | mg/l   | 60.9         | 58.70        | 60.0         | 55.0         | 50.77        |
| 13     | Total Hardness (CaCO <sub>3</sub> )   | mg/l   | 230.0        | 200.0        | 410.0        | 450.0        | 290.0        |
| 14     | Total Alkalinity (CaCO <sub>3</sub> ) | mg/l   | 245.0        | 196.0        | 320.0        | 350.0        | 370.0        |
| 15     | Fluoride (F)                          | mg/l   | 0.38         | 0.29         | 0.68         | 0.87         | 0.64         |
| 16     | Odour                                 | -      | Agreeable    | Agreeable    | Agreeable    | Agreeable    | Agreeable    |
| 17     | Taste                                 | -      | Disagreeable | Disagreeable | Disagreeable | Disagreeable | Disagreeable |
| 18     | Total Solids                          | mg/l   | 652.0        | 602.0        | 765.0        | 800.0        | 620.0        |
| 19     | Dissolved Oxygen                      | mg/l   | 5.0          | 5.0          | 5.2          | 5.0          | 4.8          |
| 20     | Phosphorous                           | mg/l   | 0.52         | 0.60         | 1.4          | 1.6          | 2.81         |
| 21     | Potassium (K)                         | mg/l   | 1.67         | 1.52         | 25.0         | 25.0         | 10.4         |
| 22     | Nitrite (NO <sub>2</sub> )            | mg/l   | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  | BDL(DL-0.1)  |
| 23     | Phenolphthalein Alkalinity            | mg/l   | BDL(DL-2.0)  | BDL(DL-2.0)  | BDL(DL-2.0)  | BDL(DL-2.0)  | BDL(DL-2.0)  |
| 24     | Total Coliform                        | CFU/ml | Present      | Present      | Present      | Absent       | Absent       |
| 25     | Escherichia Coli                      | CFU/ml | Present      | Present      | Present      | Absent       | Absent       |

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS



### 3.3.1 Hydrogeological Studies

#### Rainfall

Rainfall data for the study area were collected for the period of 1981-2022 (POWER | Data Access Viewer (nasa.gov)). Long term monthly average rainfall was estimated from the data of 1981-2022 and compared with the monthly rainfall for the year 2022, shown in Figure 3.10. The Figure 3.10 shows that monthly rainfall in 2022 is generally high in the months of May, August and October, when compared to the long term monthly average rainfall.

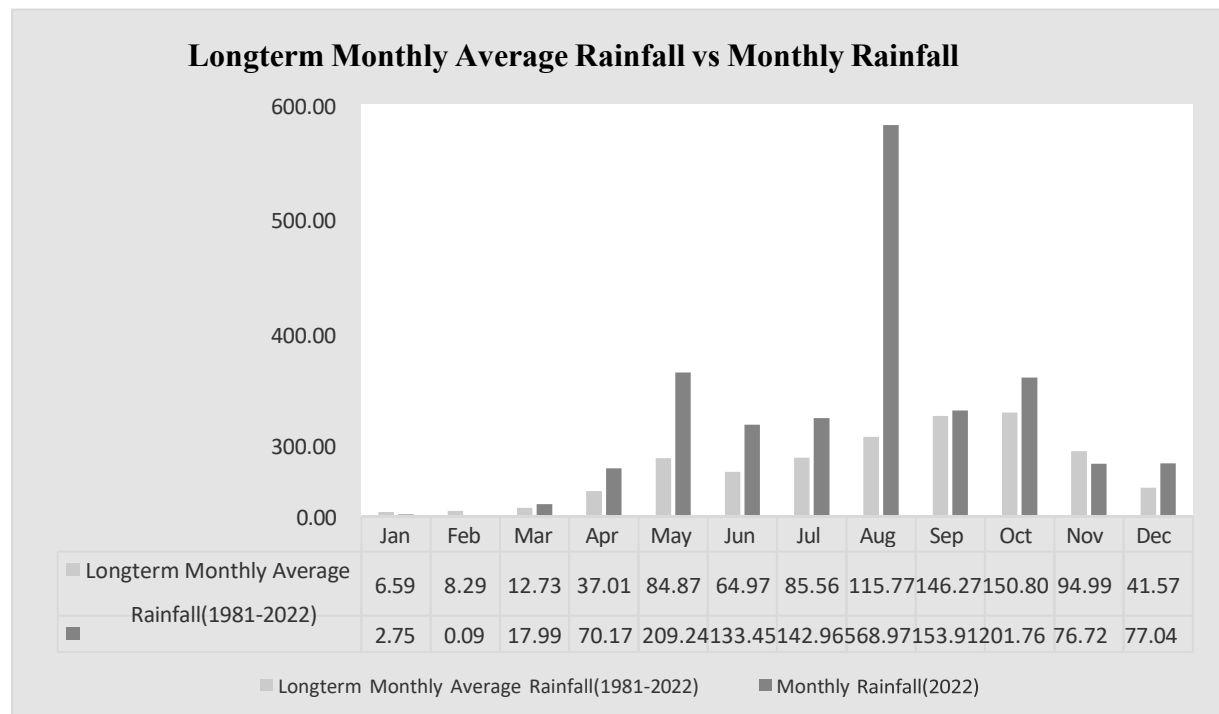


**Figure 3.10 Long-term monthly average rainfall vs monthly rainfall**

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

#### 3.3.2 Groundwater Levels and Flow Direction

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May, 2025 (Pre-Monsoon Season) and from October through December, 2024 (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.9 and 3.10. According to the data, average depths to the static water table in open wells range from 10.00 to 11.40 m BGL in pre monsoon and 17.97 to 18.93 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.11 and 3.12. The average depths to static potentiometric surface in bore wells for the period of October through December 2025 (Post-Monsoon Season) vary from 79.10 to 77.80 m and from 83.07 to 80.43 m for the period of March through May, 2025 (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.

From the maps of open well groundwater flow direction shown in Figures 3.11- 3.12, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 6 located in South direction of the proposed project site. The groundwater flow maps in Figure 3.13-3.14 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 7,9. It is located in East direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

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

| Station ID | Depth to Static Water Table BGL (m) |          |           |         | Latitude      | Longitude     |
|------------|-------------------------------------|----------|-----------|---------|---------------|---------------|
|            | Mar-2025                            | Apr-2025 | May- 2025 | Average |               |               |
| OW01       | 10.4                                | 10.8     | 11.2      | 10.80   | 12°34'34.84"N | 77°52'44.97"E |
| OW02       | 10.2                                | 10.6     | 11.1      | 10.63   | 12°34'21.68"N | 77°52'43.30"E |
| OW03       | 10.3                                | 10.7     | 11.5      | 10.83   | 12°34'36.92"N | 77°53'26.06"E |
| OW04       | 9.8                                 | 10.2     | 10.8      | 10.27   | 12°34'25.39"N | 77°51'48.06"E |
| OW05       | 10.2                                | 10.6     | 10.9      | 10.57   | 12°34'57.81"N | 77°52'17.22"E |
| OW06       | 9.4                                 | 10.1     | 10.5      | 10.00   | 12°33'52.25"N | 77°52'39.66"E |
| OW07       | 10.6                                | 11.2     | 11.6      | 11.13   | 12°35'15.52"N | 77°52'36.74"E |
| OW08       | 9.6                                 | 10.5     | 10.8      | 10.30   | 12°33'43.85"N | 77°53'35.41"E |
| OW09       | 10.8                                | 11.6     | 11.8      | 11.40   | 12°35'20.52"N | 77°53'40.91"E |

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

| Station ID | Depth to Static Water Table BGL (m) |        |        |         | Latitude      | Longitude     |
|------------|-------------------------------------|--------|--------|---------|---------------|---------------|
|            | Oct-25                              | Nov-25 | Dec-25 | Average |               |               |
| OW01       | 9.6                                 | 9.8    | 10.2   | 9.87    | 12°34'34.84"N | 77°52'44.97"E |
| OW02       | 9.2                                 | 9.6    | 9.9    | 9.57    | 12°34'21.68"N | 77°52'43.30"E |
| OW03       | 9.4                                 | 9.7    | 10.1   | 9.73    | 12°34'36.92"N | 77°53'26.06"E |
| OW04       | 8.5                                 | 8.8    | 9.6    | 8.97    | 12°34'25.39"N | 77°51'48.06"E |
| OW05       | 8.6                                 | 9.2    | 9.8    | 9.20    | 12°34'57.81"N | 77°52'17.22"E |
| OW06       | 8.4                                 | 9.1    | 9.7    | 9.07    | 12°33'52.25"N | 77°52'39.66"E |
| OW07       | 9.5                                 | 9.8    | 10.5   | 9.93    | 12°35'15.52"N | 77°52'36.74"E |
| OW08       | 9.2                                 | 9.7    | 10.4   | 9.77    | 12°33'43.85"N | 77°53'35.41"E |
| OW09       | 9.4                                 | 9.6    | 10.2   | 9.73    | 12°35'20.52"N | 77°53'40.91"E |

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

| Station ID | Depth to Static Potentiometric Surface BGL(m) |          |           |         | Latitude      | Longitude     |
|------------|-----------------------------------------------|----------|-----------|---------|---------------|---------------|
|            | Mar-2025                                      | Apr-2025 | May- 2025 | Average |               |               |
| BW01       | 71.4                                          | 72.2     | 72.6      | 72.07   | 12°35'9.90"N  | 77°52'25.40"E |
| BW02       | 71.2                                          | 72.6     | 73.2      | 72.33   | 12°35'24.72"N | 77°52'30.26"E |
| BW03       | 72.5                                          | 73.2     | 73.7      | 73.13   | 12°35'34.42"N | 77°53'20.06"E |
| BW04       | 69.2                                          | 70.1     | 70.5      | 69.93   | 12°34'15.73"N | 77°53'50.12"E |
| BW05       | 67.8                                          | 68.5     | 69.2      | 68.50   | 12°33'34.72"N | 77°53'24.43"E |
| BW06       | 69.4                                          | 70.2     | 70.8      | 70.13   | 12°34'22.13"N | 77°52'0.53"E  |
| BW07       | 66.6                                          | 67.5     | 68.1      | 67.40   | 12°33'53.29"N | 77°52'49.29"E |
| BW08       | 69.5                                          | 70.3     | 71.1      | 70.30   | 12°34'56.92"N | 77°53'39.10"E |
| BW09       | 68.2                                          | 69.5     | 70.3      | 69.33   | 12°34'18.25"N | 77°53'2.75"E  |

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

| Station ID | Depth to Static Potentiometric Surface BGL(m) |        |        |         | Latitude      | Longitude     |
|------------|-----------------------------------------------|--------|--------|---------|---------------|---------------|
|            | Oct-25                                        | Nov-25 | Dec-25 | Average |               |               |
| BW01       | 70.5                                          | 70.8   | 71.2   | 70.83   | 12°35'9.90"N  | 77°52'25.40"E |
| BW02       | 71.1                                          | 71.5   | 71.8   | 71.47   | 12°35'24.72"N | 77°52'30.26"E |
| BW03       | 71.6                                          | 72.1   | 72.5   | 72.07   | 12°35'34.42"N | 77°53'20.06"E |
| BW04       | 68.4                                          | 69.3   | 70.1   | 69.27   | 12°34'15.73"N | 77°53'50.12"E |
| BW05       | 67.5                                          | 68.2   | 68.6   | 68.10   | 12°33'34.72"N | 77°53'24.43"E |
| BW06       | 68.2                                          | 68.7   | 69.2   | 68.70   | 12°34'22.13"N | 77°52'0.53"E  |
| BW07       | 66.5                                          | 67.1   | 67.5   | 67.03   | 12°33'53.29"N | 77°52'49.29"E |
| BW08       | 69.4                                          | 70.2   | 70.6   | 70.07   | 12°34'56.92"N | 77°53'39.10"E |
| BW09       | 68.4                                          | 68.8   | 69.2   | 68.80   | 12°34'18.25"N | 77°53'2.75"E  |

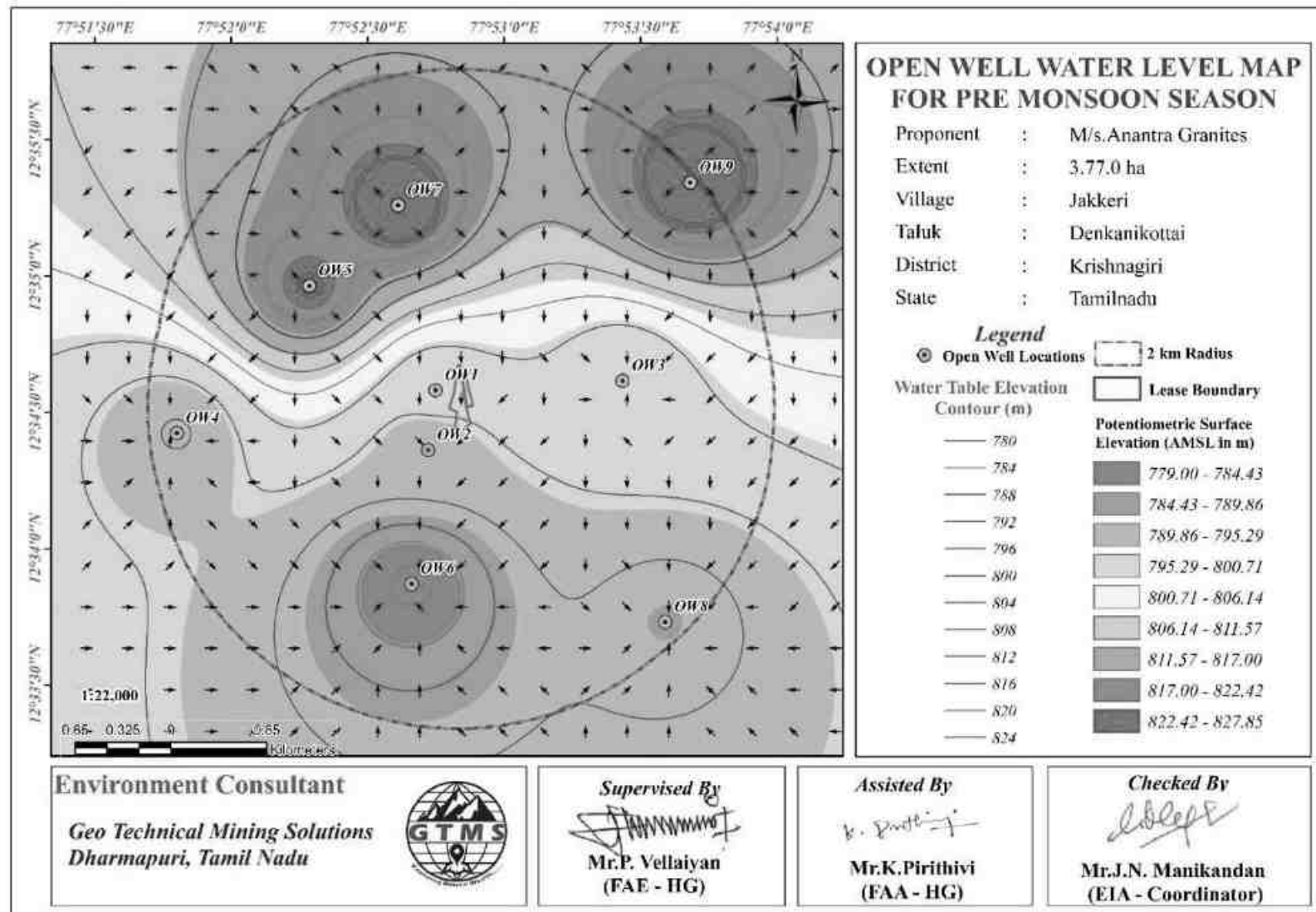


Figure 3.11 Open well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

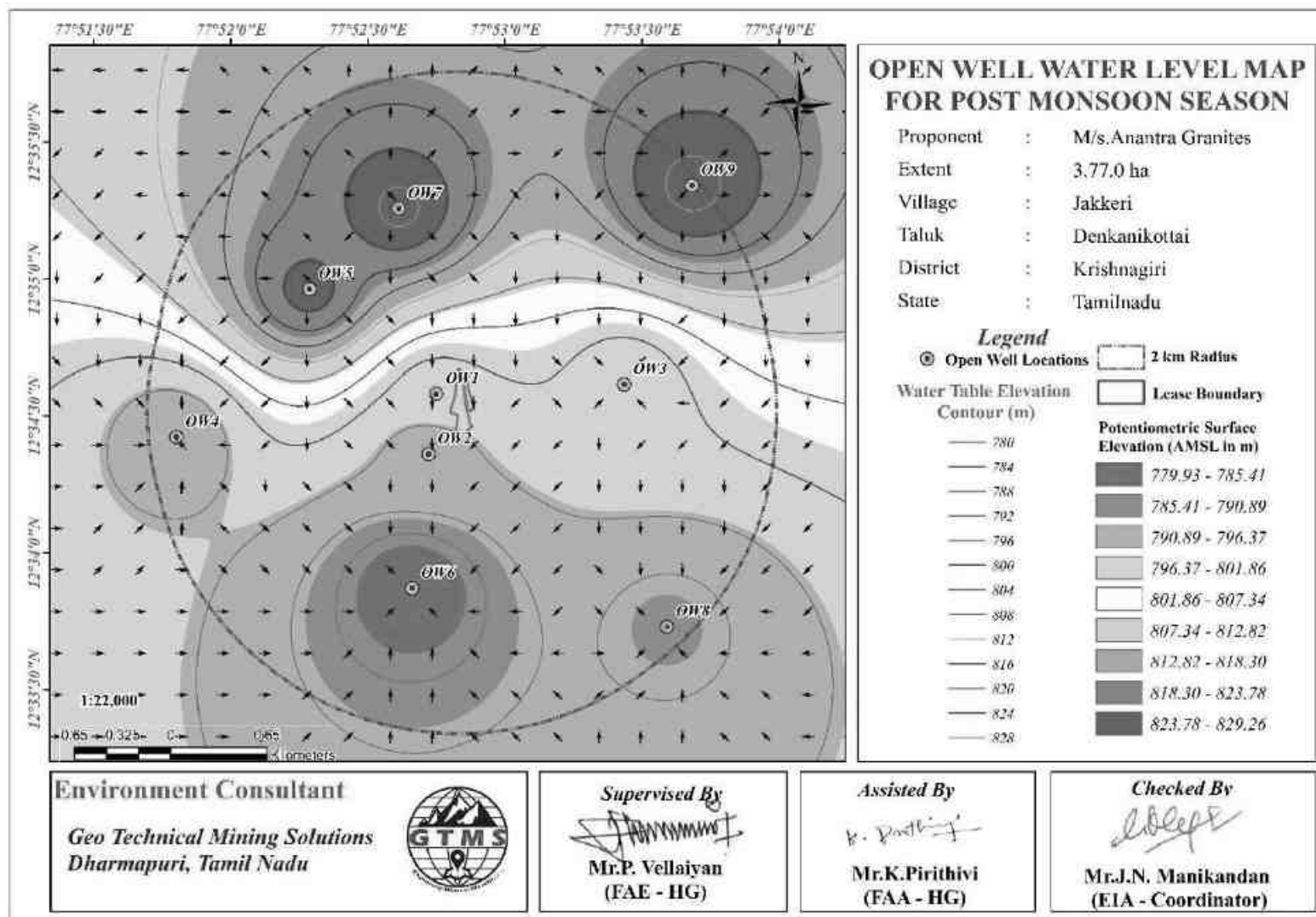


Figure 3.12 Open well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

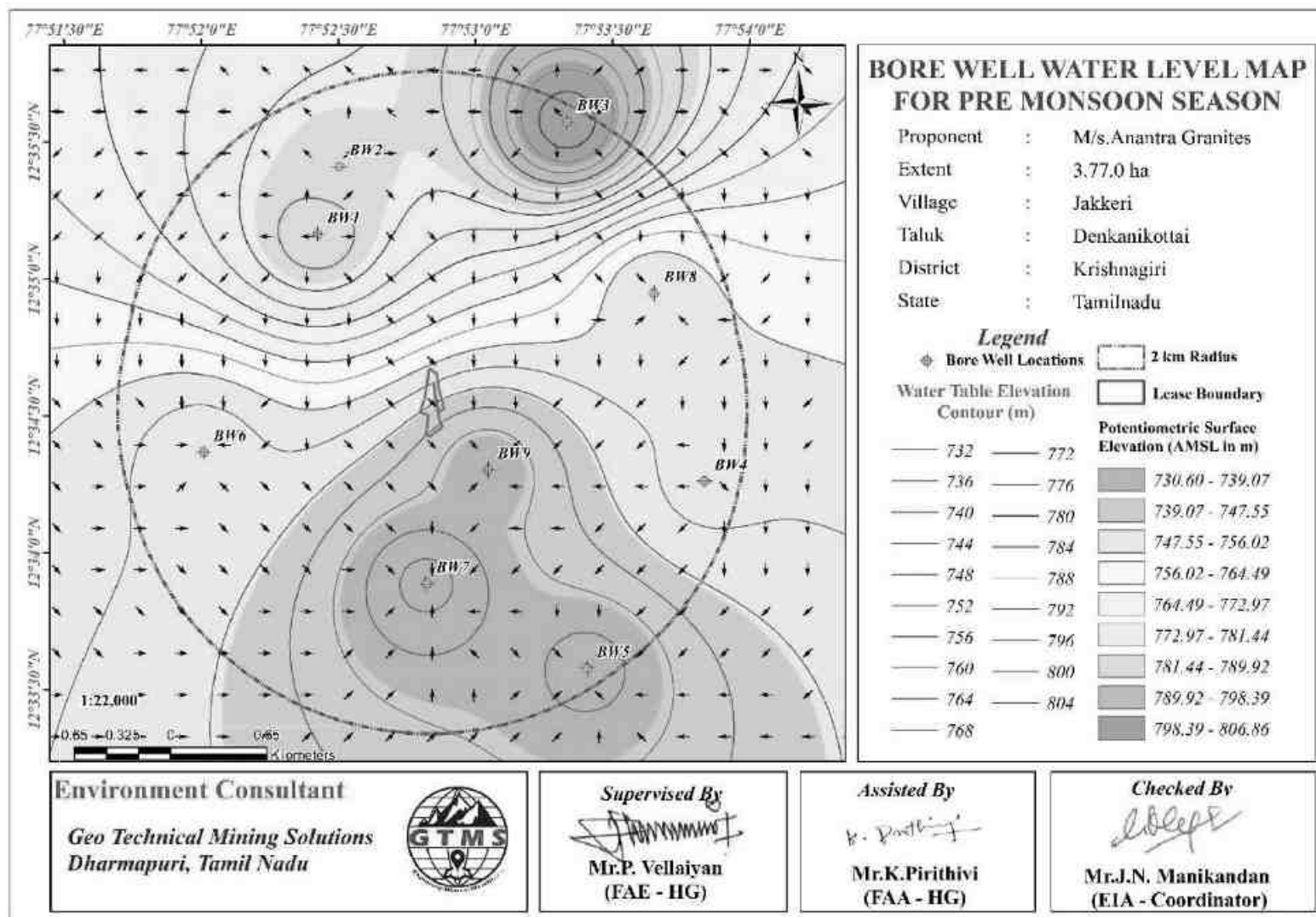


Figure 3.13 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

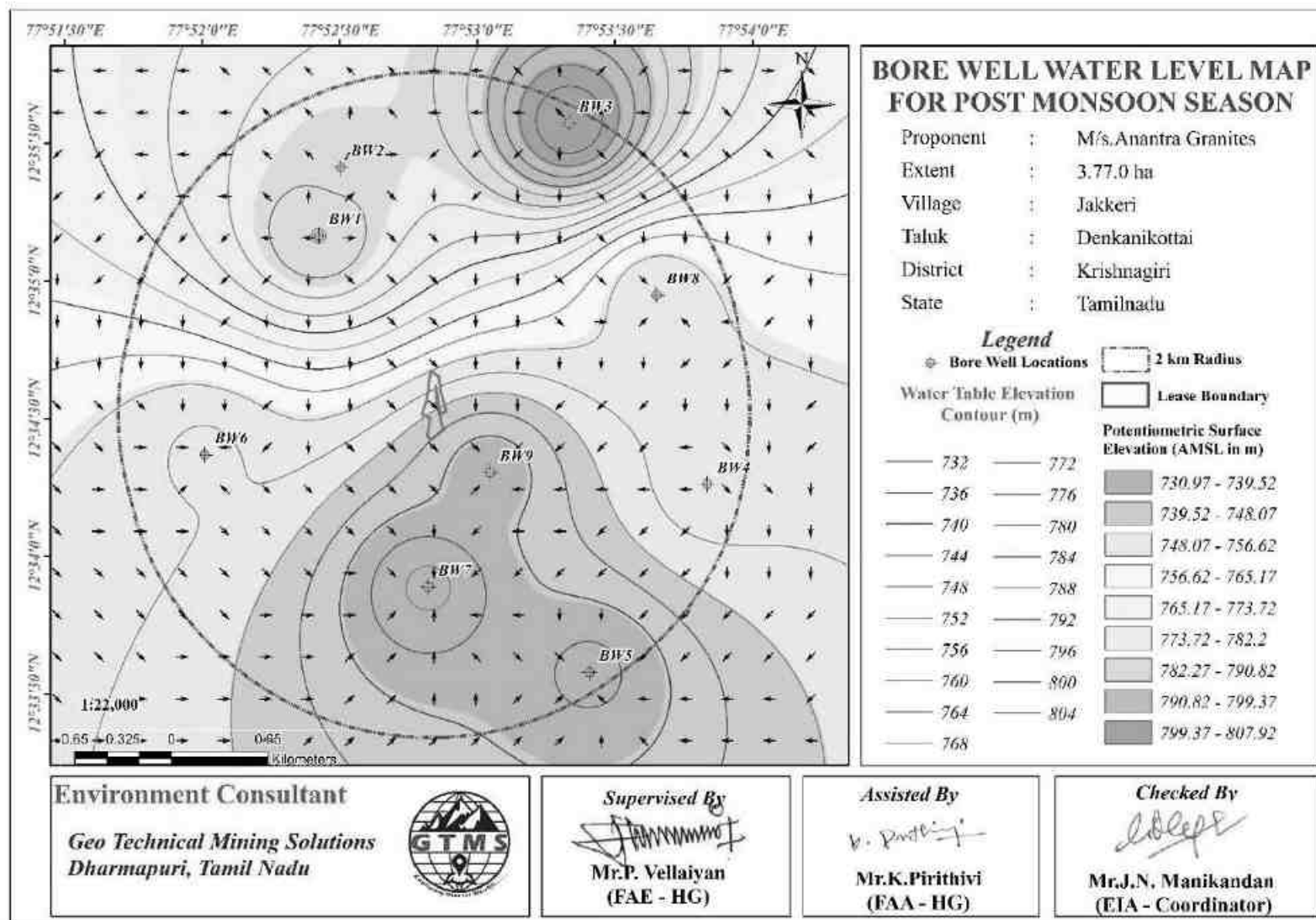


Figure 3.14 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

### 3.3.3 Electrical Resistivity Investigation

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

#### **Result**

The Geophysical VES data obtained from the project site have been shown in Table 3.13. 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 3.15.

**Table 3.13 Vertical Electrical Sounding Data**

| Location Coordinates - 12°34'32.82"N, 77°52'49.84"E |             |             |                           |                           |                                       |
|-----------------------------------------------------|-------------|-------------|---------------------------|---------------------------|---------------------------------------|
| S. No.                                              | AB/2<br>(m) | MN/2<br>(m) | Geometrical<br>Factor (G) | Resistance in<br>$\Omega$ | Apparent<br>Resistivity in $\Omega m$ |
| 1                                                   | 5           | 2           | 16.5                      | 8.016                     | 132.26                                |
| 2                                                   | 10          | 2           | 75.43                     | 2.578                     | 194.48                                |
| 3                                                   | 15          | 5           | 62.86                     | 4.699                     | 295.38                                |
| 4                                                   | 20          | 5           | 117.86                    | 3.345                     | 394.22                                |
| 5                                                   | 25          | 5           | 188.58                    | 2.683                     | 505.96                                |
| 6                                                   | 25          | 10          | 82.5                      | 6.061                     | 500.05                                |
| 7                                                   | 30          | 10          | 125.72                    | 4.288                     | 539.12                                |
| 8                                                   | 35          | 10          | 176.79                    | 4.117                     | 727.76                                |
| 9                                                   | 40          | 10          | 235.73                    | 3.722                     | 877.48                                |
| 10                                                  | 45          | 10          | 302.51                    | 3.583                     | 1083.91                               |
| 11                                                  | 50          | 20          | 165.01                    | 7.270                     | 1199.65                               |
| 12                                                  | 60          | 20          | 251.44                    | 3.167                     | 796.42                                |
| 13                                                  | 70          | 20          | 353.59                    | 3.535                     | 1249.9                                |
| 14                                                  | 80          | 20          | 471.45                    | 2.739                     | 1291.12                               |
| 15                                                  | 90          | 20          | 605.03                    | 2.573                     | 1556.68                               |
| 16                                                  | 100         | 20          | 754.32                    | 2.380                     | 1795.32                               |



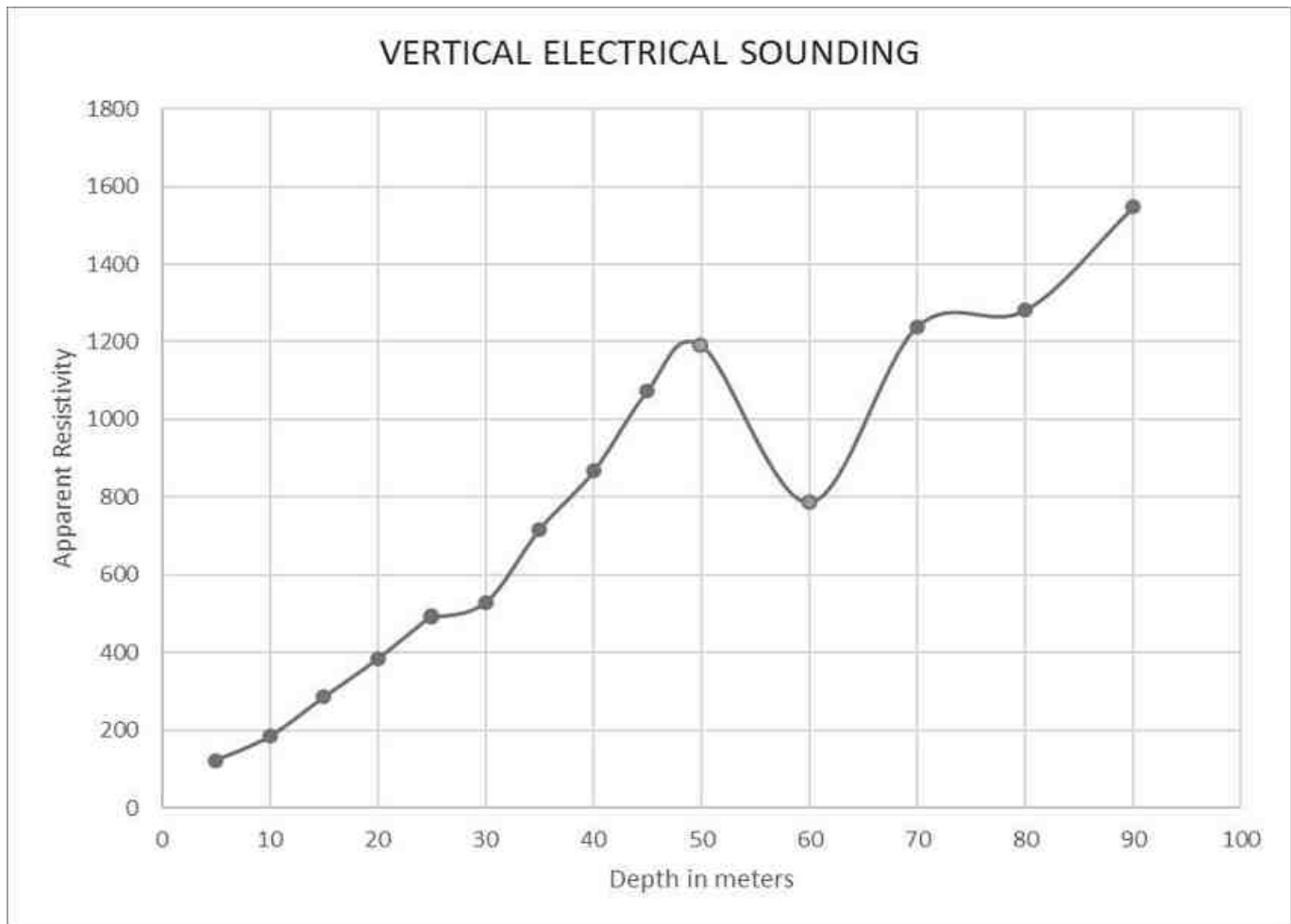


**Figure 3.15 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 60m Below Ground Level in the Proposed Project Area**

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60m below ground level. The maximum depth proposed for the proposed project is 35m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

### **3.4 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.

#### **3.4.1 Meteorology**

##### ***Climatic Variables***

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

obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.14.

**Table 3.14 Onsite Meteorological Data**

| S. No. | Parameters                    |     | March,2026 | April,2026 | May,2026 |
|--------|-------------------------------|-----|------------|------------|----------|
| 1      | Temperature ( <sup>0</sup> C) | Min | 17.99      | 19.30      | 20.81    |
|        |                               | Max | 38.30      | 39.27      | 36.99    |
|        |                               | Avg | 27.12      | 29.98      | 26.98    |
| 2      | Relative Humidity (%)         | Min | 13.13      | 13.95      | 28.16    |
|        |                               | Max | 99.14      | 93.60      | 97.29    |
|        |                               | Avg | 50.71      | 46.05      | 70.44    |
| 3      | Wind Speed (m/s)              | Min | 0.10       | 0.13       | 0.11     |
|        |                               | Max | 5.05       | 4.55       | 7.76     |
|        |                               | Avg | 2.29       | 1.78       | 2.42     |
| 4      | Wind Direction (degree)       | Min | 11.50      | 2.80       | 1.20     |
|        |                               | Max | 350.10     | 357.80     | 357.70   |
|        |                               | Avg | 123.62     | 148.88     | 221.25   |
| 5      | Surface Pressure(kPa)         | Min | 93.45      | 93.30      | 93.12    |
|        |                               | Max | 94.51      | 94.22      | 94.08    |
|        |                               | Avg | 93.99      | 93.77      | 93.61    |

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS

### 3.4.2 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 March through May of the years from 2022 to 2025 and the seasonal wind rose for the study period of March through May 2026. The wind rose diagrams thus produced are shown in Figures 3.16-3.16a. Figure 3.17 reveals that:

- ❖ The measured average wind velocity during the study period is 3.36m/s.
- ❖ Predominant wind was dominant in the directions ranging from Southeast to Northwest.

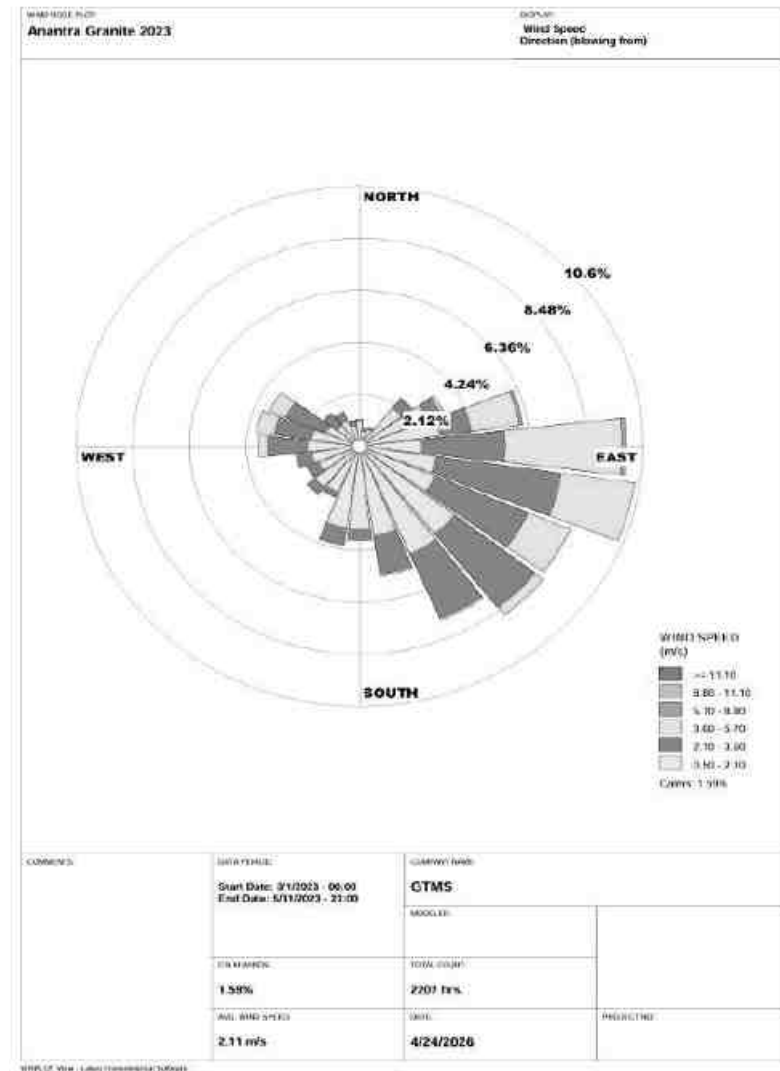
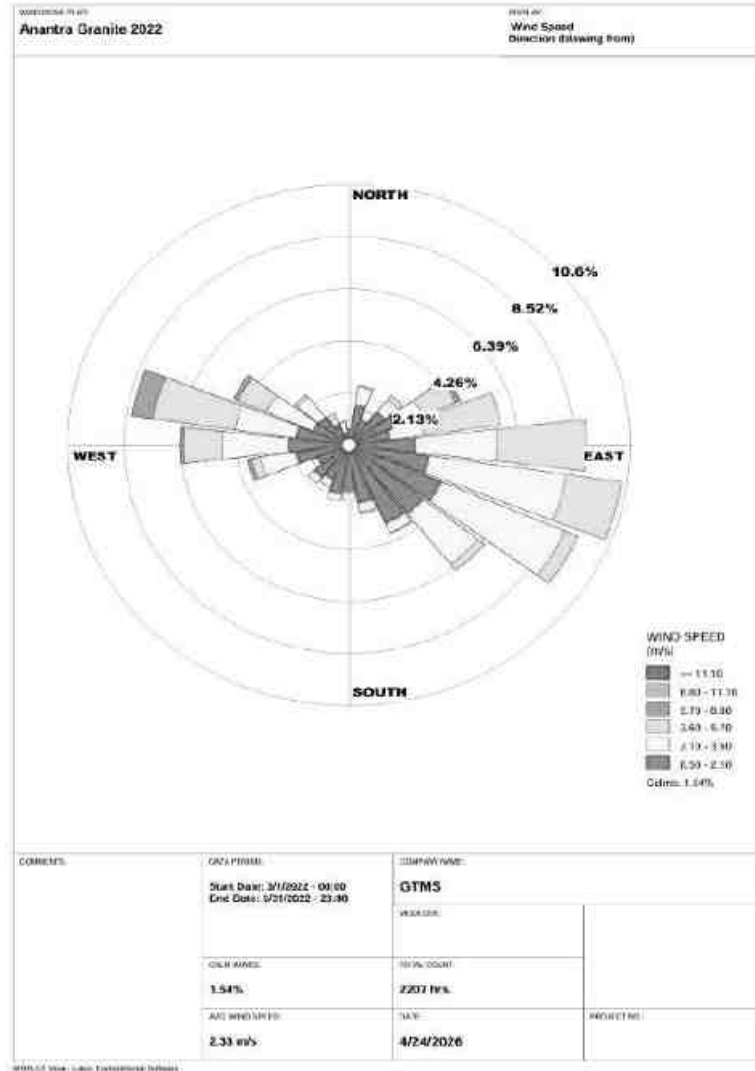


Figure 3.16 Windrose Diagram for 2022 and 2023 (March to May)

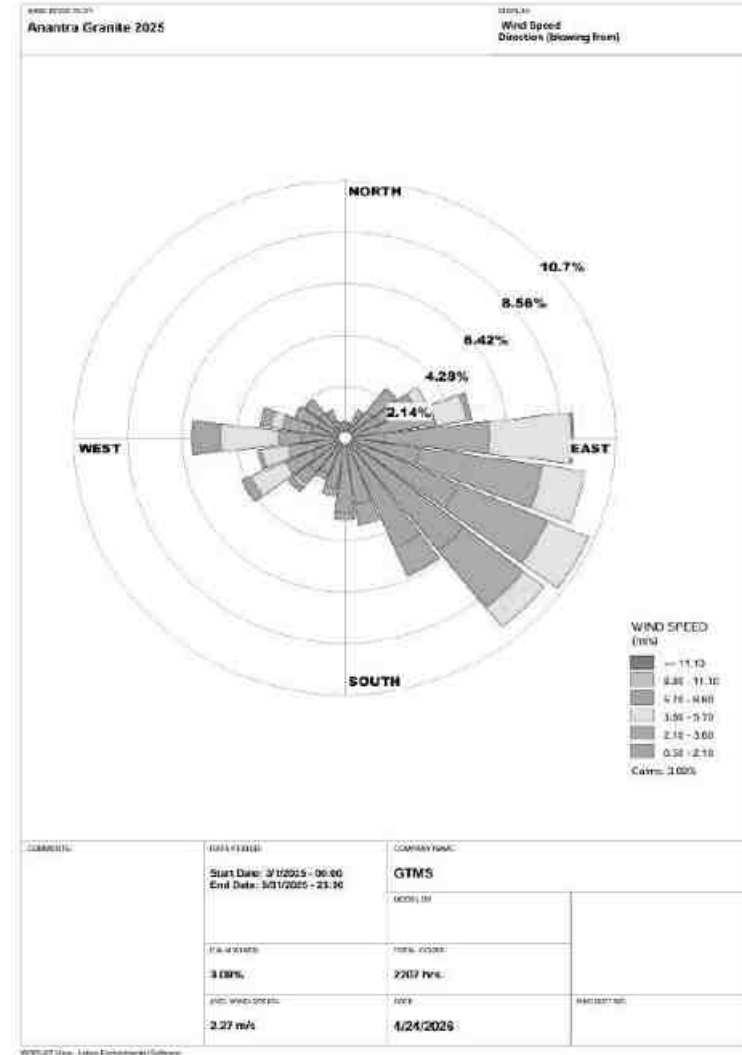
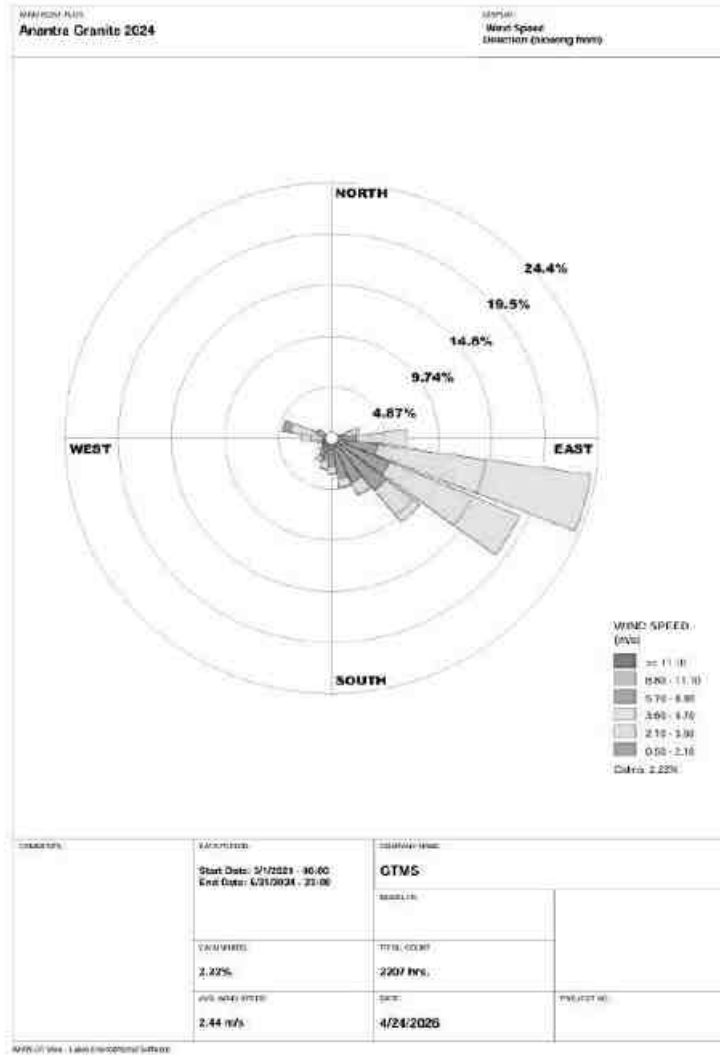


Figure 3.16(a) Windrose Diagram for 2024 and 2025 (March to May)

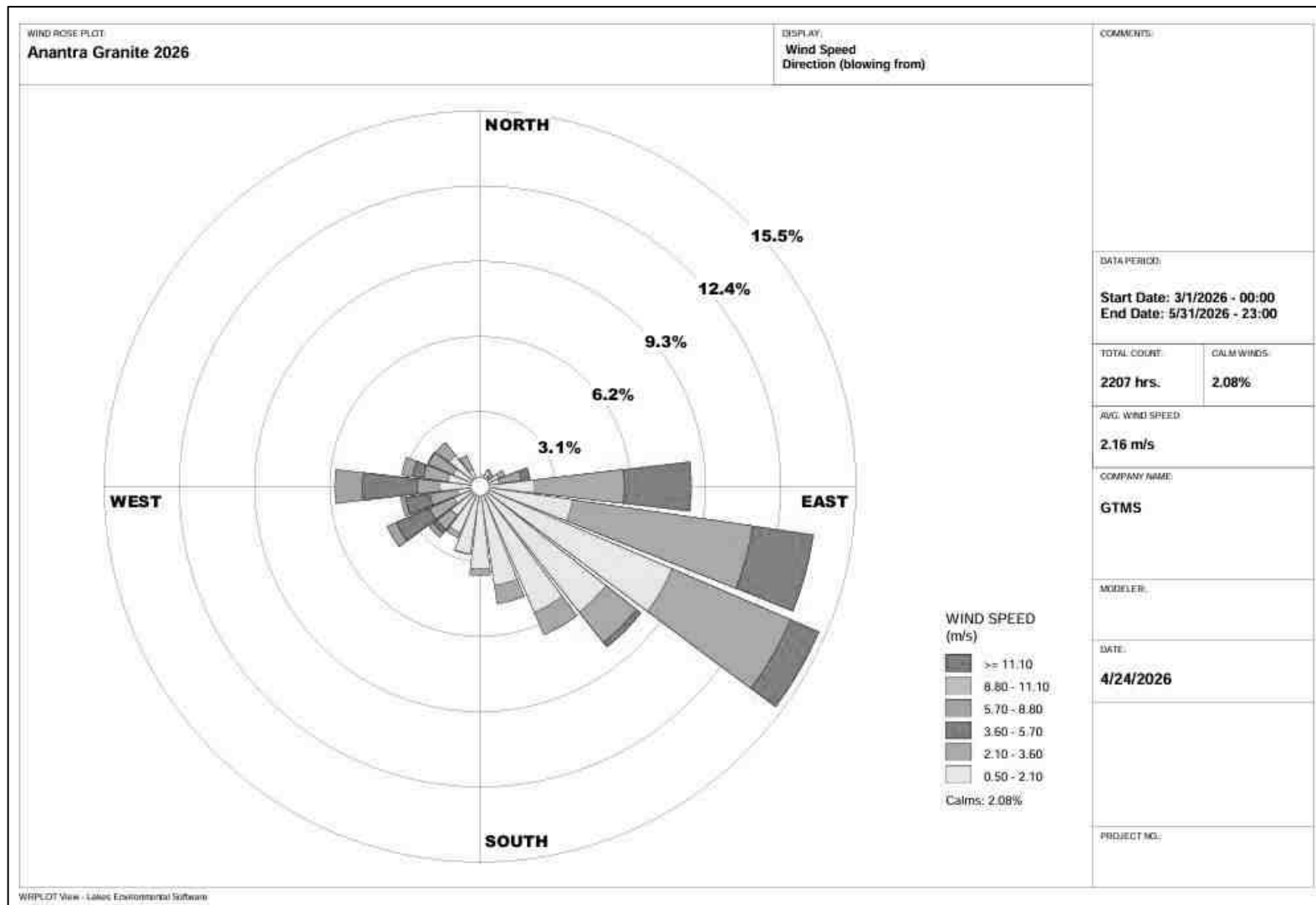


**Figure 3.17 Onsite Windrose Diagram**

### 3.4.3 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 3.15 Methodology and Instrument Used for AAQ Analysis**

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

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS

**Table 3.16 National Ambient Air Quality Standards**

| S. No. | Pollutant                              | Time Weighted<br>Average   | Concentration in ambient air                          |                                                                  |
|--------|----------------------------------------|----------------------------|-------------------------------------------------------|------------------------------------------------------------------|
|        |                                        |                            | Industrial,<br>Residential,<br>Rural & other<br>areas | Ecologically<br>Sensitive area<br>(Notified by<br>Central Govt.) |
| 1      | SO <sub>2</sub> (µg/m <sup>3</sup> )   | Annual Avg.*<br>24 hours** | 50.0<br>80.0                                          | 20.0<br>80.0                                                     |
| 2      | NO <sub>2</sub> (µg/m <sup>3</sup> )   | Annual Avg.<br>24 hours    | 40.0<br>80.0                                          | 30.0<br>80.0                                                     |
| 3      | PM <sub>10</sub> (µg/m <sup>3</sup> )  | Annual Avg.<br>24 hours    | 60.0<br>100.0                                         | 60.0<br>100.0                                                    |
| 4      | PM <sub>2.5</sub> (µg/m <sup>3</sup> ) | Annual Avg.<br>24 hours    | 40.0<br>60.0                                          | 40.0<br>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 Six (6) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March-May, 2024 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 3.18 & Table 3.15 average concentrations of air pollutants are summarized in Tables 3.17.

**Table 3.17 Ambient Air Quality (AAQ) Monitoring Locations**

| S. No | Location Code | Monitoring Locations | Distance (km) | Direction | Coordinates   |               |
|-------|---------------|----------------------|---------------|-----------|---------------|---------------|
|       |               |                      |               |           | Lat           | Long          |
| 1     | AAQ1          | Nearby Core          | ---           | --        | 12°34'28.20"N | 77°52'55.11"E |
| 2     | AAQ2          | Jakkeri              | 1.18          | NW        | 12°35'11.49"N | 77°52'26.61"E |
| 3     | AAQ3          | Bodichipalli         | 3.62          | NW        | 12°36'16.09"N | 77°51'39.71"E |
| 4     | AAQ4          | D. Kothapalli        | 3.78          | SW        | 12°34'3.43"N  | 77°50'45.83"E |
| 5     | AAQ5          | Anusonai             | 1.78          | E         | 12°34'21.17"N | 77°53'51.20"E |
| 6     | AAQ6          | Pachapanatti         | 2.69          | S         | 12°32'58.95"N | 77°53'2.74"E  |

Source: Sampling Results by **Greenlink Analytical and Research Laboratory (India) Private Ltd**, in association with GTMS

## Results

As per the monitoring data, PM<sub>2.5</sub> ranges from 17.0 µg/m<sup>3</sup> to 19.4 µg/m<sup>3</sup>; PM<sub>10</sub> from 39.8 µg/m<sup>3</sup> to 44.4µg/m<sup>3</sup>; SO<sub>2</sub> from 3.3 µg/m<sup>3</sup> to 4.9µg/m<sup>3</sup>; NO<sub>x</sub> from 11.2µg/m<sup>3</sup> to 16.3g/m<sup>3</sup>. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

## Air quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 42 causing minimal impact to human health.

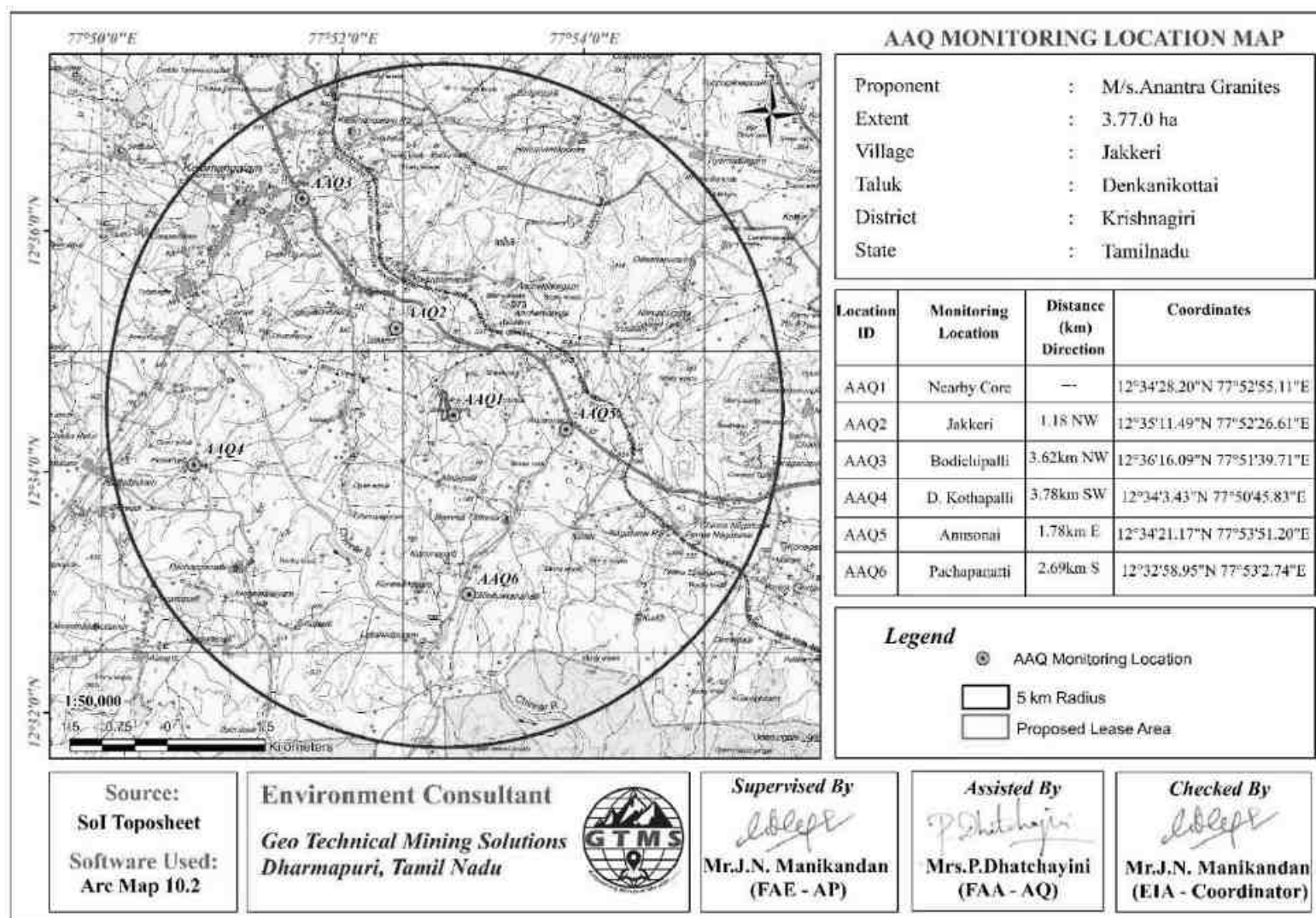


Figure 3.18 Map Showing Ambient Air Quality Monitoring Station Locations around 5km Radius from the Proposed Project Site



**Table 3.18 Summary of AAQ Result**

| PM <sub>2.5</sub> |       |       |       |                             | PM <sub>10</sub> |       |       |                             |
|-------------------|-------|-------|-------|-----------------------------|------------------|-------|-------|-----------------------------|
| Station ID        | Max   | Min   | Mean  | 98 <sup>th</sup> Percentile | Max              | Min   | Mean  | 98 <sup>th</sup> Percentile |
| AAQ1              | 24.60 | 19.50 | 22.28 | 24.51                       | 49.70            | 43.40 | 45.96 | 49.06                       |
| AAQ2              | 22.80 | 20.00 | 21.09 | 22.62                       | 50.70            | 44.40 | 47.01 | 50.56                       |
| AAQ3              | 19.80 | 18.30 | 19.19 | 19.60                       | 43.80            | 40.40 | 42.36 | 43.62                       |
| AAQ4              | 17.60 | 15.50 | 16.73 | 17.60                       | 44.00            | 38.80 | 41.81 | 43.95                       |
| AAQ5              | 16.20 | 15.10 | 15.65 | 16.20                       | 40.60            | 37.80 | 39.14 | 40.55                       |
| AAQ6              | 15.10 | 13.50 | 14.28 | 15.01                       | 37.80            | 33.80 | 35.70 | 37.57                       |
| SO <sub>2</sub>   |       |       |       |                             | NO <sub>2</sub>  |       |       |                             |
| AAQ1              | 5.60  | 3.70  | 4.68  | 5.60                        | 17.80            | 12.30 | 15.81 | 17.71                       |
| AAQ2              | 4.80  | 3.90  | 4.32  | 4.80                        | 18.20            | 14.80 | 16.50 | 18.11                       |
| AAQ3              | 4.80  | 3.20  | 4.07  | 4.80                        | 18.70            | 12.50 | 17.12 | 18.65                       |
| AAQ4              | 5.10  | 3.80  | 4.42  | 5.10                        | 15.80            | 11.80 | 14.68 | 15.52                       |
| AAQ5              | 4.80  | 2.90  | 3.72  | 4.75                        | 14.90            | 9.00  | 12.57 | 14.76                       |
| AAQ6              | 4.00  | 2.10  | 2.63  | 3.49                        | 12.40            | 6.50  | 8.91  | 12.31                       |

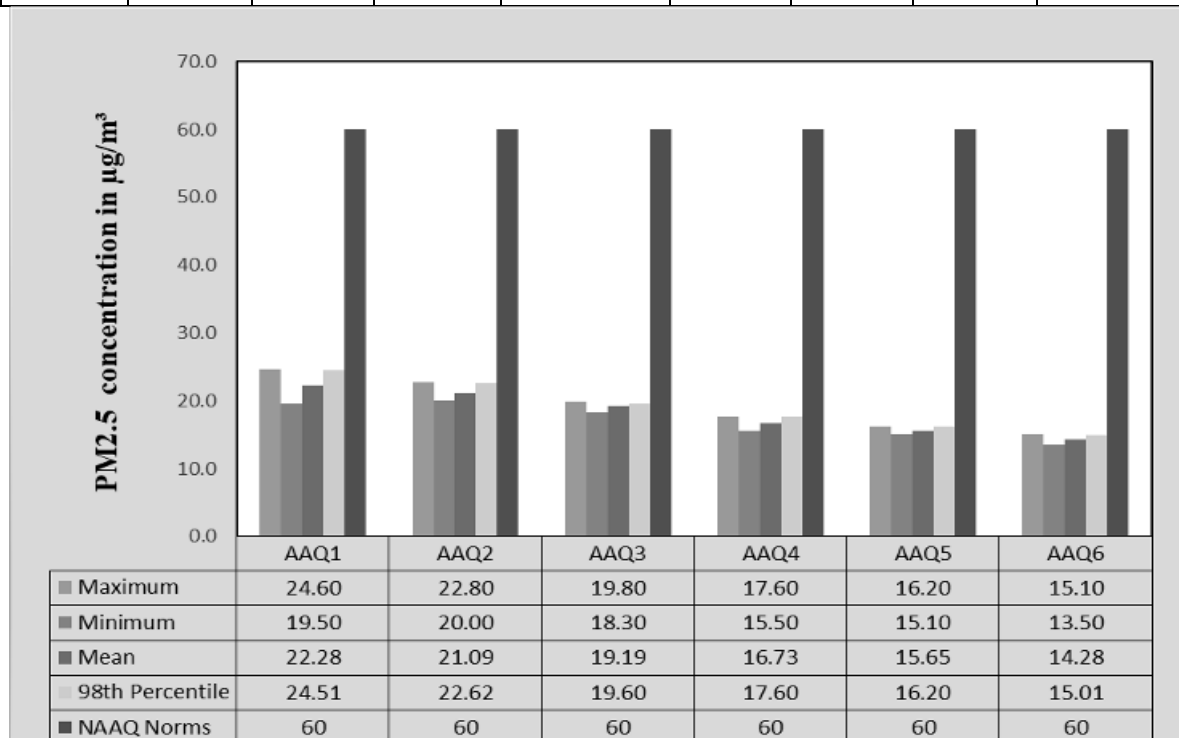


**Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM<sub>2.5</sub> Measured from 6 Air Quality Monitoring Stations within 5 km Radius**

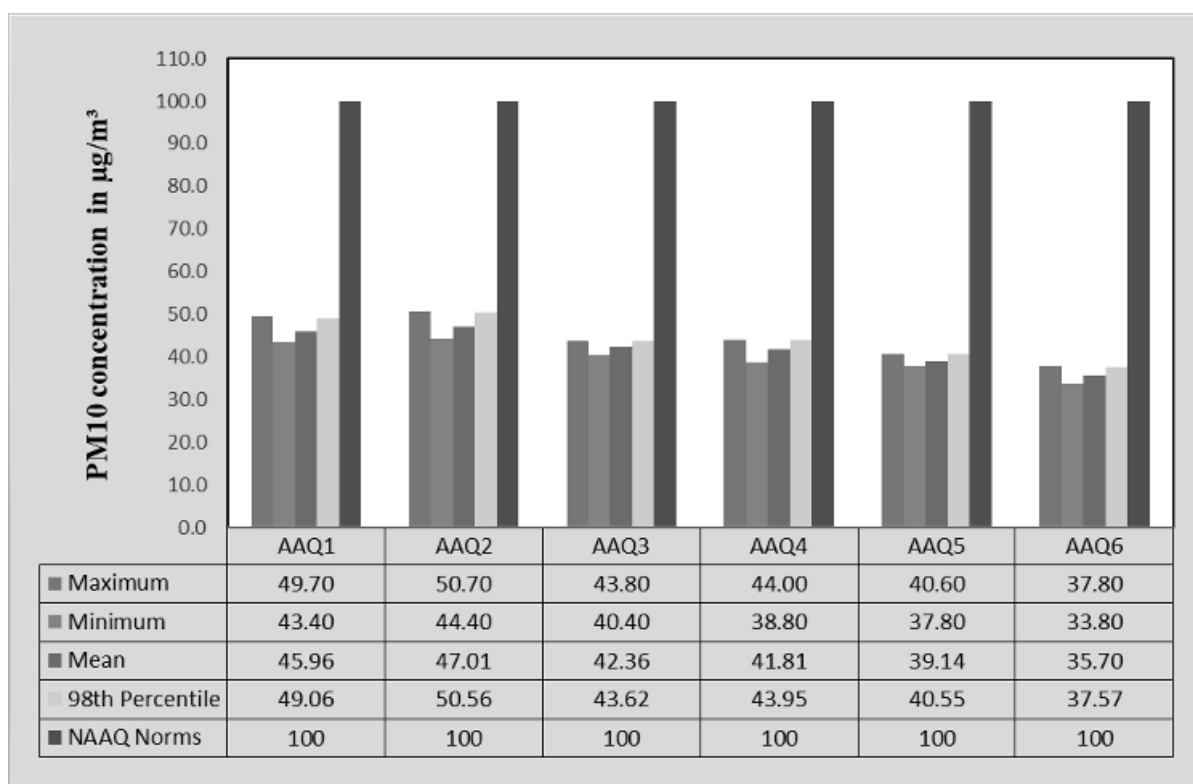


**Figure 3.20 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM<sub>10</sub> Measured from 6 Air Quality Monitoring Stations within 5 km Radius**

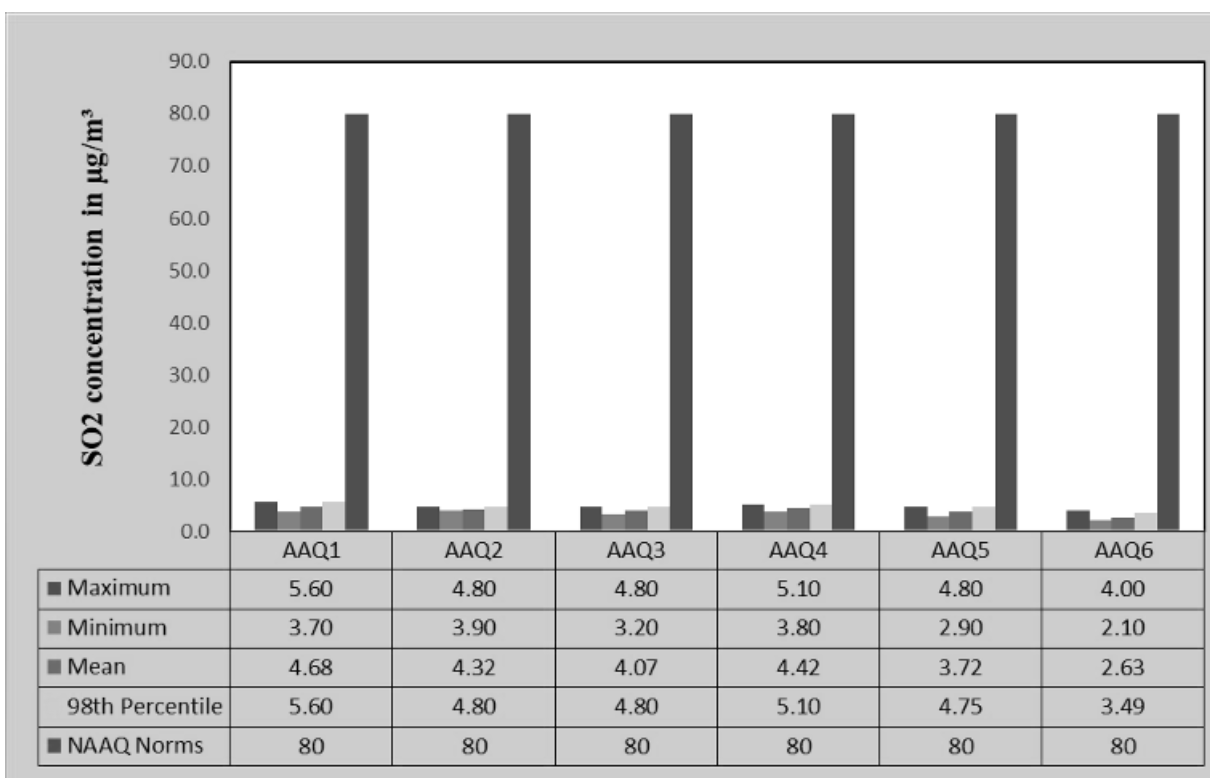


**Figure 3.21 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO<sub>2</sub> Measured from 6 Air Quality Monitoring Stations within 5 km Radius**

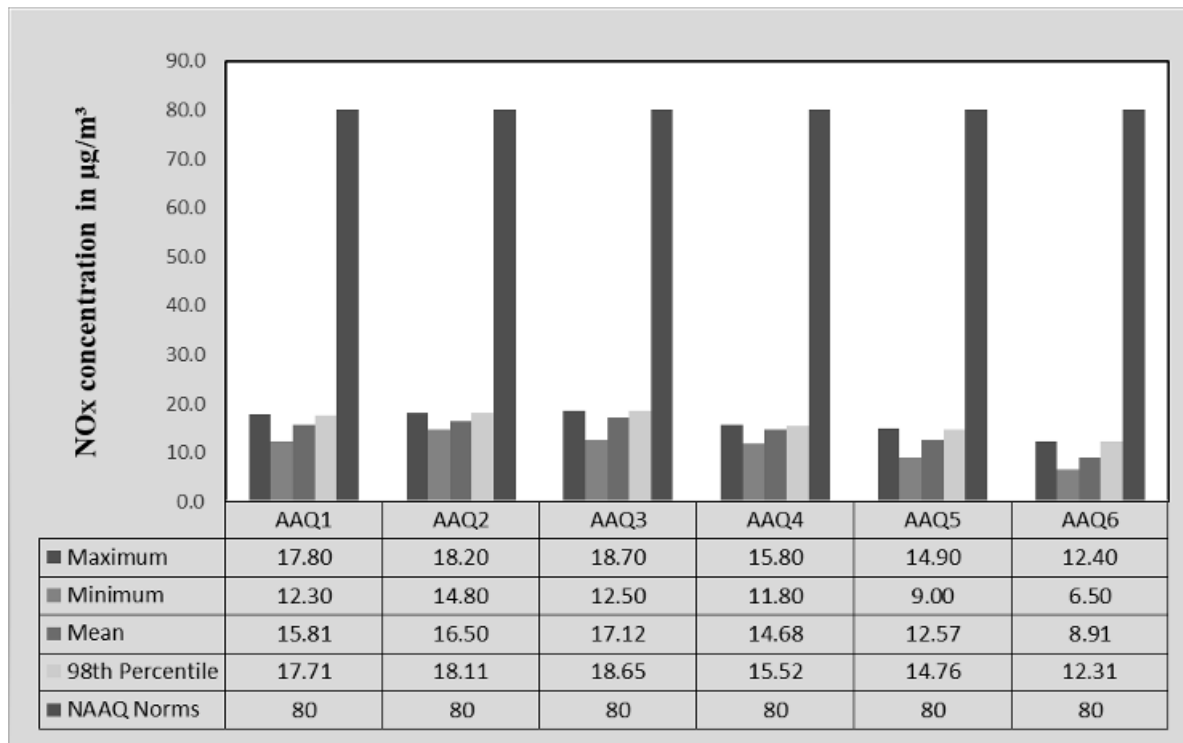


**Figure 3.22 Bar Chart Showing Maximum, Minimum, And Average Concentrations of NO<sub>x</sub> Measured from 6 Air Quality Monitoring Stations within 5 km Radius**

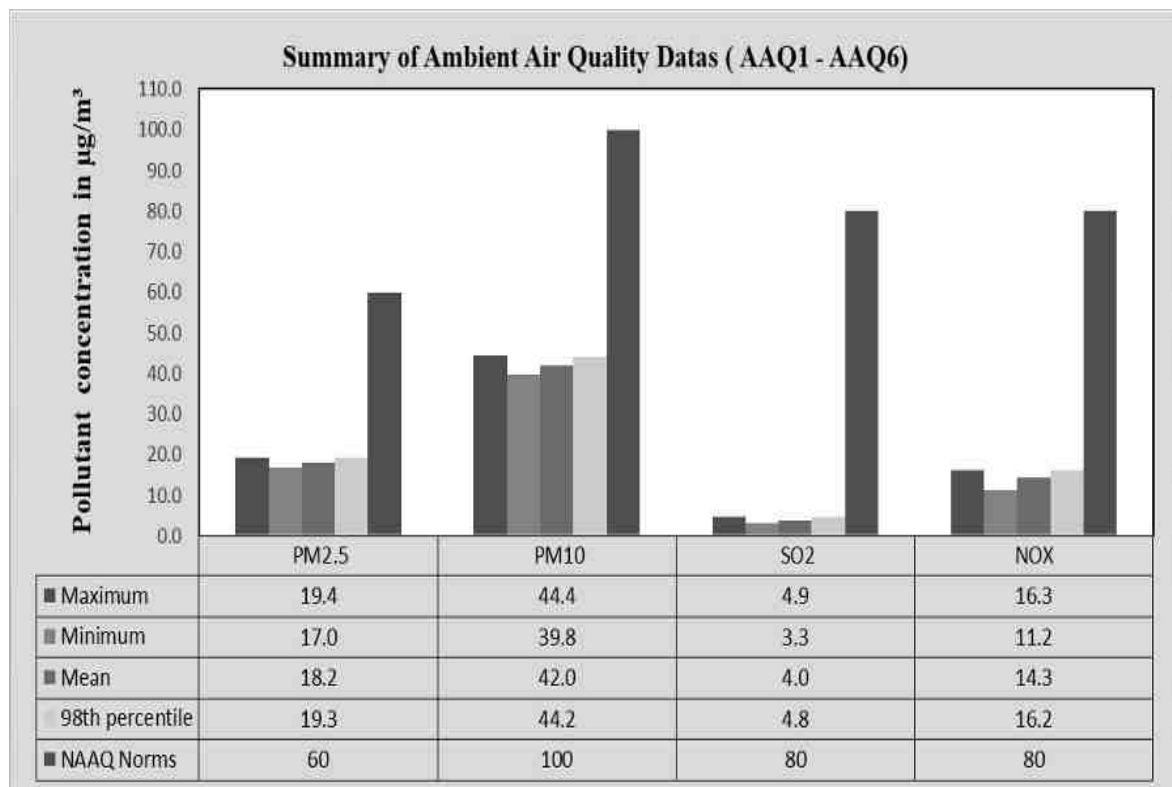


**Figure 3.23 Bar Chart Showing Maximum, Minimum, and Average Concentrations of Pollutants in the Atmosphere within 5 km Radius**

### 3.5 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at six (6) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.19 and spatial occurrence of the locations are shown in Figure 3.26.

**Table 3.19 Noise Monitoring Locations**

| Location Code | Monitoring Locations | Distance in km | Direction | Coordinates   |               |
|---------------|----------------------|----------------|-----------|---------------|---------------|
|               |                      |                |           | Lat           | Long          |
| N1            | Nearby Core          | --             | --        | 12°34'28.20"N | 77°52'52.72"E |
| N2            | Jakkeri              | 1.14           | NW        | 12°35'9.43"N  | 77°52'26.10"E |
| N3            | Bodichipalli         | 3.60           | NW        | 12°36'15.98"N | 77°51'40.44"E |
| N4            | D. Kothapalli        | 3.76           | SW        | 12°34'2.42"N  | 77°50'46.99"E |
| N5            | Anusonai             | 1.78           | E         | 12°34'21.75"N | 77°53'51.08"E |
| N6            | Pachapanatti         | 2.66           | S         | 12°32'59.44"N | 77°52'58.06"E |

Source: Sampling Results by *Greenlink Analytical and Research Laboratory (India) Private Ltd*, in association with GTMS

**Table 3.20 Ambient Noise Quality Result**

| Location      | Environmental setting | Average day noise level(dB(A)) | Average night noise level (dB(A)) | Day time (6.00 AM – 10.00 PM) | Night time (10.00 PM – 6.00 AM) |
|---------------|-----------------------|--------------------------------|-----------------------------------|-------------------------------|---------------------------------|
|               |                       |                                |                                   | Standard (Leq in dB(A))       |                                 |
| Nearby Core   | Industrial area       | 54.2                           | 51.4                              | 75                            | 70                              |
| Jakkeri       | Residential area      | 46.9                           | 38.8                              | 55                            | 45                              |
| Bodichipalli  |                       | 50.1                           | 40.5                              | 55                            | 45                              |
| D. Kothapalli |                       | 42.2                           | 37.5                              | 55                            | 45                              |
| Anusonai      |                       | 46.1                           | 38.6                              | 55                            | 45                              |
| Pachapanatti  |                       | 42.8                           | 36.2                              | 55                            | 45                              |

Source: Sampling Results by *Greenlink Analytical and Research Laboratory (India) Private Ltd*, in association with GTMS

The Table 3.20 shows that noise level in core zone was 54.2dB (A) Leq during day time and 51.4dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 42.2 to 50.1dB (A) Leq and during night time from 36.2 to 40.5 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 3.24 and 3.25.

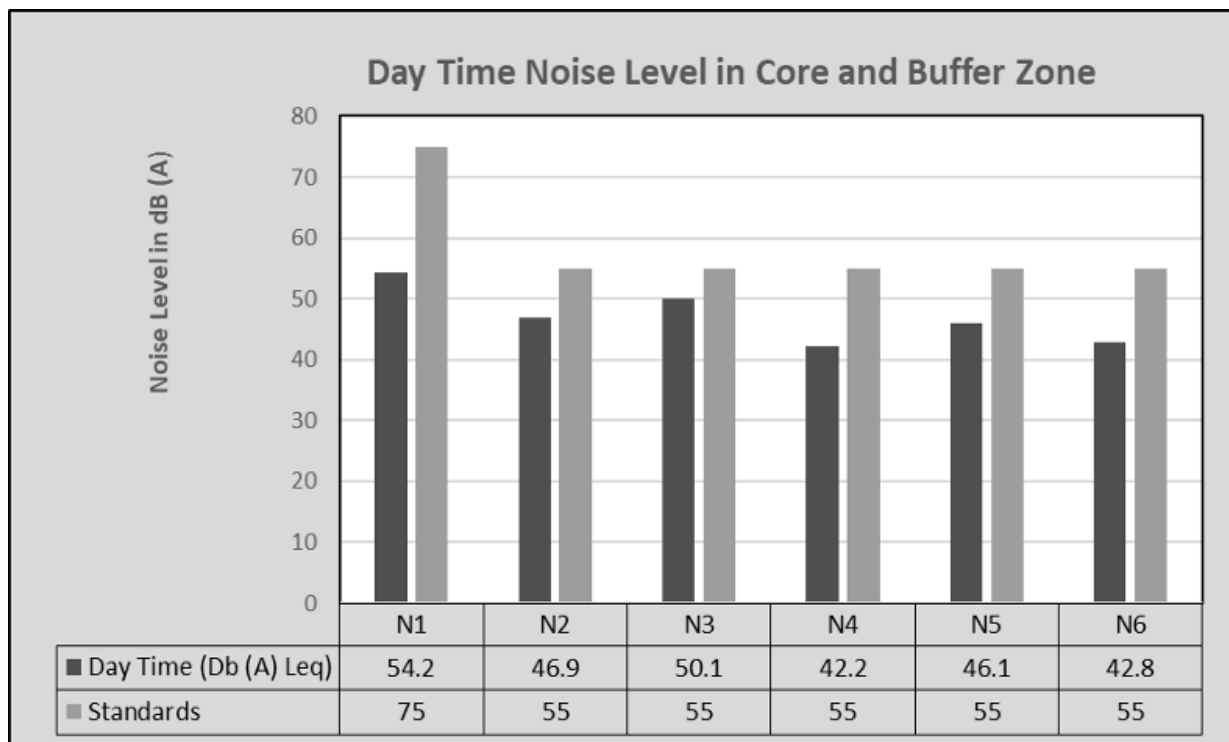


**Figure 3.24 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones**

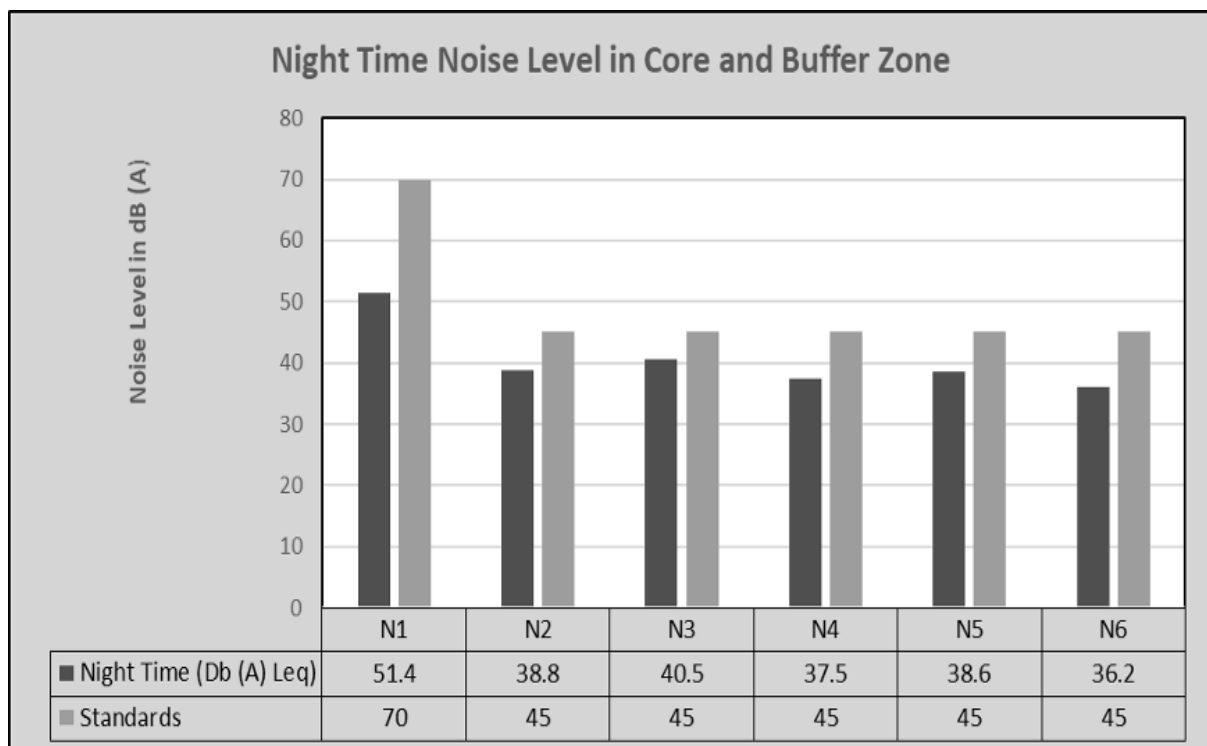


**Figure 3.25 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones**

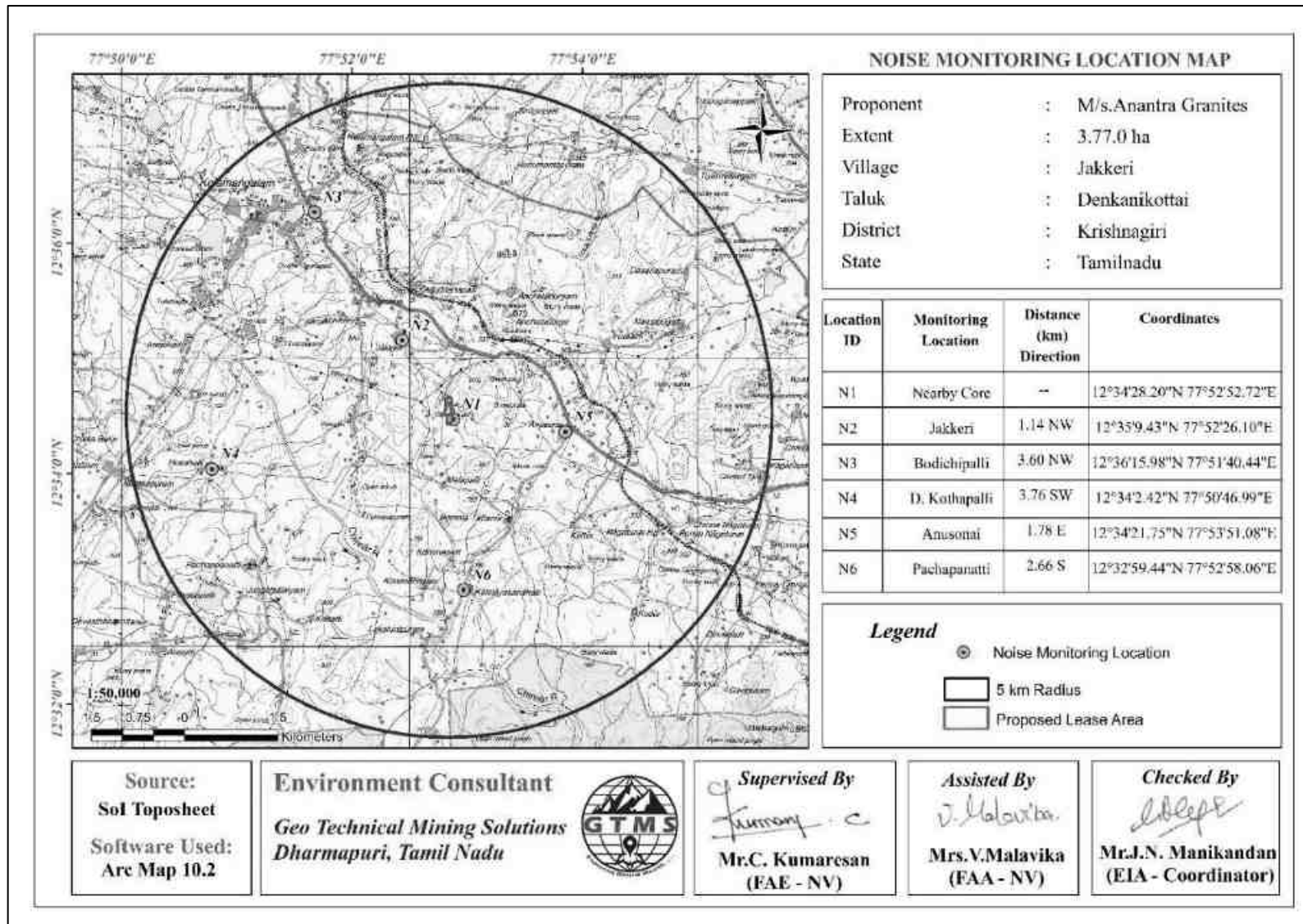


Figure 3.26 Map Showing Noise Level Monitoring Station Locations around 5 km Radius from the Proposed Project Site

### **3.6 BIOLOGICAL ENVIRONMENT**

Collection of comprehensive baseline information on flora and fauna is a prerequisite for assessment of impacts of any extractive industries/ activities. Biological environment is an important component of the environment of any area. It covers flora & fauna in the region, details of forests and wildlife sanctuaries in the region, with list of endangered species. Over the years ecological and along with it the loss of biological diversity has become a national and a global concern. Ecological assessment therefore is very critical for decision making and for the setting of a developmental project or an industry. An ecological study of the ecosystem is essential to understand the impact of industrialization and urbanization on existing flora and fauna of the area. Studies on various aspects of ecosystem play an important role in identifying sensitive issues for undertaking appropriate action to mitigate the impact, if any.

The objective of this Section is to characterize and understand the present status of the ecosystems in the study area to assess the bio-diversity and to identify the critical areas. The present study was undertaken as a part of EIA report to understand the present status of ecosystem prevailing in the study area, to compare it with the past condition with the help of available data, to predict changes as a result of present activities and to suggest measures for maintaining the conditions.

#### **3.6.1 Flora**

##### **3.6.1.1 Objectives of the Study**

The ecological study of the area was conducted in order to understand the existing status of the flora and fauna to generate baseline information and evaluate the possible impacts on biological environment. The present study highlights the various issues pertaining to floristic diversity and faunal wealth in the surrounding area up to 10km radius from the proposed expansion project.

##### **3.6.1.2 Study Approach & Methodology**

The baseline study for existing ecological environment was carried out during study period. A participatory and consultative approach was followed. Field visits were under taken for survey of the aquatic and terrestrial vegetation and animals in the study area.

Nested quadrat sampling method was used for the study of community structure of the vegetation. The sampling consisted of randomly placed quadrats of 10m × 10m were laid down

to assess trees, and sub quadrats of 5 m × 5 m were laid down for shrubs, 1m x 1m were laid done for herbs. The size and number of quadrats needed were determined using the species-area curve (Misra, 1968). The data on vegetation were quantitatively analysed for abundance, density, frequency as per Curtis & McIntosh (1950). The Important Value Index (IVI) for trees was determined as the sum of relative density, relative frequency and relative dominance (Curtis, 1959).



**Figure 3.27 Quadrates Sampling Methods of Flora**

### **3.6.1.3 Survey Methodology**

The baseline study for existing biological environmental was carried out in Nov 2024. Study of flora and fauna carried out as per prescribed method addressed in SOP. Field visits were under taken for survey of the vegetation and animals in the study area. The study area is divided into three parts as project site area along with 500m from all direction surrounding site is being considered as core area and rest of 5km study area is buffer part of the study area.

### **3.6.1.4 Important Value Index (IVI)**

The concept of ‘Important Value Index (IVI)’ has been developed for expressing the dominance and ecological success of any species, with a single value (Mishra, 1968, Sharma, 2005). This index utilizes three characteristics, they are (i) Relative frequency and (ii) Relative density. The three characteristics computed using frequency, density and abundance for all the species falling in all the quadrat by using the following formula. The relative frequency, relative density and relative abundance has been calculated to calculate the IVI value



IVI = Relative frequency + Relative abundance + Relative density [RF + RA + RD]

**Relative Value Index (RVI)** = Relative Density + Relative Frequency [ RD + RF].

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

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

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

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

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

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

- ☛ Where,  $n_i$  is individual density of a species and  $n$  is total density of all the species
- ☛ The Evenness Index (E) is calculated by using Shannon's Evenness formula (Magurran, 2004).
- ☛ The higher the value of H, the higher the diversity of species in a particular community  
The lower the value of H, the lower the diversity. A value of  $H = 0$  indicates a community that only has one species

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

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

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

#### **3.6.1.5 Floral diversity Analysis**

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

### ***flora in core zone***

There are no trees in the quarry lease area, only shrubs, herbs and grasses. Taxonomically total of 28 species belonging to 16 families were recorded. Among them are herbs (23) and shrubs (5). Majority of the species belongs to the family of Fabaceae and Poaceae. The species richness (Margalef index) and plant details are given in Table 3.21-3.23. There are no endangered or threatened plant species in the quarry lease area.

### ***Flora in 300m radius***

The vegetation habit analysis indicates that the flora of the 300m radius of the study area consists of 60 species belonging to 31 families. Among the 60 species, 22 herbs, 24 shrubs and 14 trees. the highest number of species were from the Poaceae family (7), followed by Fabaceae (6), Malvaceae (4), and Mimosaceae (4). Three species were recorded from the Amaranthaceae, Apocynaceae, and Asteraceae families, while two species each were recorded from the Arecaceae, Boraginaceae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, and Lamiaceae families. The endangered or threatened and Species Richness (margalef Index) in the study area it mentioned in Table 3.21 - 3.23. The Velamundi Reserve Forest is located 172 meters north of the quarry lease area. The reserve forest is predominantly populated with *Albizia amara*, *Vachellia leucophloea*, *Vachellia karroo*, *Chloroxylon swietenia*, and *Ziziphus mauritiana*.

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

The 10km radius A total of 107 species of invasive alien species belonging to 82 genera and 39 families were recorded in 10km radius Table 3.24. Herbs (73.83%) formed the predominant life form followed by shrubs (10.28%), climbers (8.41%), trees (4.67%) and grasses (2.80%).

Table 3.21 Flora in 300meter 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>Trees</b>  |                  |                                |               |                      |                                 |                        |         |               |           |                  |                    |      |                          |
| 1             | Velikathan maram | <i>Prosopis juliflora</i>      | Fabaceae      | 3                    | 2                               | 5                      | 0.6     | 40.0          | 1.5       | 7.5              | 6.7                | 14.2 | Not Listed               |
| 2             | Pongam oiltree   | <i>Pongamia pin nata</i>       | Fabaceae      | 4                    | 3                               | 5                      | 0.8     | 60.0          | 1.3       | 10.0             | 10.0               | 20.0 | Not Listed               |
| 3             | Panai maram      | <i>Borassus flabellifer</i>    | Arecaceae     | 5                    | 4                               | 5                      | 1.0     | 80.0          | 1.3       | 12.5             | 13.3               | 25.8 | Not Listed               |
| 4             | Nochi            | <i>Vitex negundo</i>           | Lamiaceae     | 3                    | 2                               | 5                      | 0.6     | 40.0          | 1.5       | 7.5              | 6.7                | 14.2 | Not Listed               |
| 5             | Nuna maram       | <i>Morinda citrifolia</i>      | Rubiaceae     | 4                    | 3                               | 5                      | 0.8     | 60.0          | 1.3       | 10.0             | 10.0               | 20.0 | Not Listed               |
| 6             | Vembu            | <i>Azadirachta indica</i>      | Meliaceae     | 5                    | 4                               | 5                      | 1.0     | 80.0          | 1.3       | 12.5             | 13.3               | 25.8 | Not Listed               |
| 7             | Manga maram      | <i>Mangifera indica</i>        | Anacardiaceae | 4                    | 3                               | 5                      | 0.8     | 60.0          | 1.3       | 10.0             | 10.0               | 20.0 | Not Listed               |
| 8             | Thennai maram    | <i>Cocos nucifera</i>          | Arecaceae     | 3                    | 2                               | 5                      | 0.6     | 40.0          | 1.5       | 7.5              | 6.7                | 14.2 | Not Listed               |
| 9             | Wetpalai maram   | <i>Wrightia tinctoria</i>      | Apocynaceae   | 4                    | 3                               | 5                      | 0.8     | 60.0          | 1.3       | 10.0             | 10.0               | 20.0 | Not Listed               |
| 10            | Unjai maram      | <i>Albizia amara</i>           | Fabaceae      | 5                    | 4                               | 5                      | 1.0     | 80.0          | 1.3       | 12.5             | 13.3               | 25.8 | Not Listed               |
| <b>Shrubs</b> |                  |                                |               |                      |                                 |                        |         |               |           |                  |                    |      |                          |
| 1             | Unichedi         | <i>Lantana camara</i>          | Verbenaceae   | 7                    | 6                               | 10                     | 0.7     | 60.0          | 1.2       | 12.7             | 12.5               | 25.2 | Not Listed               |
| 2             | Sundaika         | <i>Solanum torvum</i>          | Solanaceae    | 9                    | 8                               | 10                     | 0.9     | 80.0          | 1.1       | 16.4             | 16.7               | 33.0 | Not Listed               |
| 3             | Erukku           | <i>Calotropis gigantea</i>     | apocynaceae   | 8                    | 7                               | 10                     | 0.8     | 70.0          | 1.1       | 14.5             | 14.6               | 29.1 | Not Listed               |
| 4             | Avarai           | <i>Senna auriculata</i>        | Fabaceae      | 10                   | 9                               | 10                     | 1.0     | 90.0          | 1.1       | 18.2             | 18.8               | 36.9 | Not Listed               |
| 5             | Sappathikalli    | <i>Cereus pterogonus</i>       | Cactus        | 6                    | 5                               | 10                     | 0.6     | 50.0          | 1.2       | 10.9             | 10.4               | 21.3 | Not Listed               |
| 6             | Kattamanaku      | <i>Jatropha gossypifolia L</i> | Euphorbiaceae | 7                    | 6                               | 10                     | 0.7     | 60.0          | 1.2       | 12.7             | 12.5               | 25.2 | Not Listed               |
| 7             | Karunochi        | <i>Vitex negundo</i>           | Lamiaceae     | 8                    | 7                               | 10                     | 0.8     | 70.0          | 1.1       | 14.5             | 14.6               | 29.1 | Not Listed               |

| Herbs, Climbers & Grass |                   |                                           |                |    |    |    |     |      |     |     |     |      |            |
|-------------------------|-------------------|-------------------------------------------|----------------|----|----|----|-----|------|-----|-----|-----|------|------------|
| 1                       | Thumbai           | <i>Leucas aspera</i>                      | Lamiaceae      | 9  | 8  | 15 | 0.6 | 53.3 | 1.1 | 5.6 | 5.7 | 11.2 | Not Listed |
| 2                       | Kantang kathrikai | <i>Solanum virginianum</i>                | Solanaceae     | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 3                       | Arugampul         | <i>Cynodon dactylon</i>                   | Poaceae        | 11 | 10 | 15 | 0.7 | 66.7 | 1.1 | 6.8 | 7.1 | 13.9 | Not Listed |
| 4                       | Poolai poondu     | <i>Aerva lanata</i>                       | Amaranthaceae  | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |
| 5                       | Korai             | <i>Cyperus rotundus</i>                   | Cyperaceae     | 6  | 5  | 15 | 0.4 | 33.3 | 1.2 | 3.7 | 3.5 | 7.2  | Not Listed |
| 6                       | Nerunji           | <i>Tribulus terrestris</i>                | Zygophyllales  | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 7                       | Nayuruvi          | <i>Achyranthes aspera</i>                 | Amaranthaceae  | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |
| 8                       | Thottalchinungi   | <i>Mimosa pudica</i>                      | Mimosaceae     | 9  | 8  | 15 | 0.6 | 53.3 | 1.1 | 5.6 | 5.7 | 11.2 | Not Listed |
| 9                       | Anachundaikai     | <i>Solanum violaceum</i><br><i>Ortega</i> | Solanaceae     | 6  | 5  | 15 | 0.4 | 33.3 | 1.2 | 3.7 | 3.5 | 7.2  | Not Listed |
| 10                      | Kombumul          | <i>Acanthospermum</i><br><i>hispidum</i>  | Asteraceae     | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 11                      | Ponnangani        | <i>Alternanthera pungens</i>              | Amaranthaceae  | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |
| 12                      | wild thulasi      | <i>Hyptis suaveolens (L.)</i>             | Lamiaceae      | 10 | 9  | 15 | 0.7 | 60.0 | 1.1 | 6.2 | 6.4 | 12.6 | Not Listed |
| 13                      | Gopuram Tangi     | <i>Andrographis echiioides</i>            | Acanthaceae    | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 14                      | Amman Paccharisi  | <i>Euphorbia hirta</i>                    | Euphorbiaceae  | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |
| 15                      | Paca poondu       | <i>Pavonia gallaensis</i>                 | Malvaceae      | 6  | 5  | 15 | 0.4 | 33.3 | 1.2 | 3.7 | 3.5 | 7.2  | Not Listed |
| 16                      | Perandai          | <i>Cissus quadrangularis</i>              | Vitaceae       | 9  | 8  | 15 | 0.6 | 53.3 | 1.1 | 5.6 | 5.7 | 11.2 | Not Listed |
| 17                      | Vishnukrandai     | <i>Evolvulus alsinoides</i>               | Convolvulaceae | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 18                      | Musumusukkai      | <i>Mukia maderaspatana</i>                | Cucurbitaceae  | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |
| 19                      | Sirupunaikkali    | <i>Passiflora foetida</i>                 | Passifloraceae | 6  | 5  | 15 | 0.4 | 33.3 | 1.2 | 3.7 | 3.5 | 7.2  | Not Listed |
| 20                      | Nagathali         | <i>Opuntia dillenii</i>                   | Cactaceae      | 7  | 6  | 15 | 0.5 | 40.0 | 1.2 | 4.3 | 4.3 | 8.6  | Not Listed |
| 21                      | Agave             | <i>Agave sisalana</i>                     | Asparagaceae   | 8  | 7  | 15 | 0.5 | 46.7 | 1.1 | 4.9 | 5.0 | 9.9  | Not Listed |

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

| S. No                                    | Common name      | Scientific name                 | No. of Species | Pi   | ln (Pi) | Pi x ln (Pi) |
|------------------------------------------|------------------|---------------------------------|----------------|------|---------|--------------|
| <b>Trees</b>                             |                  |                                 |                |      |         |              |
| 1                                        | Velikathan maram | <i>Prosopis juliflora</i>       | 3              | 0.08 | -2.59   | -0.19        |
| 2                                        | Pongam oiltree   | <i>Pongamia pin nata</i>        | 4              | 0.10 | -2.30   | -0.23        |
| 3                                        | Panai maram      | <i>Borassus flabellifer</i>     | 5              | 0.13 | -2.08   | -0.26        |
| 4                                        | Nochi            | <i>Vitex negundo</i>            | 3              | 0.08 | -2.59   | -0.19        |
| 5                                        | Nuna maram       | <i>Morinda citrifolia</i>       | 4              | 0.10 | -2.30   | -0.23        |
| 6                                        | Vembu            | <i>Azadirachta indica</i>       | 5              | 0.13 | -2.08   | -0.26        |
| 7                                        | Manga maram      | <i>Mangifera indica</i>         | 4              | 0.10 | -2.30   | -0.23        |
| 8                                        | Thennai maram    | <i>Cocos nucifera</i>           | 3              | 0.08 | -2.59   | -0.19        |
| 9                                        | Wetpalai maram   | <i>Wrightia tinctoria</i>       | 4              | 0.10 | -2.30   | -0.23        |
| 10                                       | Unjai maram      | <i>Albizia amara</i>            | 5              | 0.13 | -2.08   | -0.26        |
| <b>H (Shannon Diversity Index) =2.28</b> |                  |                                 |                |      |         |              |
| <b>Shrubs</b>                            |                  |                                 |                |      |         |              |
| 1                                        | Unichedi         | <i>Lantana camara</i>           | 7              | 0.13 | -2.06   | -0.26        |
| 2                                        | Sundaika         | <i>Solanum torvum</i>           | 9              | 0.16 | -1.81   | -0.30        |
| 3                                        | Erukku           | <i>Calotropis gigantea</i>      | 8              | 0.15 | -1.93   | -0.28        |
| 4                                        | Avarai           | <i>Senna auriculata</i>         | 10             | 0.18 | -1.70   | -0.31        |
| 5                                        | Sappathikalli    | <i>Cereus pterogonus</i>        | 6              | 0.11 | -2.22   | -0.24        |
| 6                                        | Kattamanaku      | <i>Jatropha gossypifolia L</i>  | 7              | 0.13 | -2.06   | -0.26        |
| 7                                        | Karunochi        | <i>Vitex negundo</i>            | 8              | 0.15 | -1.93   | -0.28        |
| <b>H (Shannon Diversity Index) =1.93</b> |                  |                                 |                |      |         |              |
| <b>Herbs</b>                             |                  |                                 |                |      |         |              |
| 1                                        | Thumbai          | <i>Leucas aspera</i>            | 9              | 0.06 | -2.89   | -0.16        |
| 2                                        | Katang kathrikai | <i>Solanum virginianum</i>      | 7              | 0.04 | -3.14   | -0.14        |
| 3                                        | Arugampul        | <i>Cynodon dactylon</i>         | 11             | 0.07 | -2.69   | -0.18        |
| 4                                        | Poolai poondu    | <i>Aerva lanata</i>             | 8              | 0.05 | -3.01   | -0.15        |
| 5                                        | Korai            | <i>Cyperus rotundus</i>         | 6              | 0.04 | -3.30   | -0.12        |
| 6                                        | Nerunji          | <i>Tribulus terrestris</i>      | 7              | 0.04 | -3.14   | -0.14        |
| 7                                        | Nayuruvi         | <i>Achyranthes aspera</i>       | 8              | 0.05 | -3.01   | -0.15        |
| 8                                        | Thottalchinungi  | <i>Mimosa pudica</i>            | 9              | 0.06 | -2.89   | -0.16        |
| 9                                        | Anachundaikai    | <i>Solanum violaceum Ortega</i> | 6              | 0.04 | -3.30   | -0.12        |
| 10                                       | Kombumul         | <i>Acanthospermum hispidum</i>  | 7              | 0.04 | -3.14   | -0.14        |
| 11                                       | Ponnangani       | <i>Alternanthera pungens</i>    | 8              | 0.05 | -3.01   | -0.15        |
| 12                                       | Wild thulasi     | <i>Hyptis suaveolens (L.)</i>   | 10             | 0.06 | -2.79   | -0.17        |
| 13                                       | Gopuram Tangi    | <i>Andrographis echinoides</i>  | 7              | 0.04 | -3.14   | -0.14        |
| 14                                       | Amman Paccharisi | <i>Euphorbia hirta</i>          | 8              | 0.05 | -3.01   | -0.15        |
| 15                                       | Paca poondu      | <i>Pavonia gallaensis</i>       | 6              | 0.04 | -3.30   | -0.12        |
| 16                                       | Perandai         | <i>Cissus quadrangularis</i>    | 9              | 0.06 | -2.89   | -0.16        |
| 17                                       | Vishnukrandai    | <i>Evolvulus alsinoides</i>     | 7              | 0.04 | -3.14   | -0.14        |
| 18                                       | Musumusukkai     | <i>Mukia maderaspatana</i>      | 8              | 0.05 | -3.01   | -0.15        |

|                                          |                |                           |   |      |       |       |
|------------------------------------------|----------------|---------------------------|---|------|-------|-------|
| 19                                       | Sirupunaikkali | <i>Passiflora foetida</i> | 6 | 0.04 | -3.30 | -0.12 |
| 20                                       | Nagathali      | <i>Opuntia dillenii</i>   | 7 | 0.04 | -3.14 | -0.14 |
| 21                                       | Agave          | <i>Agave sisalana</i>     | 8 | 0.05 | -3.01 | -0.15 |
| <b>H (Shannon Diversity Index) =3.03</b> |                |                           |   |      |       |       |

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

| Details | H    | H max | Evenness | Species Richness |
|---------|------|-------|----------|------------------|
| Trees   | 2.28 | 2.30  | 0.99     | 2.44             |
| Shrubs  | 1.93 | 1.95  | 0.99     | 1.50             |
| Herbs   | 3.03 | 3.04  | 1.00     | 3.93             |

**Table 3.24 Flora in Buffer Zone**

| S. No        | Local Name       | Scientific name                 | Family name    |
|--------------|------------------|---------------------------------|----------------|
| <b>Trees</b> |                  |                                 |                |
| 1            | Vembu            | <i>Azadirachta indica</i>       | Meliaceae      |
| 2            | Pongam oiltree   | <i>Pongamia pinnata</i>         | Fabaceae       |
| 3            | Karuvelam        | <i>Acacia nilotica</i>          | Mimosaceae     |
| 4            | Thennai maram    | <i>Cocos nucifera</i>           | Arecaceae      |
| 5            | Arasanmaram      | <i>Ficus religiosa</i>          | Moraceae       |
| 6            | Puliyamaram      | <i>Tamarindus indica</i>        | Legumes        |
| 7            | Punnai           | <i>Calophyllum inophyllum</i>   | Calophyllaceae |
| 8            | Athi             | <i>Ficus recemosa</i>           | Moraceae       |
| 9            | Vazhaimaram      | <i>Musa</i>                     | Musaceae       |
| 10           | Kadukka puli     | <i>Terminalia chebula</i>       | Combretaceae   |
| 11           | Nettilinkam      | <i>Polylathia longifolia</i>    | Annonaceae     |
| 12           | Perumungil       | <i>Bambusa bambos</i>           | Poaceae        |
| 13           | Sapota           | <i>Manilkara zapota</i>         | Sapotaceae     |
| 14           | Eucalyptus       | <i>Eucalyptus globules</i>      | Myrtaceae      |
| 15           | Navalmaram       | <i>Sygygium cumini</i>          | Myrtaceae      |
| 16           | Ezhumuchai maram | <i>Citrus lemon</i>             | Rutaceae       |
| 17           | Alamaram         | <i>Ficus benghalensis</i>       | Moraceae       |
| 18           | Panai maram      | <i>Borassus flabellifer</i>     | Arecaceae      |
| 19           | Manga            | <i>Mangifera indica</i>         | Anacardiaceae  |
| 20           | Thekku           | <i>Tectona grandis</i>          | Verbenaceae    |
| 21           | Nelli            | <i>Emblica officinalis</i>      | Phyllanthaceae |
| 22           | Nettilinkam      | <i>Polylathia longifolia</i>    | Annonaceae     |
| 23           | Vellai Karuvelam | <i>Vachellia nilotica</i>       | Fabaceae       |
| 24           | Palamaram        | <i>Artocarpus heterophyllus</i> | Moraceae       |
| 25           | Vadanarayani     | <i>Delonix elata</i>            | Fabaceae       |
| 26           | Marudaani        | <i>Lawsonia inermis</i>         | Lythraceae     |
| 27           | Pappali maram    | <i>Carica papaya L</i>          | Caricaceae     |
| 28           | Nuna maram       | <i>Morinda citrifolia</i>       | Rubiaceae      |
| 29           | Koyya            | <i>Psidium guajava</i>          | Myrtaceae      |
| 30           | Seethapazham     | <i>Annona reticulata</i>        | Annonaceae     |

|                                                    |                 |                                  |                |
|----------------------------------------------------|-----------------|----------------------------------|----------------|
| 31                                                 | Moonghil        | <i>Bambusa bambo</i>             | Poaceae        |
| <b>Shrubs</b>                                      |                 |                                  |                |
| 1                                                  | Avarai          | <i>Senna auriculata</i>          | Fabaceae       |
| 2                                                  | Sundaika        | <i>Solanum torvum</i>            | Solanaceae     |
| 3                                                  | Arali           | <i>Nerium indicum</i>            | Apocynaceae    |
| 4                                                  | Idlipoo         | <i>xoracoc cinea</i>             | Rubiaceae      |
| 5                                                  | Neermulli       | <i>Hydrophila auriculata</i>     | Acanthaceae    |
| 6                                                  | Icham           | <i>Phoenix pusilla</i>           | Arecaceae      |
| 7                                                  | Chaturakalli    | <i>Euphorbia antiquorum</i>      | Euphorbiaceae  |
| 8                                                  | Kattamanakku    | <i>Jatropha curcas</i>           | Euphorbiaceae  |
| 9                                                  | Thuthi          | <i>Abutilon indicum</i>          | Meliaceae      |
| 10                                                 | Chemparuthi     | <i>Hibiscu rosa-sinensis</i>     | Malvaceae      |
| 11                                                 | Erukku          | <i>Calotropis gigantea</i>       | Apocynaceae    |
| <b>Herbs, Climber, Creeper, Grass &amp; Cactus</b> |                 |                                  |                |
| 1                                                  | Thumbai         | <i>Leucas aspera</i>             | Lamiaceae      |
| 2                                                  | Parttiniyam     | <i>Parthenium</i>                | Asteraceae     |
| 3                                                  | Thoiya keera    | <i>Digeria muricata</i>          | Amaranthaceae  |
| 4                                                  | Pulliyari       | <i>Oxalis corniculata</i>        | Oxalidaceae    |
| 5                                                  | Mukuratthai     | <i>Boerhavia diffusa</i>         | Nyctaginaceae  |
| 6                                                  | Thulasi         | <i>Ocimum tenuiflorum</i>        | Lamiaceae      |
| 7                                                  | Arugampul       | <i>Cynodon dactylon</i>          | Poaceae        |
| 8                                                  | Manjal          | <i>Curcuma longa</i>             | Zingiberaceae  |
| 9                                                  | Manathakkali    | <i>Solanumnigrum</i>             | Solanaceae     |
| 10                                                 | Nai kadugu      | <i>Celome viscosa</i>            | Capparidaceae  |
| 11                                                 | Koraikkilangu   | <i>Cyperus articulates</i>       | Cyperaceae     |
| 12                                                 | Karisilanganni  | <i>Eclipta prostata</i>          | Asteraceae     |
| 13                                                 | Korai           | <i>Cyperus rotundus</i>          | Cyperaceae     |
| 14                                                 | Kunnakora       | <i>Cyperus compressus</i>        | Cyperaceae     |
| 15                                                 | Mukurattai      | <i>Boerhavia diffusa</i>         | Nyctaginaceae  |
| 16                                                 | Kovai           | <i>Coccinia grandis</i>          | Cucurbitaceae  |
| 17                                                 | Perandai        | <i>Cissus quadrangularis</i>     | Vitaceae       |
| 18                                                 | Mudakkotan      | <i>Cardiospermum helicacabum</i> | Sapindaceae    |
| 19                                                 | Sangupoo        | <i>Clitoriaternatia</i>          | Fabaceae       |
| 20                                                 | Malli           | <i>Jasminum augustifolium</i>    | Oleaceae       |
| 21                                                 | Vallikeerai     | <i>Ipomoea aquatica</i>          | Convolvulaceae |
| 22                                                 | Siru puladi     | <i>Desmodium triflorum</i>       | Fabaceae       |
| 23                                                 | Sithrapaalavi   | <i>Euphorbia prostrata</i>       | Euphorbiaceae  |
| 24                                                 | mookuthi poondu | <i>Wedelia trilobata</i>         | Asteraceae     |
| 25                                                 | Pullu           | <i>Eragrostis ferruginea</i>     | Poaceae        |
| 26                                                 | Chevvarakupul   | <i>Chloris barbata</i>           | Amaranthaceae  |
| 27                                                 | Nagathali       | <i>Opuntia dillenii</i>          | Nagathali      |
| 28                                                 | Nayuruvi        | <i>Achyranthes aspera</i>        | Amaranthaceae  |

|    |                 |                               |                |
|----|-----------------|-------------------------------|----------------|
| 29 | Veetukaayapoonu | <i>Tridax procumbens</i>      | Asteraceae     |
| 30 | Kaattu piral    | <i>Hibiscus hispidissimus</i> | Malvaceae      |
| 31 | Kuppaimeni      | <i>Acalypha indica</i>        | Euphorbiaceae  |
| 32 | Karisilanganni  | <i>Eclipta prostrata</i>      | Asteraceae     |
| 33 | Korai           | <i>Cyperus rotundus</i>       | Cyperaceae     |
| 34 | Kumattikkirai   | <i>Allmania nodiflora</i>     | Amaranthaceae  |
| 35 | Kunnakora       | <i>Cyperus compressus</i>     | Cyperaceae     |
| 36 | Keelaneeli      | <i>Phyllanthus niruri</i>     | Phyllanthaceae |
| 37 | Kanamvazhalai   | <i>Commelina benghalensis</i> | Commelinaceae  |
| 38 | Thottalchinungi | <i>Mimosa pudica</i>          | Mimosaceae     |

### **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 3.25.

**Table 3.25 Aquatic Vegetation**

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

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

### **3.6.2 Fauna**

The fauna study was both direct & indirect observation methods were used to survey the fauna, the study area was restricted up to 10km radius from the lease area. The study area is divided into two parts as core zone and buffer zone. The data was generated with reference to topography, land use, vegetation pattern, animals etc. Core zone has been considered within the cluster area and buffer zone has been considered outside the cluster area up to 10km from Project boundary. The faunal like was carried out for Mammals, Birds, Reptiles, Amphibians and Butterflies. There are no rare, endangered, threatened (RET) and endemic species present in core area. indirect evidence such as calls, nests, burrows, droppings, scats, tracks etc. All available types of habitats at the site were evaluated and marked.

**Table 3.26 Methodology Applied during Survey of Fauna**

| S.No. | Taxa       | Method of Sampling                      | References                   |
|-------|------------|-----------------------------------------|------------------------------|
| 1     | Insects    | Random walk, Opportunistic observations | Pollard (1977); Kunte (2000) |
| 2     | Reptiles   | Visual encounter survey (Direct Search) | Daniel J.C (2002)            |
| 3     | Amphibians | Visual encounter survey (Direct Search) |                              |



|   |         |                                         |                                    |
|---|---------|-----------------------------------------|------------------------------------|
| 4 | Mammals | Tracks and Signs                        | Menon V (2014)                     |
| 5 | Avian   | Random walk, Opportunistic observations | Grimmett R (2011);<br>Ali S (1941) |

### 3.6.2.1 Methodology

Field observations of fauna were carried out. The commonly available mammals, amphibians, reptiles, butterflies, with 10km surroundings were enumerated. The method followed for avifauna survey has been outlined in respective section. To prepare a detailed report on the status of faunal diversity within study area, field studies were conducted. Both direct (sighting) and indirect (evidences) observations methods were used to survey the faunal species around the study area. Further, information towards faunal diversity from secondary sources was collected on interaction with the local people and Forest Dept. officials.

### ***Fauna Composition in the Core Zone***

The faunal species observed in the study area are listed in Table 3.27. A total of 26 species were recorded in core zone of the project area. The core zone exhibited fewer species, with only a small number of insects, mammals, and reptiles, whereas the buffer zone showed greater species diversity. Among the 26 species recorded, the distribution was as follows: (10) insects, (03) reptiles, Avian and (04) mammals. These species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. Data analysis revealed that 21 species are categorized as Least Concern on the Red List, while 18 species were not listed. The analysis indicates that there are no REET species in the core zone of the proposed quarry site.

### ***Fauna Composition in the Buffer Zone***

The faunal species observed in the study area are listed in Table 3.28. Taxonomically a total of 82 species belonging to 49 families have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 50, followed by Insects 13, Reptiles 11, Mammals 5 and amphibians 3. There are 4 schedule II species and 28 schedule IV species according to Indian wild life Act 1972. Totally, 19 species of bird were sighted in the study area.

**Table 3.27 Fauna in Core Zone**

| S.no           | Common Name/English Name | Scientific Name         | Family name  | IUCN Red List data |
|----------------|--------------------------|-------------------------|--------------|--------------------|
| <b>Insects</b> |                          |                         |              |                    |
| 1              | Chocolate pansy          | <i>Junonia iphita</i>   | Nymphalidae  | NA                 |
| 2              | Lime swallowtail         | <i>Papilio demoleus</i> | Papilionidae | NA                 |
| 3              | Common Mormon            | <i>Papilio polytes</i>  | Papilionidae | NA                 |
| 4              | Crimson dropwing         | <i>Trithemis aurora</i> | Libellulidae | LC                 |

|                 |                            |                                  |                   |    |
|-----------------|----------------------------|----------------------------------|-------------------|----|
| 5               | Lemon pansy                | <i>Junonia lemonias</i>          | Nymphalidae       | NA |
| 6               | Tawny coster               | <i>Acraea terpsicore</i>         | Nymphalidae       | NA |
| 7               | Slender skimmer            | <i>Orthetrum sabina</i>          | Libellulidae      | LC |
| 8               | Plaina tiger butterfly     | <i>Danaus chrysippus</i>         | Nymphalidae       | LC |
| 9               | Mottled emigrant           | <i>Catopsilia pyranthe</i>       | Pieridae          | LC |
| 10              | Spotted locust             | <i>Aularches miliaris</i>        | Pyrgomorphidae    | LC |
| <b>Reptiles</b> |                            |                                  |                   |    |
| 1               | Oriental garden lizard     | <i>Calotes uersicolor</i>        | Agamidae          | LC |
| 2               | Fan-Throated Lizard        | <i>Sitanaponticeriana</i>        | Agamidae          | LC |
| 3               | Common skink               | <i>Mabuya carinatus</i>          | Scincidae         | LC |
| <b>Aves</b>     |                            |                                  |                   |    |
| 1               | Baya weaver                | <i>Ploceus philippinus</i>       | Ploceidae         | LC |
| 2               | White – browed Wagtail     | <i>Motacilla maderaspatensis</i> | Motacillidae      | LC |
| 3               | Great cormorant            | <i>Phalacrocorax carbo</i>       | Phalacrocoracidae | LC |
| 4               | Indian robin               | <i>Copsychus fulicatus</i>       | Muscicapidae      | LC |
| 5               | Indian Roller              | <i>Coracias benghalensis</i>     | Coraciidae        | LC |
| 6               | Indian paradise flycatcher | <i>Terpsiphone paradisi</i>      | Monarchidae       | LC |
| 7               | Common myna                | <i>Acridotheres tristis</i>      | Sturnidae         | LC |
| 8               | European bee- eater        | <i>Merops apiaster</i>           | Meropidae         | LC |
| 9               | Black drongo               | <i>Dicrurus macrocercus</i>      | Dicruridae        | LC |
| <b>Mammals</b>  |                            |                                  |                   |    |
| 1               | House mouse                | <i>Mus musculus</i>              | Muridae           | LC |
| 2               | Indian hare                | <i>Lepus nigricollis</i>         | Leporidae         | LC |
| 3               | Cow                        | <i>Bos taurus</i>                | Bovidae           | NA |
| 4               | Goat                       | <i>Capra hircus</i>              | Bovidae           | NA |

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

**Table 3.28 Fauna in Buffer Zone**

| S. No          | Common Name/English Name | Scientific Name          | Family name  | IUCN Red List data |
|----------------|--------------------------|--------------------------|--------------|--------------------|
| <b>Insects</b> |                          |                          |              |                    |
| 1              | Chocolate pansy          | <i>Junonia iphita</i>    | Nymphalidae  | NA                 |
| 2              | Lime swallowtail         | <i>Papilio demoleus</i>  | Papilionidae | NA                 |
| 3              | Common Mormon            | <i>Papilio polytes</i>   | Papilionidae | NA                 |
| 4              | Crimson dropwing         | <i>Trithemis aurora</i>  | Libellulidae | LC                 |
| 5              | Lemon pansy              | <i>Junonia lemonias</i>  | Libellulidae | NA                 |
| 6              | Tawny coster             | <i>Acraea terpsicore</i> | Nymphalidae  | NA                 |

|                 |                              |                                  |                   |    |
|-----------------|------------------------------|----------------------------------|-------------------|----|
| 7               | Slender skimmer              | <i>Orthetrum sabina</i>          | Libellulidae      | LC |
| 8               | Plaina tiger butterfly       | <i>Danaus chrysippus</i>         | Nymphalidae       | LC |
| 9               | Danaid eggfly                | <i>Hypolimnys misippus</i>       | Nymphalidae       | LC |
| 10              | Bark blue tiger butterfly    | <i>Tirumala septentrionis</i>    | Nymphalidae       | NA |
| 11              | Mottled emigrant             | <i>Catopsilia pyranthe</i>       | Pieridae          | NA |
| 12              | Spotted locust               | <i>Aularches miliaris</i>        | Pyrgomorphidae    | NA |
| 13              | Ditgh jewel                  | <i>Brachythemis contaminata</i>  | Libellulidae      | LC |
| <b>Reptiles</b> |                              |                                  |                   |    |
| 1               | Oriental garden lizard       | <i>Calotes uersicolor</i>        | Agamidae          | NA |
| 2               | Fan-Throated Lizard          | <i>Sitanaponticeriana</i>        | Agamidae          | NA |
| 3               | Common skink                 | <i>Mabuya carinatus</i>          | Scincidae         | NA |
| 4               | Buff striped keelback        | <i>Amphiesma stolatum</i>        | Colubridae        | LC |
| 5               | Common bronzeback tree snake | <i>Dendrelaphis tristis</i>      | Colubridae        | LC |
| 6               | Common krait                 | <i>Bungarus caeruleus</i>        | Elapidae          | LC |
| 7               | Russells wolf snake          | <i>Lycodon fasilatus</i>         | Colubridae        | LC |
| 8               | Brahminy blindsnake          | <i>Indotyphlope braminus</i>     | Typhlopidae       | LC |
| 9               | Rock dragon                  | <i>Psammophilus dorsalis</i>     | Agamidae          | LC |
| 10              | Indian vine snake            | <i>Ahaetulla oxyrhynca</i>       | Colubridae        | NA |
| 11              | Blotched house gecko         | <i>Hemidactylus triedrus</i>     | Gekkonidae        | LC |
| <b>Aves</b>     |                              |                                  |                   |    |
| 1               | Baya weaver                  | <i>Ploceus philippinus</i>       | Ploceidae         | LC |
| 2               | White – browed Wagtail       | <i>Motacilla maderaspatensis</i> | Motacillidae      | LC |
| 3               | Great cormorant              | <i>Phalacrocorax carbo</i>       | Phalacrocoracidae | LC |
| 4               | Indian robin                 | <i>Copsychus fulicatus</i>       | Muscicapidae      | LC |
| 5               | Indian Roller                | <i>Coracias benghalensis</i>     | Coraciidae        | LC |
| 6               | Indian paradise flycatcher   | <i>Terpsiphone paradisi</i>      | Monarchidae       | LC |
| 7               | Red junglefowl               | <i>Gallus gallus</i>             | Phasianidae       | LC |
| 8               | Common myna                  | <i>Acridotheres tristis</i>      | Sturnidae         | LC |
| 9               | European bee- eater          | <i>Merops apiaster</i>           | Meropidae         | LC |
| 10              | Black drongo                 | <i>Dicrurus macrocercus</i>      | Dicruridae        | LC |
| 11              | Black – winged stilt         | <i>Himantopus Himantopus</i>     | Recurvirostridae  | LC |
| 12              | Crested serpent eagle        | <i>Spilornis cheela</i>          | Accipitridae      | LC |
| 13              | Brahminy kite                | <i>Haliastur indus</i>           | Accipitridae      | LC |
| 14              | Spotted owlet                | <i>Athene brama</i>              | Strigidae         | LC |
| 15              | Black rumped flameback       | <i>Dinopium benghalense</i>      | Picidae           | LC |

|    |                              |                                |                |    |
|----|------------------------------|--------------------------------|----------------|----|
| 16 | White -browed bulbul         | <i>Pycnonotus luteolus</i>     | Pycnonotidae   | LC |
| 17 | House sparrow                | <i>Passer domesticus</i>       | Passeridae     | LC |
| 18 | Grey heron                   | <i>Ardea cinerea</i>           | Ardeidae       | LC |
| 19 | Indian peafowl               | <i>Pavo cristatus</i>          | Phasianidae    | LC |
| 20 | Rose -ringed parakeet        | <i>Psittacula krameri</i>      | Psittaculidae  | LC |
| 21 | Scaly – breasted munia       | <i>Lonchura punctulata</i>     | Estrildidae    | LC |
| 22 | White -throated kingfisher   | <i>Halcyon smyrnensis</i>      | Alcedinidae    | LC |
| 23 | House crow                   | <i>Corvus splendens</i>        | Corvidae       | LC |
| 24 | Asian koel                   | <i>Eudynamys scolopaceus</i>   | Cuculidae      | LC |
| 25 | Asian green bee- Eater       | <i>Merops orientalis</i>       | Meropidae      | LC |
| 26 | Little cormorant             | <i>Microcarbo niger</i>        | Microcarbo     | LC |
| 27 | Painted stork                | <i>Mycteria leucocephala</i>   | Ciconiidae     | NT |
| 28 | Shikra                       | <i>Accipiter badius</i>        | Accipitridae   | LC |
| 29 | Indian robin                 | <i>Copsychus fulicatus</i>     | Muscicapidae   | LC |
| 30 | Indian roller                | <i>Coracias benghalensis</i>   | Coraciidae     | LC |
| 31 | Indian paradise flycatcher   | <i>Terpsiphone paradisi</i>    | Monarchidae    | LC |
| 32 | Yellow – billed babbler      | <i>Argya affinis</i>           | Leiothrichidae | LC |
| 33 | Ashy – crowned sparrow lark  | <i>Eremopterix griseus</i>     | Alaudidae      | LC |
| 34 | Small pratincole             | <i>Glareola lactea</i>         | Glareolidae    | LC |
| 35 | Great egret                  | <i>Ardea alba</i>              | Ardeidae       | LC |
| 36 | Rock pigeon                  | <i>Columba livia</i>           | Columbidae     | LC |
| 37 | Eurasian collared – dove     | <i>Streptopelia decaocto</i>   | Columbidae     | LC |
| 38 | Eurasian coot                | <i>Fulica atra</i>             | Rallidae       | LC |
| 39 | Northern shoveler            | <i>Spatula clypeata</i>        | Anatidae       | LC |
| 40 | Black kite                   | <i>Milvus migrans</i>          | Accipitridae   | LC |
| 41 | Red junglefowl               | <i>Gallus gallus</i>           | Phasianidae    | LC |
| 42 | Common kingfisher            | <i>Alcedo atthis</i>           | Alcedo atthis  | LC |
| 43 | Common sandpiper             | <i>Actitis hypoleucos</i>      | Scolopacidae   | LC |
| 44 | Striated heron               | <i>Butorides striata</i>       | Ardeidae       | LC |
| 45 | Laughing dove                | <i>Spilopelia senegalensis</i> | Columbidae     | LC |
| 46 | Red vented bulbul            | <i>Pycnonotus cafer</i>        | Pycnonotidae   | LC |
| 47 | Black winged kite            | <i>Elanus caeruleus</i>        | Accipitridae   | LC |
| 48 | Common tailorbird            | <i>Orthotomus sutorius</i>     | Cisticolidae   | LC |
| 49 | Indian pond -heron           | <i>Ardeola grayii</i>          | Ardeidae       | LC |
| 50 | Greater racket tailed drongo | <i>Dicrurus paradiseus</i>     | Dicruridae     | LC |

| <b>Mammals</b>    |                        |                                   |                |    |
|-------------------|------------------------|-----------------------------------|----------------|----|
| 1                 | House mouse            | <i>Mus musculus</i>               | Muridae        | LC |
| 2                 | Indian hare            | <i>Lepus nigricollis</i>          | Leporidae      | LC |
| 3                 | Jungle cat             | <i>Felis chaus</i>                | Felidae        | LC |
| 4                 | Cow                    | <i>Bos taurus</i>                 | Bovidae        | NA |
| 5                 | Goat                   | <i>Capra hircus</i>               | Bovidae        | NA |
| <b>Amphibians</b> |                        |                                   |                |    |
| 1                 | Asian common toad      | <i>Duttaphrynus melanostictus</i> | Bufonidae      | LC |
| 2                 | Chunam tree frog       | <i>Polypedates maculatus</i>      | Rhacophoridae  | LC |
| 3                 | Common skittering frog | <i>Euphlycits cyanophlyctis</i>   | Dicroglossidae | LC |

### ***Aquatic Vegetation***

The Field Survey for Assessing the Aquatic Vegetation Was Also Undertaken During the Study Period. The List of Aquatic Plants Observed in The Study Area Is Given in Table 3.29.

**Table 3.29 Aquatic Vegetation**

| <b>S. No.</b> | <b>Scientific Name</b>    | <b>Common Name</b>  | <b>Vernacular Name (Tamil)</b> | <b>IUCN Red List of Threatened Species</b> |
|---------------|---------------------------|---------------------|--------------------------------|--------------------------------------------|
| 1             | <i>Eichornia Crassipe</i> | Water Hyacinth      | Agayatamarai                   | NA                                         |
| 2             | <i>Aponogeton natans</i>  | Floating Lace Plant | Kottikizhangu                  | NA                                         |
| 3             | <i>Nymphaea Nouchali</i>  | Blue Water Lily     | Nellambal                      | LC                                         |
| 4             | <i>Carex Cruciata</i>     | Cross Grass         | Koraipullu                     | NA                                         |
| 5             | <i>Cynodon Dactylon</i>   | Scutch Grass        | Arugampullu                    | LC                                         |
| 6             | <i>Cyperus Exaltatus</i>  | Tall Flat Sedge     | Koraikizhangu                  | LC                                         |

\*Lc- Least Concern, Na-Not Yet Assessed

### ***Food chain***

The food chain in aquatic ecosystems often begins with the algae or phytoplankton producers, and then the zooplankton that feed on them. This type of food chain is found in Noyal River by phytoplankton, zooplankton, fish and Artiola gray.

Ex: Phytoplankton→ Zooplankton→ Small fish→ Large fish

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

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

## Agriculture & Horticulture in Krishnagiri district

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

### Major Agricultural Crops

Major horticulture crops cultivated in this district are fruit crops like mango, banana, Sapota and guava, vegetables like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and horticulture in 1km radius is given in Table. 3.30. Agricultural land in the study area.

**Table 3.30 Major Crops in 1km radius**

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

### Major Horticulture Crops

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

### Horticulture

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

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

| Sl.No                            | Common Name   | Scientific Name               | Family         |
|----------------------------------|---------------|-------------------------------|----------------|
| <b>Major Horticultural Crops</b> |               |                               |                |
| 1                                | Banana        | <i>Musa</i>                   | Musaceae       |
| 2                                | Mango         | <i>Mangifera indica</i>       | Anacardiaceae  |
| 4                                | Guava         | <i>Psidium guajava</i>        | Myrtaceae      |
| 5                                | Sapota        | <i>Manilkara zapota</i>       | Sapotaceae     |
| 6                                | Lemon         | <i>Citrus × limon</i>         | Rutaceae       |
| 7                                | Papaya        | <i>Carica papaya</i>          | Caricaceae     |
| <b>Vegetables</b>                |               |                               |                |
| 8                                | Onion         | <i>Allium cepa</i>            | Amaryllidaceae |
| 9                                | Tapioca       | <i>Manihot esculenta</i>      | Spurges        |
| 10                               | Brinjal       | <i>Solanum melongena</i>      | Nightshade     |
| 11                               | Tomato        | <i>Solanum lycopersicum</i>   | Nightshade     |
| 12                               | Bottle Gourd  | <i>Lagenaria siceraria</i>    | Cucurbits      |
| 13                               | Veandai kai   | <i>Abelmoschus esculentus</i> | Mallows        |
| 14                               | Moringa       | <i>Moringa oleifera</i>       | Moringaceae    |
| 15                               | Mullangi      | <i>Raphanus sativus</i>       | Brassicaceae   |
| <b>Flowers</b>                   |               |                               |                |
| 18                               | Jasmine       | <i>Jasminum</i>               | Jasminaceae    |
| 20                               | Sambanthi poo | <i>Crysanthimum</i>           | Asteraceae     |
| 21                               | Rose & Jathi  | <i>Rosa</i>                   | Rosaceae       |
| 23                               | Tuberose      | <i>Polianthes tuberosa</i>    | Asparagus      |
| <b>Spices and Condiments</b>     |               |                               |                |
| 24                               | Chillies      | <i>Capsicum frutescens</i>    | Solanaceae     |
| 25                               | Turmeric      | <i>Curcuma longa</i>          | Zingiberaceae  |
| 26                               | Curry leaf    | <i>Murraya koenigii</i>       | Rutaceae       |

**Results**

The biodiversity assessment of the proposed project site has identified no ecologically sensitive areas within the core or buffer zones. The flora and fauna observed in the study area are commonly occurring species, with no IUCN-listed rare, endangered, endemic, or threatened (REET) species present, except for some species classified as of least concern. Additionally, the site is not located on any migratory routes for fauna. Operations at the granite quarry may generate dust particles. Implementing a green belt composed of native trees could help mitigate the dust effect on nearby flora and fauna. Key recommendations from the assessment include adopting green mining strategies to minimize environmental impact and developing a green

belt with native trees to reduce dust movement from mining activities. this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

### **3.7 SOCIO ECONOMIC ENVIRONMENT**

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

#### **3.7.1 Objectives of the Study**

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

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



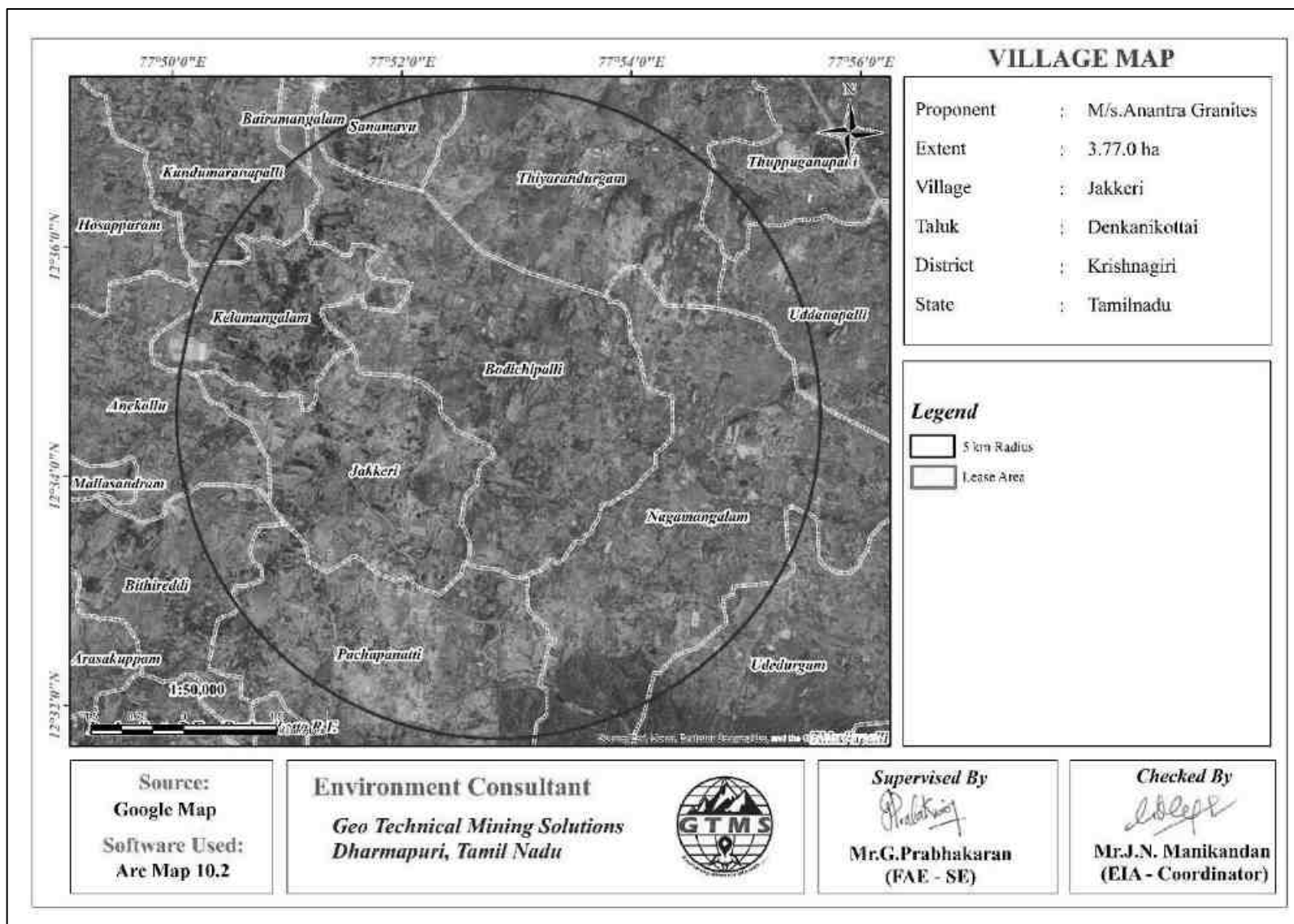


**Figure 3.28 Socio Economic Village Boundary Map**

### 3.7.2 Primary Data Collection

Primary data was collected through household survey, Focus Group Discussions (FGD) with key stakeholders and public consultations. The primary data collection and consultations were carried out with the objectives of:

- Assessing the socio-economic situation of the local people
- Creating public awareness about the project
- Assessing the views of local people about the project and understanding the needs of the community for possible incorporation into community development plans.

For the primary survey, the study area was divided into three zones depending upon the distance from the project site: the study area of three impact zones is given as Figure 3.28.

**Zone 1 (Core Zone):** 0-1km from the proposed project site

**Zone 2 (Low impact zone):** 1-5km from the proposed project site

### 3.7.3 Collection of Data from Secondary Sources

Data from secondary sources were collected on following aspects:

- Demographic profile of the area
- Economic profile of the area

**Table 3.32 Type of Information and Sources**

| Information                  | Source                                   |
|------------------------------|------------------------------------------|
| Demography                   | District Census Handbook, Govt. of India |
| Economic profile of the area | Census of India, Tamil Nadu State        |

### **Primary data of Socio-Economic Profile of the Study Area - Jakkeri Village, Denkanikottai Taluk**

Jakkeri is a large village located in Denkanikottai Taluk of Krishnagiri district, Tamil Nadu with total 914 families residing. The Jakkeri village has population of 3957 of which 1989 are males while 1968 are females as per Population Census 2011. In Jakkeri village population of children with age 0-6 is 383 which makes up 9.68 % of total population of village. Average Sex Ratio of Jakkeri village is 989 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Jakkeri as per census is 1016, higher than Tamil Nadu average of 943.

Jakkeri village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Jakkeri village was 65.67 % compared to 80.09 % of Tamil Nadu. In Jakkeri Male literacy stands at 74.32 % while female literacy rate was 56.90 % table 3.33.

**Table. 3.33 Jakkeri Village Population Facts**

| <b>Particulars</b>  | <b>Total</b> | <b>Male</b> | <b>Female</b> |
|---------------------|--------------|-------------|---------------|
| Total No. of Houses | 914          | -           | -             |
| Population          | 3957         | 1989        | 1968          |
| Child (0-6)         | 383          | 190         | 193           |
| Schedule Caste      | 844          | 420         | 424           |
| Schedule Tribe      | 127          | 67          | 60            |
| Literacy %          | 65.67        | 74.32       | 56.90         |
| Total Workers       | 2088         | 1252        | 836           |
| Main Worker         | 1735         | -           | -             |
| Marginal Worker     | 353          | 182         | 171           |

Source: <https://www.census2011.co.in/data/village/644027-jakkeri-tamil-nadu.html>

### **3.7.4 Working Population- Jakkeri Village, Denkanikottai Taluk**

In Jakkeri village out of total population, 2088 were engaged in work activities. 83.09 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 16.91 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2088 workers engaged in Main Work, 467 were cultivators (owner or co-owner) while 814 were Agricultural labourer.

#### ***Benefits:***

The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. The number of villages and settlements within a radius of 5 km from the project site along with population, their education level etc. are given in the table 3.35.

### **3.7.5 Krishnagiri District**

Krishnagiri district is bounded by Vellore and Thiruvannamalai districts in the East, Karnataka state in the west, State of Andhra Pradesh in the North Dharmapuri District in the south. Its area is 5143 Sq. Kms. The average rainfall is 830 mm per annum. Three languages namely Tamil, Telugu and Kannada are predominantly spoken in this district. Krishnagiri District has 2 Municipalities, 10 Panchayat Unions, 7 Town Panchayats, 352 Village Panchayats and 636 Revenue Villages. In 2011, Krishnagiri had population of 1,879,809 of which male and female were 960,232 and 919,577 respectively. In 2001 census, Krishnagiri had a population of 1,561,118 of which males were 803,077 and remaining 758,041 were females. Average literacy rate of Krishnagiri in 2011 were 71.46 compared to 71.46 of 2001. If things are looked out at gender wise, male and female literacy were 78.72 and 63.91 respectively. For 2001 census, same figures stood at 72.50 and 51.62 in Krishnagiri District.

Total literate in Krishnagiri District was 1,187,958 of which male and female were 667,062 and 520,896 respectively. In 2001, Krishnagiri District had 838,547 in its district.

With regards to Sex Ratio in Krishnagiri, it stood at 958 per 1000 male compared to 2001 census figure of 944. The average national sex ratio in India is 940 as per latest reports of Census 2011 Directorate. In 2011 census, child sex ratio is 926 girls per 1000 boys compared to figure of 869 girls per 1000 boys of 2001 census data. In census enumeration, data regarding child under 0-6 age were also collected for all districts including Krishnagiri. There was total 217,323 children under age of 0-6 against 214,954 of 2001 census. Of total 217,323 male and female were 112,832 and 104,491 respectively. Child Sex Ratio as per census 2011 was 926 compared to 869 of census 2001. In 2011, Children under 0-6 formed 11.56 percent of Krishnagiri District compared to 13.77 percent of 2001. There was net change of - 2.21 percent in this compared to previous census of India.

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



**Figure 3.29 Photographs of the Socio-Economic Survey**

**Table 3.34 Population and Literacy Data of Study Area**

| Village Name     | No. of Houses | Total Population |        | Child (0-6) |        | Schedule Caste |        | Schedule Tribe |        | Literacy % |        | Total Workers |        |
|------------------|---------------|------------------|--------|-------------|--------|----------------|--------|----------------|--------|------------|--------|---------------|--------|
|                  |               | Male             | Female | Male        | Female | Male           | Female | Male           | Female | Male       | Female | Male          | Female |
| Anekollu         | 628           | 1471             | 1387   | 179         | 157    | 64             | 72     | 1              | -      | 66.64      | 48.78  | 918           | 795    |
| Bairamangalam    | 1207          | 2569             | 2363   | 258         | 262    | 638            | 575    | 5              | 6      | 83.95      | 68.35  | 1573          | 757    |
| Bithireddi       | 412           | 871              | 823    | 86          | 86     | 210            | 209    | 47             | 49     | 67.52      | 51.15  | 557           | 400    |
| Bodichipalli     | 1176          | 2549             | 2433   | 271         | 287    | 210            | 222    | 0              | 0      | 71.84      | 56.48  | 1430          | 678    |
| Jakkeri          | 825           | 1745             | 1658   | 185         | 199    | 363            | 361    | 24             | 20     | 75.38      | 56.61  | 1022          | 638    |
| Kelamangalam     | 2583          | 2583             | 5576   | 5433        | 641    | 582            | 471    | 16             | 11     | 85.80      | 72.82  | 2445          | 1021   |
| Kundumaranapalli | 694           | 1629             | 1447   | 177         | 156    | 162            | 148    | 84             | 75     | 71.97      | 51.51  | 913           | 547    |
| Nagamangalam     | 1215          | 2654             | 2445   | 275         | 259    | 403            | 382    | 102            | 96     | 66.08      | 48.08  | 1514          | 1104   |
| Pachapanatti     | 143           | 338              | 297    | 40          | 36     | 11             | 9      | 0              | 0      | 58.72      | 43.68  | 201           | 145    |
| Sanamavu         | 716           | 1614             | 1450   | 171         | 158    | 238            | 228    | 4              | 5      | 72.56      | 50.46  | 936           | 610    |
| Thiyarandurgam   | 189           | 434              | 436    | 41          | 43     | 58             | 51     | 0              | 0      | 66.16      | 45.80  | 254           | 207    |
| Thuppuganapalli  | 948           | 2147             | 2038   | 223         | 208    | 448            | 442    | 1              | 0      | 73.65      | 56.67  | 1211          | 741    |
| Uddanapalli      | 988           | 2110             | 2031   | 226         | 217    | 181            | 187    | 0              | 0      | 74.52      | 58.05  | 1162          | 754    |
| Udedurgam        | 592           | 1341             | 1303   | 143         | 124    | 248            | 219    | 16             | 17     | 64.94      | 49.36  | 772           | 584    |
| Total            | 12519         | 27048            | 25542  | 3096        | 2934   | 3706           | 3594   | 300            | 279    | 74.19      | 57.17  | 14938         | 8984   |

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

**Table 3.35 Workers Profile of Study Area**

| <b>Village</b>   | <b>Total Worker<br/>Population<br/>Person</b> | <b>Total Worker<br/>Population<br/>Male</b> | <b>Total Worker<br/>Population<br/>Female</b> | <b>Main Working<br/>Population<br/>Person</b> | <b>Main<br/>Cultivator<br/>Population<br/>Person</b> | <b>Main<br/>Agricultural<br/>Labourers<br/>Population<br/>Person</b> | <b>Main Other<br/>Workers<br/>Population<br/>Person</b> | <b>Non-Working<br/>Population<br/>Person</b> |
|------------------|-----------------------------------------------|---------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------|
| Anekollu         | 1713                                          | 918                                         | 795                                           | 1496                                          | 923                                                  | 446                                                                  | 125                                                     | 1145                                         |
| Bairamangalam    | 2330                                          | 1573                                        | 757                                           | 1723                                          | 725                                                  | 282                                                                  | 682                                                     | 2602                                         |
| Bithireddi       | 957                                           | 557                                         | 400                                           | 622                                           | 196                                                  | 215                                                                  | 193                                                     | 737                                          |
| Bodichipalli     | 2108                                          | 1430                                        | 678                                           | 1342                                          | 473                                                  | 647                                                                  | 204                                                     | 2874                                         |
| Jakkeri          | 1660                                          | 1022                                        | 638                                           | 1285                                          | 398                                                  | 610                                                                  | 256                                                     | 1743                                         |
| Kelamangalam     | 3466                                          | 2445                                        | 1021                                          | 3290                                          | 110                                                  | 161                                                                  | 2915                                                    | 7543                                         |
| Kundumaranapalli | 1460                                          | 913                                         | 547                                           | 1118                                          | 415                                                  | 450                                                                  | 227                                                     | 1616                                         |
| Nagamangalam     | 2645                                          | 1541                                        | 1104                                          | 2115                                          | 694                                                  | 1114                                                                 | 268                                                     | 2454                                         |
| Pachapanatti     | 346                                           | 201                                         | 145                                           | 284                                           | 126                                                  | 129                                                                  | 24                                                      | 289                                          |
| Sanamavu         | 1546                                          | 936                                         | 610                                           | 1264                                          | 447                                                  | 614                                                                  | 185                                                     | 1518                                         |
| Thiyarandurgam   | 461                                           | 254                                         | 207                                           | 374                                           | 140                                                  | 188                                                                  | 42                                                      | 409                                          |
| Thuppuganapalli  | 1952                                          | 1211                                        | 741                                           | 1610                                          | 485                                                  | 812                                                                  | 286                                                     | 2233                                         |
| Uddanapalli      | 1916                                          | 1162                                        | 754                                           | 1495                                          | 382                                                  | 845                                                                  | 239                                                     | 2225                                         |
| Udedurgam        | 1356                                          | 772                                         | 584                                           | 1032                                          | 316                                                  | 540                                                                  | 164                                                     | 1288                                         |

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

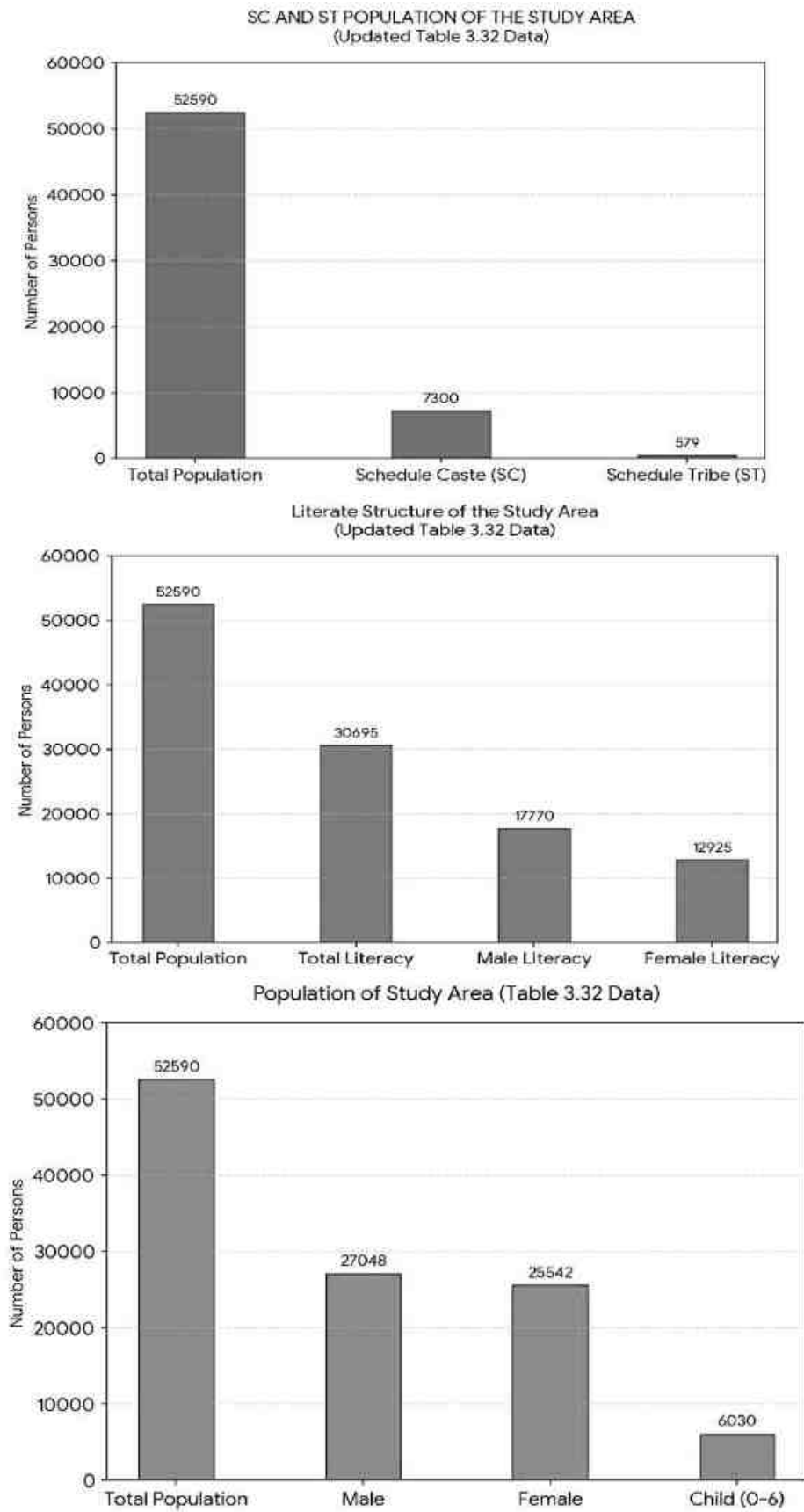


**Figure 3.30 Chart Diagram about Population, Literacy Structure in Surrounding Villages**

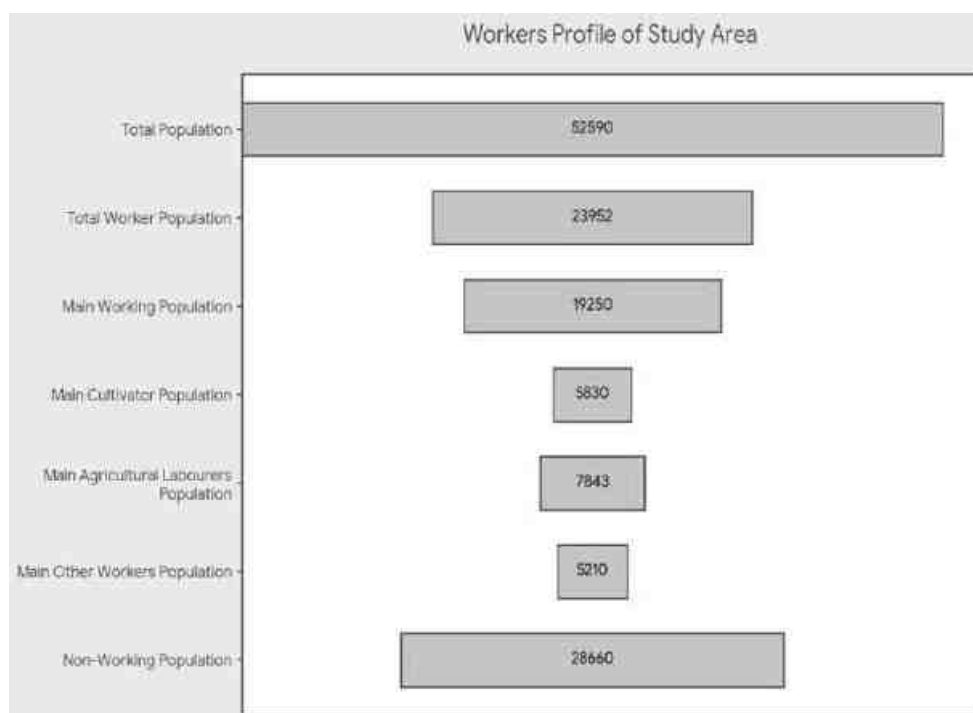


**Figure 3.31 Chart Diagram about Workers Profile in Surrounding Villages**

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

Awareness and opinion of the people about the project for the assessment of awareness about the project activities and opinion about it, following salient observations were recorded,

During survey it was observed that only nearby villagers are aware and other villagers are not aware about the proposed project.

People in the region expect job opportunities and improvement in educational, transportation and sanitation facility from project authority.

### **3.7.6 Recommendation and Suggestions**

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



- Women empowerment– Home based income generation activities, vocational training programs and common education centre for increasing the literacy rate.
- Education – Free uniform, construction of common rooms and library, computer education and physical education, additional schools for girls, furniture and equipment in schools, up-gradation of existing school infrastructure.
- Agriculture/livestock – Infrastructure such as agricultural practices, electricity connections, assistance with buying improved tools and equipment, capacity building, supply and/or knowledge of better variety of seeds, pasture land development and trainings on animal husbandry& facility of veterinary doctor.
- Health – Improvements in sanitary conditions of villages, assistance with construction of latrines, improvement in drainage system, health camps and awareness campaigns for diseases like common cold, malaria, typhoid, tuberculosis, yellow fever and pneumonia. Repairing of PHCs and Anganwadi centres.
- People with disability – Establishment of centre for special education, sensitization of the community towards disabled and awareness on Government schemes.
- While Developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.
- Connectivity –Transport connectivity to easiness accessibility to the region.

### **3.7.7 Conclusion**

The socio-economic study of surveyed villages 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 lack of permanent job to run their day-to-day life. To evaluate the impacts of proposed quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Hence, it can be concluded that the present environment status of the study area will not be affected by the Jakkeri Colour Granite cluster Quarries projects. Hence, we adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas. The proposed project will provide preferential of employment to the local people there by the livelihood standards will be improved.

### 3.8 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Colour Granite is proposed to be transported mainly through Village Rode and Denkanikottai to Bettamugilalam village road as shown in Table 3.36-3.39 and in Figure 3.32. 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 3.36 Traffic Survey Locations**

| Station Code | Road Name                       | Distance and Direction | Type of Road                    |
|--------------|---------------------------------|------------------------|---------------------------------|
| TS1          | Village Road                    | 0.26km NW              | Village Road                    |
| TS2          | Denkanikottai to Bettamugilalam | 3.0km N                | Denkanikottai to Bettamugilalam |

*Source: On-site monitoring by GTMS FAE & TM*

**Table 3.37 Existing Traffic Volume**

| Station code | HMV |     | LMV |     | 2/3 Wheelers |     | Total PCU |
|--------------|-----|-----|-----|-----|--------------|-----|-----------|
|              | No  | PCU | No  | PCU | No           | PCU |           |
| TS1          | 16  | 48  | 28  | 28  | 45           | 23  | 99        |
| TS2          | 115 | 345 | 47  | 47  | 88           | 44  | 436       |

*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 3.38 Multi Colour Granite Transportation Requirement**

| Transportation of Multi Colour Granite per day |                      |               |
|------------------------------------------------|----------------------|---------------|
| Capacity of trucks                             | No. of Trips per day | Volume in PCU |
| 15 tonnes                                      | 1                    | 3             |

*Source: Approved Mining Plan*

**Table 3.39 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                | 99                             | 3                                      | 102                  | 1200                                                |
| Uthangarai– Krishnagri NH77 | 436                            | 3                                      | 439                  | 1500                                                |

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

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

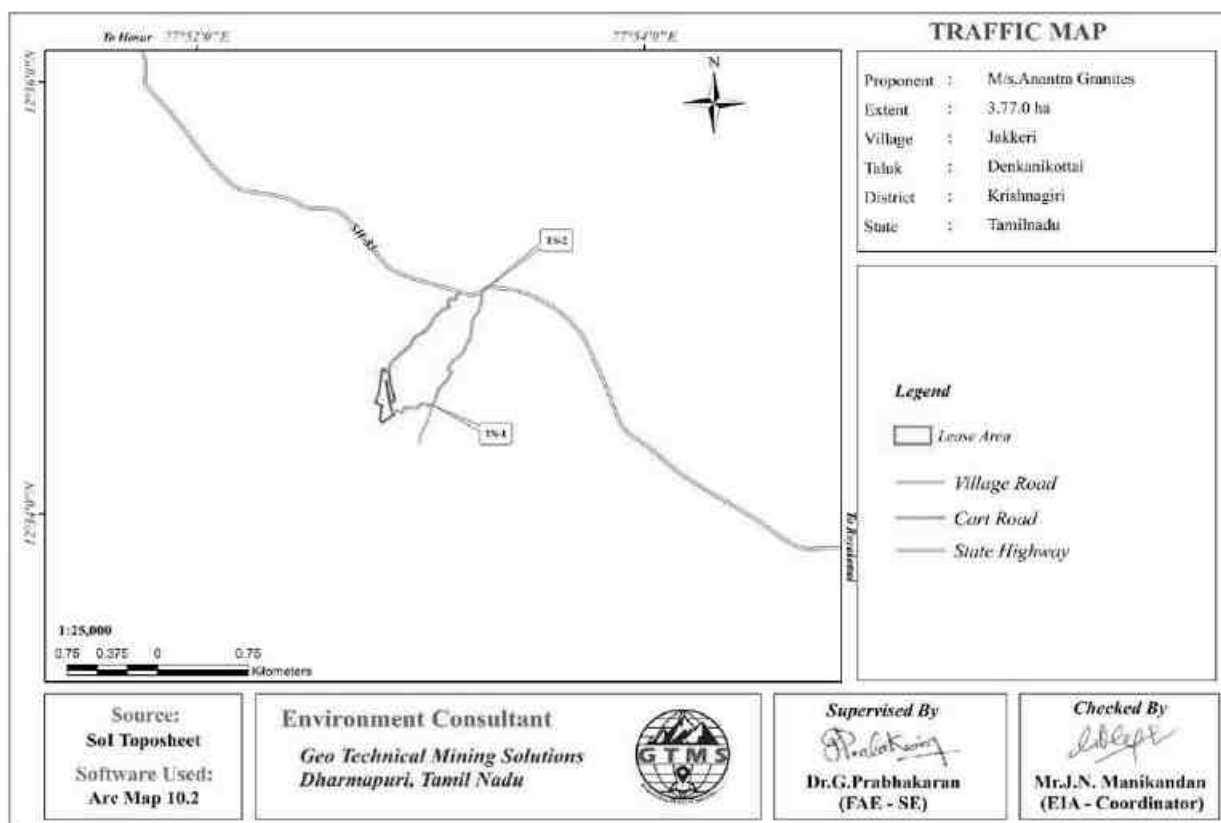


**Figure 3. 32 Traffic Density Map**

### 3.9 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, National Park within the project area to 10km radius. There is no Protected Forest area within 10 km radius from the proposed project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to

the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.40.

**Table 3.40 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              | Cauvery North wildlife sanctuary | 1.82km-SE                         |
| 2     | Reserve Forest                                     | Aiyur Ext-I R.F                  | 2.68km-NE                         |
|       |                                                    | Panai R.F                        | 7.19km-SW                         |
|       |                                                    | Kollatti                         | 2.22km-SW                         |
|       |                                                    | Denkanikotta R.F                 | 7.05km- N                         |
|       |                                                    | Noganur                          | 4.78km-NW                         |
|       |                                                    | Manchi R.F                       | 8.09km-SW                         |
|       |                                                    | Udedurgam R.F                    | 6.95km-NE                         |
|       |                                                    | Tholuvabetta R.F                 | 4.27km-S                          |
|       |                                                    | Marandahalli R.F                 | 7.08km-NE                         |
|       |                                                    | Sameri R.F                       | 4.74km-SE                         |
|       |                                                    | Galigattam R.F                   | 9.31km-SE                         |
| 3     | Lakes/ Reservoirs/ Dams/ Streams/ Rivers           | Nemrelli lake                    | 1.47km-N                          |
| 4     | Tiger Reserve/ Elephant Reserve/ Biosphere Reserve | None                             | Nil within 10km radius            |
| 5     | Critically Polluted Areas                          | None                             | Nil within 10km radius            |
| 6     | Mangroves                                          | None                             | Nil within 10km radius            |
| 7     | Mountains/ Hills                                   | None                             | Nil within 10km radius            |
| 8     | Notified Archaeological Sites                      | None                             | Nil within 10km radius            |
| 9     | Industries/ Thermal Power Plants                   | None                             | Nil within 10km radius            |
| 10    | Defense Installation                               | None                             | Nil within 10km radius            |

Source: Survey of India Toposheet



**Figure 3.33 Baseline monitoring Photos**

## CHAPTER IV

### ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

#### 4.0 GENERAL

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

#### 4.1 LAND ENVIRONMENT

##### 4.1.1 Anticipated Impact

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

##### 4.1.2 Common Mitigation measures for the proposed Project

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

## **4.2 SOIL ENVIRONMENT**

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

- ✚ Deterioration of soil quality in the surrounding area due to runoff from the project area
- ✚ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation

### **4.2.2 Common Mitigation Measures from proposed project**

- ✚ Construction of garland drains, settling pits, and check dams to prevent runoff and siltation
- ✚ Run-off diversion – Garland drains will be constructed around the project boundary to prevent surface flows from entering the quarry works areas and will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site.
- ✚ Retain existing or re-plant the vegetation will be retained at the site wherever possible.  
Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

## **4.3 WATER ENVIRONMENT**

### **4.3.1 Anticipated Impact**

- ✚ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ✚ As the proposed project acquires 3.2KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

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

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

- ✚ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program

## 4.4 AIR ENVIRONMENT

### 4.4.1 Anticipated Impact from proposed project

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

#### 4.4.1.1 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chaulya et al.,2001. The equations used for SPM 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). |

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>10</sub>, and PM<sub>2.5</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> | 0.593758504            | 37700                        | 1.57496E-05                            |
| Overall Mine | PM <sub>10</sub>  | 1.187517008            |                              | 3.14991E-05                            |

#### 4.4.1.2 Modelling of Incremental Concentration

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500 m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.4.

#### 4.4.1.3 Model Results

The post project Resultant Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, is given in the table shown below:

#### Mitigation Measures

- ✚ To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored
- ✚ Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- ✚ Transportation of material will be carried out during day time and material will be covered with tarpaulin
- ✚ The speed of tippers playing on the haul road will be limited to < 20 km/hr to avoid generation of dust
- ✚ The un-metalled haul roads will be compacted weekly before being put into use
- ✚ It will be ensured that all transportation vehicles carry a valid PUC certificate
- ✚ Haul roads and service roads will be graded to clear accumulation of loose materials
- ✚ Planting of trees all along main mine haul roads and around the project site will be practiced to prevent the generation of dust
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored

**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       | ---                        | --        | 22.28                                                | 6.93      | 29.21 | Below standard                                                  | 31.1                    | Not significant |
| AAQ2       | 1.18                       | NW        | 21.09                                                | 5         | 26.09 |                                                                 | 23.7                    |                 |
| AAQ3       | 3.62                       | NW        | 19.19                                                | 4         | 23.19 |                                                                 | 20.8                    |                 |
| AAQ4       | 3.78                       | SW        | 16.73                                                | 4         | 20.73 |                                                                 | 23.9                    |                 |
| AAQ5       | 1.78                       | E         | 15.65                                                | 1         | 16.65 |                                                                 | 6.4                     |                 |
| AAQ6       | 2.69                       | S         | 14.28                                                | 4         | 18.28 |                                                                 | 28.0                    |                 |

**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       | ---                        | --        | 45.96                                               | 12.9      | 58.86 | Below standard                                                   | 28.1                    | Not significant |
| AAQ2       | 1.18                       | NW        | 47.01                                               | 10        | 57.01 |                                                                  | 21.3                    |                 |
| AAQ3       | 3.62                       | NW        | 42.36                                               | 8         | 50.36 |                                                                  | 18.9                    |                 |
| AAQ4       | 3.78                       | SW        | 41.81                                               | 5         | 46.81 |                                                                  | 12.0                    |                 |
| AAQ5       | 1.78                       | E         | 39.14                                               | 3         | 42.14 |                                                                  | 7.7                     |                 |
| AAQ6       | 2.69                       | S         | 35.70                                               | 3         | 38.7  |                                                                  | 8.4                     |                 |

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

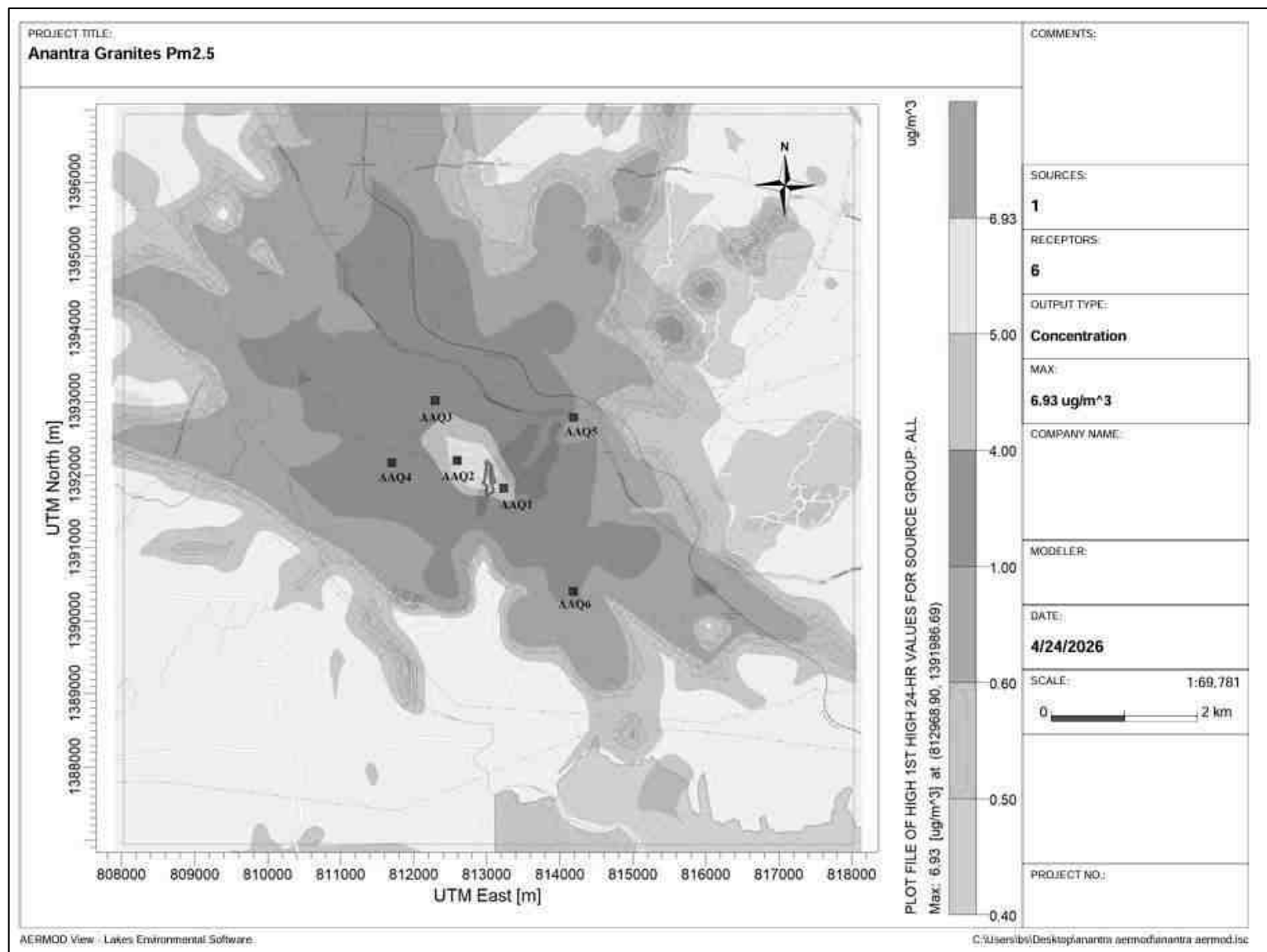


**Figure 4. 1 Predicted Incremental Concentration of PM<sub>2.5</sub>**

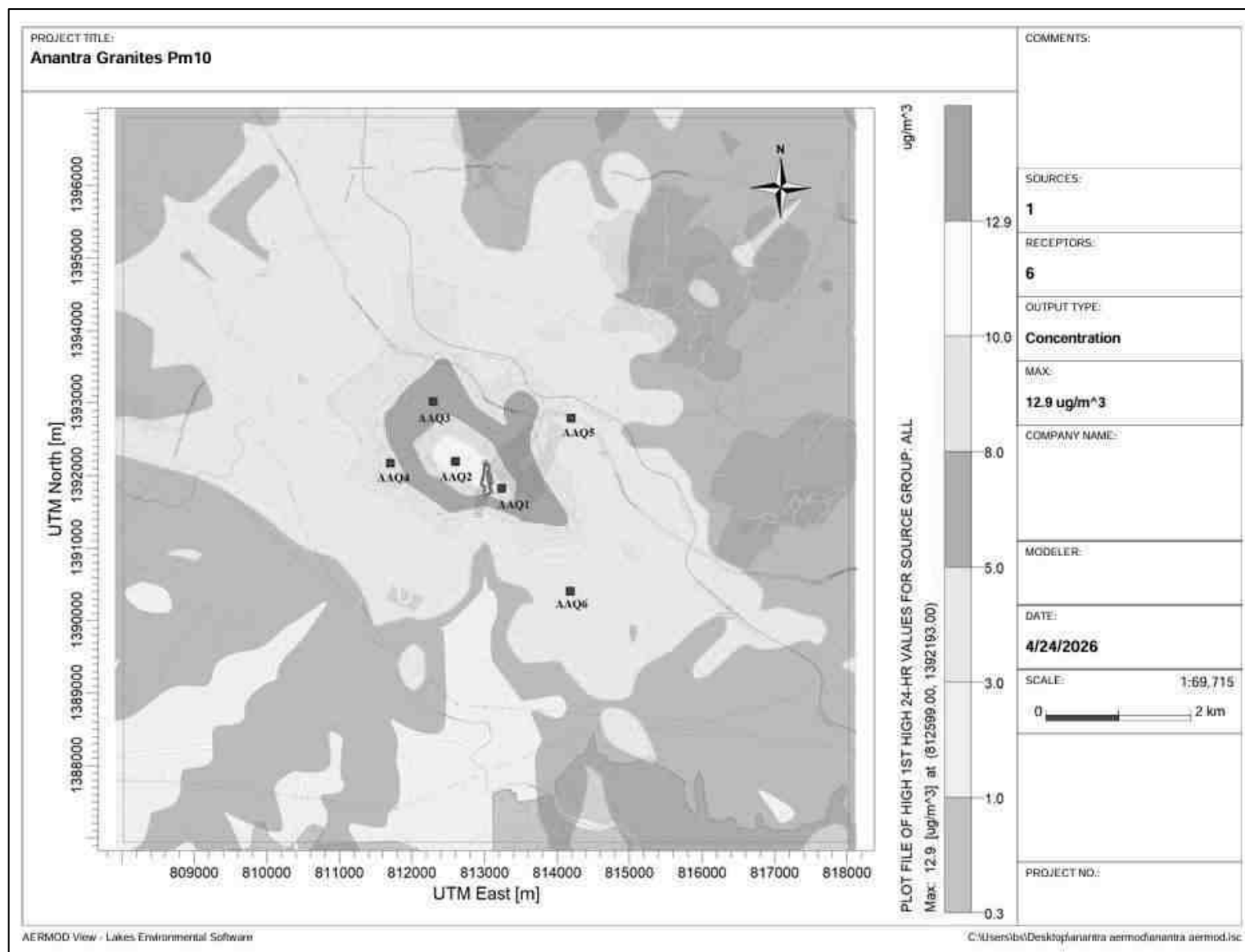


**Figure 4.2 Predicted Incremental Concentration of PM<sub>10</sub>**

## 4.5 NOISE ENVIRONMENT

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

$$L_{p2} = L_{p1} - 20 \log (r_2/r_1) - A_{e1,2}$$

Where,  $L_{p1}$  &  $L_{p2}$  are sound levels at points located at distances  $r_1$  and  $r_2$  from the source;  $A_{e1,2}$  is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$L_{p \text{ total}} = 10 \log \{10^{(L_{p1}/10)} + 10^{(L_{p2}/10)} + 10^{(L_{p3}/10)} + \dots\}$$

### 4.5.1 Anticipated Impact

The attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are: source data, receptor data, and attenuation factor. Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.5

**Table 4.5 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                           | Tipper               | No                    | 84                                            |
| <b>Total Noise Produced</b> |                      |                       | <b>90.0</b>                                   |

\*50 feet from source = 15.24 meters

The total noise to be produced by mining activity is calculated to be 90.0 dB (A). Therefore, we have considered equipment and operation noise levels (max) to be approx. 90.0

dB (A) for noise prediction modelling. The results of noise prediction modelling are shown in Table 4.6

**Table 4.6 Predicted Noise Incremental Values**

| Noise Monitoring Location | Distance From Project Site(m)                                                                                      | Baseline Noise Level (dBA)m During Day Time | Predicted Noise Level(dBA) | Total(dBA) |
|---------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------|------------|
| Nearby Core               | 100                                                                                                                | 54.2                                        | 44.0                       | 54.6       |
| Jakkeri                   | 1140                                                                                                               | 46.9                                        | 22.8                       | 46.9       |
| Bodichipalli              | 3600                                                                                                               | 50.1                                        | 12.8                       | 50.1       |
| D. Kothapalli             | 3760                                                                                                               | 42.2                                        | 12.5                       | 42.2       |
| Anusonai                  | 1780                                                                                                               | 46.1                                        | 19.0                       | 46.1       |
| Pachapanatti              | 2660                                                                                                               | 42.8                                        | 15.5                       | 42.8       |
| NAAQ Standards            | Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A)<br>Residential Day Time -55 dB (A) & Night Time- 45 dB (A) |                                             |                            |            |

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

#### **4.5.2 Common Mitigation Measures**

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

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

### 4.5.3 Ground Vibrations

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

## 4.6 ECOLOGY AND BIODIVERSITY

### 4.6.1 Impact on Ecology and Biodiversity

- ✚ There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- ✚ Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region.
- ✚ A total of 17 species belonging to 12 families have been recorded from the mining lease area. 2 trees, 6 shrubs and 9 herbs were identified. The survival rate of uprooted trees is 30% Quarry so instead of one tree 10 saplings are bought and planted in 7.5 conservation zone.
- ✚ Carbon released from quarrying machineries and tippers during quarrying would be 34 kg per day, 9065kg per year and 45326 kg over five years, as provided in Table 4.7.

**Table 4.7 Carbon Released During Five Years of colour Granite Production**

|                                  | Per day | Per year | Per five years |
|----------------------------------|---------|----------|----------------|
| Fuel consumption of excavator    | 34      | 9065     | 45326          |
| Total fuel consumption in liters | 718     | 194005   | 970026         |
| CO <sub>2</sub> emission in kg   | 2014    | 544228   | 2721143        |

### 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 13067 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 4.19), about 935 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 65335 kg of the total carbon, as provided in Table 4.8.

**Table 4.8 CO<sub>2</sub> Sequestration**

|                                                          |       |        |         |
|----------------------------------------------------------|-------|--------|---------|
| CO <sub>2</sub> sequestration in kg                      | 48    | 13067  | 65335   |
| Remaining CO <sub>2</sub> not sequestered in kg          | 1966  | 531161 | 2655809 |
| Trees required for environmental compensation            | 22116 |        |         |
| Area required for environmental compensation in hectares | 44    |        |         |

### **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 4.9-4.11. For greenbelt development, species are recommended, as shown in Table 4.9 on the basis of:

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

**Table 4.9 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<br>Well distinct in Palisade & |
| 2      | <i>Tectona grandis</i>       | Lamiaceae   | Teak        | Tree     |                                                                      |
| 3      | <i>Polyalthia longifolia</i> | Annonaceae  | Nettilingam | Tree     |                                                                      |
| 4      | <i>Albizia lebbeck</i>       | Fabaceae    | Vagai       | Tree     |                                                                      |



|    |                           |           |                 |      |                                                                                                                          |
|----|---------------------------|-----------|-----------------|------|--------------------------------------------------------------------------------------------------------------------------|
| 5  | <i>Delonix regia</i>      | Fabaceae  | Cemmayir-konrai | Tree | Spongy parenchyma. Spongy parenchyma is present at lower epidermis Many vascular bundles arranged almost parallel series |
| 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 4.10 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  |                                        |                                     |
|                                                 | 218                                          | 174                                    | 1962                                |
|                                                 | Number of plants outside the mine lease area |                                        |                                     |
|                                                 | 327                                          | 262                                    | 2943                                |
| <b>Total</b>                                    | <b>545</b>                                   | <b>436</b>                             | <b>4905</b>                         |

**Table 4.11 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) | 218                                           | 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))" | 43,600             | 6,540                    |
| Plantation outside the area                               | 327                                           | Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)                                                                                              | 98,100             | 9,810                    |
| <b>Total</b>                                              |                                               |                                                                                                                                                                                                                           | <b>1,41,700</b>    | <b>16,350</b>            |

Source: EMP budget

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

- ✚ Direct impact is anticipated on fauna of core zone
- ✚ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use.

#### **Mitigation Measures on Fauna**

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

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

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

#### **4.6.5 Mitigation Measures on agriculture and horticulture crops.**

- ✚ The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases.
- ✚ It is a granite quarry, no explosives are used, there is no possibility of vibration and dust, thus there is no possibility of damage to the adjacent agricultural land.
- ✚ Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled.
- ✚ A green belt will be created in 7.5m and 10m safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ✚ Transportation of material will be carried out during day time and material will be covered with tarpaulin

- ✚ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust.

## **4.7 SOCIO ECONOMIC ENVIRONMENT**

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

### **4.7.1 Anticipated Impact**

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

### **4.7.2 Mitigation Measures**

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

## **4.8 OCCUPATIONAL HEALTH AND SAFETY**

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

- ❖ Respiratory hazards

- ❖ Noise
- ❖ Physical hazards
- ❖ Occupational Health Survey

#### **4.8.1 Respiratory Hazards**

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

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

#### **4.8.2 Noise**

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

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

#### **4.8.3 Physical Hazards**

The following measures are proposed for control of physical hazards

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

#### **4.8.4 Occupational Health Survey**

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting general physical tests, audiometric tests, full chest, X-ray, lung function tests, spiro metric tests, periodic medical examination – yearly, Lung function/ Silicosis test – yearly, those who are exposed to dust and eye test. Essential medicines will be provided at the site. The medicines and other test facilities

will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

#### **4.9 Mine Waste Management**

No waste is anticipated from any of the proposed quarries.

#### **4.10 MINE CLOSURE**

Mine closure plan is the most important environmental requirement in mineral mining projects. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project.

Objective of Mine closure

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

##### **4.10.1 Mine Closure criteria**

The criteria involved in mine closure are discussed below:

##### **4.10.1.1 Physical Stability**

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.

##### **4.10.1.2 Chemical Stability**

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

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

#### **4.10.1.3 Biological Stability**

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc., A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

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

## **CHAPTER V**

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

#### **5.0 INTRODUCTION**

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

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

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

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

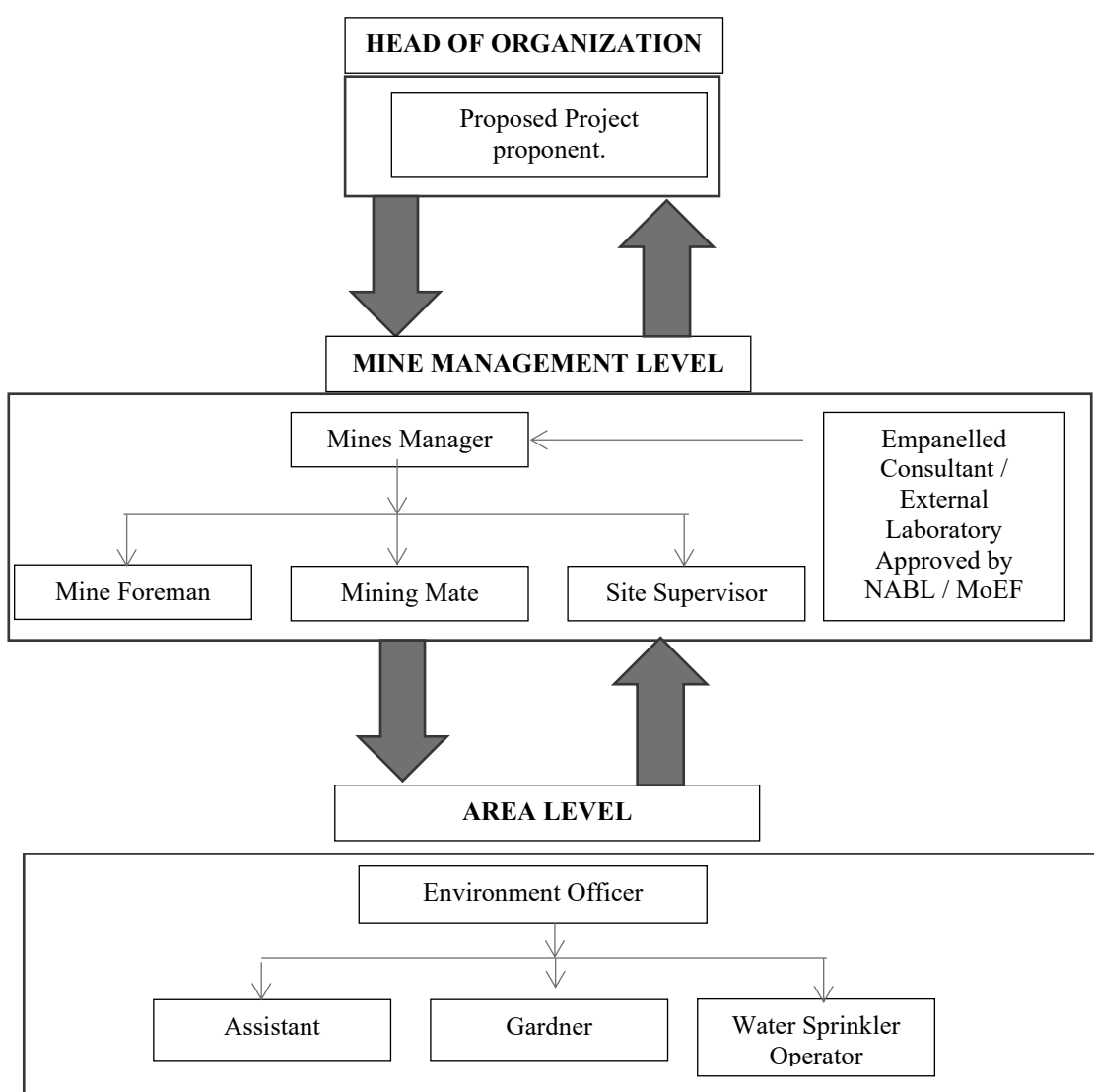


**Figure 6.1 Proposed environmental monitoring chart**

## 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: EIA 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 **1,45,000** /- 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            | Greenbelt              | -            | Rs 10,000/-              |
| <b>Total</b> |                        | -            | <b>Rs 1,45,000 /-</b>    |

Source: Field Data

## 6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

## **CHAPTER VII**

### **ADDITIONAL STUDIES**

#### **7.0 GENERAL**

Additional studies deal with:

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

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

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

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

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

**Table 7.1 Risk Assessment & Control Measures for Proposed Project**

| S. No. | Risk factors                                              | Causes of risk                                | Control measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|-----------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Accidents due to explosives and heavy mining machineries. | Improper handling and unsafe working practice | <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>✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited.</li> <li>✓ Fire-fighting 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 on daily basis 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's guidelines.</li> </ul> |
| 2      | Drilling                                                  | Improper and unsafe practices; Due to high    | <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> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|   |                |                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                | <p>pressure of compressed air, hoses may burst; Drill Rod may break;</p>                                                                                                                                 | <ul style="list-style-type: none"> <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>✓ Drilling 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 as per operator manual.</li> <li>✓ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition.</li> <li>✓ Operator shall regularly use all the personal protective equipment.</li> </ul> |
| 3 | Transportation | <p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal &amp; overtaking of vehicle</p> <p>Operator of truck leaving his</p> | <ul style="list-style-type: none"> <li>✓ Before commencing work, drivers personally check the truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition.</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> </ul>                                                                                                      |

|   |                                       |                                      |                                                                                                                                                                                                         |
|---|---------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   |                                       | cabin when it is loaded.             | ✓ All vehicles should be fitted with reverse horn with one spotter at every tipping point<br>✓ Loading according to the vehicle capacity<br>✓ Periodical maintenance of vehicles as per operator manual |
| 4 | Natural calamities                    | Unexpected happenings                | ✓ Escape Routes will be provided to prevent inundation of storm water<br>✓ Fire Extinguishers & Sand buckets                                                                                            |
| 5 | Failure of Mine Benches and Pit Slope | Slope geometry, Geological structure | ✓ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m.                                                                                                                  |

*Source: Analysed and proposed by FAE & EC*

### 7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

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

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

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



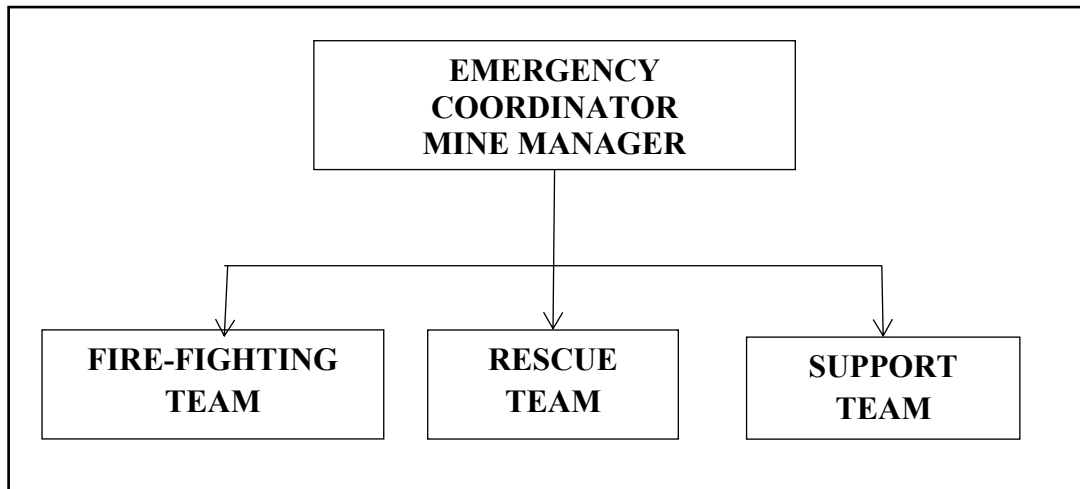


**Figure 7.1 Disaster management team layout for proposed project**

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.

### **7.3.1 Emergency Control Procedure**

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

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

- ❖ Emergency security controller

## 7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the projects within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, there is only one proposed and one existing project known as P1 & E1 is taken into consideration. The details of P1 have been given in Table 7.2, and E1 have been given in the Table 7.3.

**Table 7.2 Salient Features of the cluster Project 'P1'**

|                                        |                                             |                |
|----------------------------------------|---------------------------------------------|----------------|
| Name of the Quarry                     | M/s. Anantra Granites                       |                |
| Type of Land                           | Patta Land                                  |                |
| Extent                                 | 3.77.0ha                                    |                |
| S.F. No                                | 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 |                |
| Toposheet No                           | 57- H/14                                    |                |
| Highest Elevation                      | 814m AMSL                                   |                |
| Latitude                               | 12°34'25.47134"N to 12°34'40.41361"N        |                |
| Longitude                              | 77°52'47.90331"E to 77°52'53.17461"E        |                |
| Proposed depth for five Years          | 30m BGL                                     |                |
| As per ToR ultimate depth for 20 years | 35m BGL                                     |                |
| Geological Resources                   | ROM (MT)                                    | Recovery @ 40% |
|                                        | 29,96,598MT                                 | 11,98,639MT    |
| Mineable Reserves                      | 8,13,100MT                                  | 3,25,240MT     |
| Proposed production for 5 years        | 3,04,114MT                                  | 1,21,646MT     |
| Method of Mining                       | Open cast mechanized mining method          |                |
| Topography                             | Elevated Topography                         |                |
| Machinery requirements                 | Jack hammer                                 | 4              |
|                                        | Excavator                                   | 1              |
|                                        | Compressor                                  | 2              |
|                                        | Tipper                                      | 2              |
| Proposed Manpower Deployment           | 23 Nos                                      |                |
| Project Cost                           | Rs.74,40,655/-                              |                |
| Proposed Water Requirement             | 3.2KLD                                      |                |

**Table 7.3 Salient Features of the cluster Project 'E1'**

|                                     |                                                                              |                                |                  |                |
|-------------------------------------|------------------------------------------------------------------------------|--------------------------------|------------------|----------------|
| Name of the Quarry                  | R. Yasar Arabath Multi colour Granite quarry                                 |                                |                  |                |
| Type of Land                        | Patta Land                                                                   |                                |                  |                |
| Extent                              | 2.52.0 ha                                                                    |                                |                  |                |
| S.F. No                             | 374/6A, 374/6B and 374/6C                                                    |                                |                  |                |
| Toposheet No                        | 57-H/14                                                                      |                                |                  |                |
| Location of Project Site            | 12°34'16.28465"N to 12°34'21.89578"N<br>77°52'45.12902"E to 77°52'50.51803"E |                                |                  |                |
| Highest Elevation                   | 800m AMSL                                                                    |                                |                  |                |
| Proposed depth of Mining            | 59m (20m AGL + 39m BGL)                                                      |                                |                  |                |
|                                     | Recoverable<br>Resource @<br>35% (m³)                                        | Granite<br>Waste @<br>65% (m³) | Top Soil<br>(m³) | Waste<br>Ratio |
| Geological Resources in ROM         | 4,12,628                                                                     | 7,66,310                       | 13,092           | 1:1.86         |
| Mineable Reserves                   | 1,07,492                                                                     | 1,99,628                       | 7,185            | 1:1.86         |
| Proposed reserves for five<br>years | 12,462                                                                       | 23,142                         | 649              | 1:1.86         |
| Method of Mining                    | Open- Cast Mechanized mining                                                 |                                |                  |                |
| Topography                          | Elevated Topography                                                          |                                |                  |                |
| Machinery proposed                  | Jack Hammer                                                                  |                                | 6                |                |
|                                     | Compressor                                                                   |                                | 2                |                |
|                                     | Tipper                                                                       |                                | 2                |                |
|                                     | Hydraulic Excavator                                                          |                                | 1                |                |
| Proposed Manpower<br>Deployment     | 36 Nos                                                                       |                                |                  |                |
| Project Cost                        | Rs.2,35,01,000/-                                                             |                                |                  |                |
| CER Cost                            | Rs. 10,00,000/-                                                              |                                |                  |                |
| Proposed Water Requirement          | 2.0 KLD                                                                      |                                |                  |                |

**7.4.1 Air Environment**

As the production of rough stone and gravel plays a vital role in affecting the air environment. The data on the cumulative production resulting from cluster project have been given in Tables 7.4.

**Table 7.4 Cumulative Production Load of Multi Colour Granite**

| Quarry       | 5 Years in Ts | Per Year in Ts | Per Day in Ts | Number of Lorry Load Per Day |
|--------------|---------------|----------------|---------------|------------------------------|
| P1           | 121646        | 24329          | 90            | 5                            |
| E1           | 12462         | 2492           | 9             | 1                            |
| <b>Total</b> | <b>134108</b> | <b>26821</b>   | <b>99</b>     | <b>6</b>                     |

The cumulative study shows that the overall production of multi colour granite from the proposed quarry is 99MT per day with a capacity of 6 trips of multi colour granite per day.

#### 7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the cluster projects on air environment of the cluster have been provided in Table 7.5 The cumulative values resulting from the project for each pollutant do not exceed the permissible limits set by CPCB.

**Table 7.5 Cumulative impact results from the cluster projects**

| Pollutants        | Baseline Data ( $\mu\text{g}/\text{m}^3$ ) | Incremental Values ( $\mu\text{g}/\text{m}^3$ ) | Cumulative Value ( $\mu\text{g}/\text{m}^3$ ) |
|-------------------|--------------------------------------------|-------------------------------------------------|-----------------------------------------------|
|                   |                                            | P1                                              |                                               |
| PM <sub>2.5</sub> | 18.2                                       | 6.93                                            | 25.13                                         |
| PM <sub>10</sub>  | 42                                         | 12.9                                            | 54.9                                          |

#### 7.4.2 Noise Environment

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

**Table.7.6 Cumulative impact of noise from cluster projects**

| Location ID               | Distance (m) | Direction | Background Value (Day) dB(A) | Incremental Value dB(A) | Total Predicted dB(A) | Residential Area Standards dB(A) |
|---------------------------|--------------|-----------|------------------------------|-------------------------|-----------------------|----------------------------------|
| Habitation Near P1        | 1140         | NW        | 46.9                         | 22.8                    | 46.9                  | 55                               |
| Cumulative Noise (dB (A)) |              |           |                              |                         | 46.9                  |                                  |

Source: Lab Monitoring Data

The cumulative analysis of noise due to cluster proposed projects shows that habitation will receive about 46.9dB (A) respectively. The cumulative results for all the villages in consideration do not exceed the limit set by CPCB for residential areas for day time.

### 7.4.3 Socio Economic Environment

Socio Economic benefits of the cluster project were calculated and the results have been shown in Table 7.7. The cluster project will contribute Rs. 20,00,000/-towards CER fund.

**Table 7.7 Socio Economic benefits from the cluster project**

| Location ID        | Project Cost             | CER Cost               |
|--------------------|--------------------------|------------------------|
| P1                 | Rs.74,40,655/-           | Rs. 10,00,000/-        |
| E1                 | Rs.2,35,01,000/-         | Rs. 10,00,000/-        |
| <b>Grand Total</b> | <b>Rs. 3,09,41,655/-</b> | <b>Rs. 20,00,000/-</b> |

**Table 7.8 Employment benefits from the cluster projects**

| Location ID        | Employment |
|--------------------|------------|
| P1                 | 23         |
| E1                 | 36         |
| <b>Grand Total</b> | <b>59</b>  |

A total of 59 people will get employment due to the cluster project in cluster

### 7.4.4 Ecological Environment

**Table 7.9 Greenbelt Development Benefits from cluster Projects**

| Code         | Number of Trees proposed | Area to be covered (m <sup>2</sup> ) | No. of Trees expected to be grown @ 80% survival rate | Species recommended                                                                |
|--------------|--------------------------|--------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------|
| P1           | 1885                     | 16965                                | 1508                                                  | <i>Azadirachta indica, Albizia lebbeck, Delonix regia, Techtona grandis, etc.,</i> |
| E1           | 1260                     | 11340                                | 1008                                                  |                                                                                    |
| <b>Total</b> | <b>3145</b>              | <b>28305</b>                         | <b>2516</b>                                           |                                                                                    |

Cumulative studies show that the cluster Projects will plant about 3145 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Techtona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 2516 trees will survive in this green belt development program.

## 7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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

### 7.5.1 Objective

- ❖ To investigate the actual supply chain network of plastic waste.

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

A detailed action plan to manage plastic waste has been provided in Table 7.10.

**Table 7.10 Action Plan to Manage Plastic Waste**

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

*Source: Proposed by FAEs and EC*

## **CHAPTER VIII**

### **PROJECT BENEFITS**

#### **8.0 GENERAL**

The proposed project at Jakkeri Village aims to produce of ROM- **3,04,114MT**, Recovery 40%- **121646MT**, Granite Wastage 60%- **182468MT** 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 23 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to about 10 persons in the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

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

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

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

The proposed quarry project is located in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District and 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 10km 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 Jakkeri 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. 16,60,24,860** 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.)          |                      |
|-----------------------------------------------------------------------------|-----------------------|----------------------|
|                                                                             | @40% Granite Recovery | @60% Granite Wastage |
| CER                                                                         | 10,00,000             |                      |
| Seigniorage @ Rs. 1180/MT of Granite recovery Rs. 100/MT of Granite wastage | 14,35,42,280          | 1,82,46,800          |
| District Mineral Foundation Tax @10% of Seigniorage                         | 14,35,422             | 1,82,468             |
| Green Tax @ 10% of Seigniorage                                              | 14,35,422             | 1,82,468             |
| <b>Total</b>                                                                | <b>14,74,13,124</b>   | <b>1,86,11,736</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. Anantra Granite** will:

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

### 10.1.1 Description of the Administration and Technical Setup

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

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

### 10.2 Budgetary Provision for Environmental Management

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

**Table 10.1 EMP Budget for Proposed Project**

| Attribute              | Mitigation measures                              | Provision for Implementation                                                                                                   | Capital Cost (Rs.) | Recurring Cost/annum (Rs.) |
|------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------|
| <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 | 38,000             | 38,000                     |

|                              |                                                                                                                            |                                                                                                                            |                 |                 |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|
|                              | Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers                                                | Fixed sprinkler installation and new water tanker cost for capital; and water sprinkling (thrice a day) cost for recurring | 8,00,000        | 50,000          |
|                              | 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            | 1,00,000        | 10,000          |
|                              | No overloading of trucks/tippers/tractors                                                                                  | Manual Monitoring through Security guard                                                                                   | 0               | 50,000          |
|                              | 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               | 10,000          |
|                              | Enforcing speed limits of 20 km/hr within ML area                                                                          | Installation of speed Governors @ Rs. 5000/- per tipper/dumper deployed                                                    | 10,000          | 1,000           |
|                              | Regular monitoring of exhaust fumes as per RTO norms                                                                       | Monitoring of exhaust fumes                                                                                                | 0               | 5,000           |
|                              | 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               | 70,000          |
|                              | Installing wheel wash system near exit gate of quarry                                                                      | Installation + Maintenance + Supervision                                                                                   | 50,000          | 20,000          |
| <b>Total Air Environment</b> |                                                                                                                            |                                                                                                                            | <b>9,98,000</b> | <b>2,54,000</b> |
| <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                                                                                                                 | 50,000       | 2,000        |
|                                | Chemical agent will be practiced to control Ground vibration and fly rocks                                             | Bulk density of rock = 2.6 for Rough Stone/Granite; = 2.5 for Limestone; 6 tons of production requires 1 kg pf explosives; Cost of NONEL = Rs. 30 per kg. | 0            | 50,000       |
| <b>Total Noise Environment</b> |                                                                                                                        |                                                                                                                                                           | <b>50000</b> | <b>52000</b> |

|                         |                                                                                                                                                     |                                                                                                                                                                                                                                                         |          |        |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|
| Waste Management        | Water Management (Spent Oil, Grease etc.,)                                                                                                          | Provision for domestic waste collection and disposal through authorized agency                                                                                                                                                                          | 25,000   | 20,000 |
|                         |                                                                                                                                                     | Installation of dust bins                                                                                                                                                                                                                               | 5,000    | 2,000  |
| Total Water Environment |                                                                                                                                                     |                                                                                                                                                                                                                                                         | 30,000   | 22,000 |
| Mine Closure            | 1. Progressive Closure Activity - Surface Runoff management                                                                                         | Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum                                                                                                                                                        | 38,000   | 19,000 |
|                         | 2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned                                                              | Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum                                                                                                                                                                     | 7,50,000 | 38,000 |
|                         | 3. Progressive Closure Activity Green belt development - 500 trees per one hectare - 200 trees inside lease area & 300 trees outside the lease area | Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)                                 | 3,00,000 | 45,000 |
|                         |                                                                                                                                                     | Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)                                                                                                                            | 90,000   | 9,000  |
|                         | 4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year                                                           | Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain.<br>*For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year | 1,20,000 | 0      |
|                         | 5. Contribution towards Green Fund. As per                                                                                                          | The Contribution towards Green Funds @ 10% of Seigniorage fee are                                                                                                                                                                                       | 0        | 0      |

|                                                               |                                                                                                                        |                                                                                                                                  |                  |                 |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|
|                                                               | TNMMCR 1959, Rule 35 A                                                                                                 | indicated as part of EMP Budget and not necessarily implemented in the Project Site                                              |                  |                 |
| <b>Mine Closure</b>                                           |                                                                                                                        |                                                                                                                                  | <b>12,98,000</b> | <b>1,11,000</b> |
| <b>Implementation of EC, Mining Plan &amp; DGMS Condition</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 mentioning Environmental Conditions                            | 10,000           | 1,000           |
|                                                               | Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions                      | Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms                                                 | 0                | 50,000          |
|                                                               | Workers will be provided with Personal Protective Equipment's                                                          | Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 23 Employees | 92,000           | 23,000          |
|                                                               | Health check up for workers will be provisioned                                                                        | IME & PME Health checkup @ Rs. 1000/- per employee                                                                               | 0                | 23,000          |
|                                                               | First aid facility will be provided                                                                                    | Provision of 2 Kits per Hectare @ Rs. 2000/- for 2 kits                                                                          | 0                | 7,000           |
|                                                               | Slope stability action plan                                                                                            | Slope stability action plan in the end of fourth year plan period                                                                | 2,00,000         | 0               |
|                                                               | Mine will have safety precaution signages, boards.                                                                     | Provision for signages and boards made                                                                                           | 10,000           | 2,000           |
|                                                               | No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for | Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost                      | 1,80,000         | 38,000          |



|                                                                     |                                                                   |                                                                                                                                                                                                                                |                       |                       |
|---------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|
|                                                                     | vehicles /HEMMs. Flaggers will be deployed for traffic management |                                                                                                                                                                                                                                |                       |                       |
|                                                                     | Installation of CCTV cameras in the mines and mine entrance       | Camera 4 Nos, DVR, Monitor with internet facility                                                                                                                                                                              | 30,000                | 5,000                 |
|                                                                     | Implementation as per Mining Plan and ensure safe quarry working  | Mines Manager (1 <sup>st</sup> Class / 2 <sup>nd</sup> Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate | 0                     | 7,80,000              |
|                                                                     | Anna University star rating                                       | Per Year @ Rs.10,000/- (20*10,000)                                                                                                                                                                                             | 2,00,000              | 0                     |
| <b>Total Implementation of EC, Mining Plan &amp; DGMS Condition</b> |                                                                   |                                                                                                                                                                                                                                | <b>7,22,000</b>       | <b>9,29,000</b>       |
| <b>Conservation Measures</b>                                        | -                                                                 | -                                                                                                                                                                                                                              | -                     | -                     |
| <b>Total EMP Budget</b>                                             |                                                                   |                                                                                                                                                                                                                                | <b>Rs. 30.98Lakhs</b> | <b>Rs. 13.68Lakhs</b> |

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

| <b>Recurring cost in Year 1</b> | <b>Recurring cost @ 5% inflation Rs (in Lakhs)</b> |               |               |               |               |               |               |               |                |
|---------------------------------|----------------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
|                                 | <b>Year 2</b>                                      | <b>Year 3</b> | <b>Year 4</b> | <b>Year 5</b> | <b>Year 6</b> | <b>Year 7</b> | <b>Year 8</b> | <b>Year 9</b> | <b>Year 10</b> |
| 13.68                           | 14.36                                              | 15.07         | 15.82         | 16.61         | 17.44         | 18.31         | 19.22         | 20.18         | 21.18          |

| <b>Recurring cost in Year 11</b> | <b>Recurring cost @ 5% inflation Rs (in Lakhs)</b> |                |                |                |                |                |                |                |                | <b>Total Recurring cost for 20 years in Lakhs</b> | <b>Total Cost (Capital + Recurring) In Lakhs</b>    |
|----------------------------------|----------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------------------------------------|-----------------------------------------------------|
|                                  | <b>Year 12</b>                                     | <b>Year 13</b> | <b>Year 14</b> | <b>Year 15</b> | <b>Year 16</b> | <b>Year 17</b> | <b>Year 18</b> | <b>Year 19</b> | <b>Year 20</b> |                                                   |                                                     |
| 22.23                            | 23.34                                              | 24.50          | 25.72          | 27.0           | 28.35          | 29.76          | 31.24          | 32.80          | 34.44          | <b>Rs.451.25Lakhs</b>                             | <b>(Rs. 30.98L + Rs. 451.25L) = Rs. 482.23Lakhs</b> |

In order to implement the environmental protection measures, an amount of **Rs. 30.98Lakhs** as capital cost and **Rs. 13.68Lakhs** as recurring cost/ annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the total recurring cost over 20 years is **Rs. 451.25Lakhs** and the overall EMP cost for 20 years will be **Rs. 482.23Lakhs**, as shown in Table 10.2.

### **10.3 CONCLUSION**

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

## CHAPTER XI

### SUMMARY AND CONCLUSION

#### 11.1 INTRODUCTION

As the proposed multi colour mining project (P1) falls within the quarry cluster of 500 m radius with the total extent of 6.29.10ha, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No's. 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 over the extent of 3.77.0ha is situated in the cluster falling in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu. The quarries involved in the calculation of cluster extent are one proposed quarry and one existing quarry.

#### 11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes from 12°34'25.47134"N to 12°34'40.41361"N Longitudes from 77°52'47.90331"E to 77°52'53.17461"E in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu. According to the approved mining plan, multi colour granite 40% recovery of about 121646MT and Granite waste 60% of 182468MT will be mined up to the depth of 30m BGL in the five years. The quarrying operation is proposed to be carried out by open cast manual mining method involving drilling and formation of benches of the prescribed dimensions.

#### 11.3 DESCRIPTION OF THE ENVIRONMENT

Baseline data were collected to evaluate the existing environmental condition in the core and buffer areas during **March– May 2026** as per CPCB guidelines. The data were collected by both the FAEs and NABL accredited and MoEF notified **Greenlink Analytical and Research Laboratory (India) Private Ltd** for the environmental attributes including soil, water, noise, air and by FAEs for ecology and biodiversity, traffic, and socio-economy.

##### 11.3.1 Land Environment

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

**Table.11.1 LULC Statistics of the Study Area**

| S. No        | Classification         | Extent (ha)    | Area (%)     |
|--------------|------------------------|----------------|--------------|
| 1            | Water bodies           | 23.42          | 0.28         |
| 2            | Plantation             | 38.23          | 0.46         |
| 3            | Crop land              | 4744.31        | 56.62        |
| 4            | Builtup land           | 1190.67        | 14.21        |
| 5            | Mining/Industrial area | 112.19         | 1.34         |
| 6            | Fallow land            | 2270.29        | 27.09        |
| <b>Total</b> |                        | <b>8379.12</b> | <b>100.0</b> |

### 11.3.2 Soil Environment

#### *Physical Characteristics & Chemical Characteristics*

##### 1. Soil pH and Electrical Conductivity (EC):

- **pH** ranged from 7.22 to 7.89 indicating that the soil is neutral to slightly alkaline, which is favourable for most crops.
- **EC** value ranged from 69.0 to 860.0 $\mu$ S/cm, suggesting low salt concentration and non-saline soil across the sampling area.

##### 2. Physical Properties

- **Bulk Density** values ranged from 1.16 to 1.50kg/cm<sup>3</sup>, which are within the typical range for loamy soils and support good root penetration and aeration.

##### 3. Soil Fertility Status:

- **Total Organic matter** levels ranged from 1.0 to 2.6% by weight, classifying soils as low to moderately fertile in terms of organic matter.
- **Nitrogen (N)** content varied from 110 to 400.0kg/ha by mass indicating moderate nitrogen availability.
- **Potassium (K)** ranged from 68.0 to 200kg/ha by mass moderate fertility potential in terms of potassium.

##### 4. Base Elements and Cation Ratios:

- **Calcium (Ca)** levels were highest with 200mg/kg and lowest with 350mg/kg.
- **Magnesium (Mg)** ranged from 150 to 396mg/kg.

#### **Conclusion:**

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

### 11.3.3 Water Environment

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. Four groundwater samples, known as SW1, SW2, BW1 and OW1, OW2 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. Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing

location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May, 2025 (Pre-Monsoon Season) and from October through December, 2024 (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.9 and 3.10. According to the data, average depths to the static water table in open wells range from 10.00 to 11.40 m BGL in pre-monsoon and 17.97 to 18.93 m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.11 and 3.12. The average depths to static potentiometric surface in bore wells for the period of October through December 2025 (Post-Monsoon Season) vary from 79.10 to 77.80 m and from 83.07 to 80.43 m for the period of March through May, 2025 (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.

From the maps of open well groundwater flow direction shown in Figures 3.11- 3.12, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 6 located in South direction of the proposed project site. The groundwater flow maps in Figure 3.13-3.14 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 7,9. It is located in East direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

#### **11.3.4 Air Environment**

As per the monitoring data,  $PM_{2.5}$  ranges from  $17.0 \mu g/m^3$  to  $19.4 \mu g/m^3$ ;  $PM_{10}$  from  $39.8 \mu g/m^3$  to  $44.4 \mu g/m^3$ ;  $SO_2$  from  $3.3 \mu g/m^3$  to  $4.9 \mu g/m^3$ ;  $NO_x$  from  $11.2 \mu g/m^3$  to  $16.3 \mu g/m^3$ . The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

#### ***Air quality Index (AQI)***

The AQI shows that the air quality of the study area falls within good category 42 causing minimal impact to human health.

### 11.3.5 Noise Environment

Noise level in core zone was 54.2dB (A) Leq during day time and 51.4dB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 42.2 to 50.1dB (A) Leq and during night time from 36.2 to 40.5 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

### 11.3.6 Biological Environment

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

#### *Flora in core zone*

There are no trees in the quarry lease area, only shrubs, herbs and grasses. Taxonomically total of 28 species belonging to 16 families were recorded. Among them are herbs (23) and shrubs (5). Majority of the species belongs to the family of Fabaceae and Poaceae. The species richness (Margalef index) and plant details are given in Table 3.21-3.23. There are no endangered or threatened plant species in the quarry lease area.

#### *Flora in 300 m radius zone*

The vegetation habit analysis indicates that the flora of the 300m radius of the study area consists of 60 species belonging to 31 families. Among the 60 species, 22 herbs, 24 shrubs and 14 trees. the highest number of species were from the Poaceae family (7), followed by Fabaceae (6), Malvaceae (4), and Mimosaceae (4). Three species were recorded from the Amaranthaceae, Apocynaceae, and Asteraceae families, while two species each were recorded from the Arecaceae, Boraginaceae, Convolvulaceae, Cucurbitaceae, Euphorbiaceae, and Lamiaceae families. The endangered or threatened and Species Richness (margalef Index) in the study area it mentioned in Table 3.21 - 3.23. The Velamundi Reserve Forest is located 172 meters north of the quarry lease area. The reserve forest is predominantly populated with *Albizia amara*, *Vachellia leucophloea*, *Vachellia karroo*, *Chloroxylon swietenia*, and *Ziziphus mauritiana*..

#### *Fauna Composition in the Core Zone*

The faunal species observed in the study area are listed in Table 3.27. A total of 26 species were recorded in core zone of the project area. The core zone exhibited fewer species, with only a small number of insects, mammals, and reptiles, whereas the buffer zone showed

greater species diversity. Among the 26 species recorded, the distribution was as follows: (10) insects, (03) reptiles, Avian and (04) mammals. These species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. Data analysis revealed that 21 species are categorized as Least Concern on the Red List, while 18 species were not listed. The analysis indicates that there are no REET species in the core zone of the proposed quarry site.

### ***Fauna Composition in the Buffer Zone***

The faunal species observed in the study area are listed in Table 3.28. Taxonomically a total of 82 species belonging to 49 families have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 50, followed by Insects 13, Reptiles 11, Mammals 5 and amphibians 3. There are 4 schedule II species and 28 schedule IV species according to Indian wild life Act 1972. Totally, 19 species of bird were sighted in the study area.

### **11.3.7 Socio Economic Environment**

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

## **11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **11.4.1 Land Environment**

#### **Anticipated Impact**

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

#### **Mitigation Measures**

Construction of garland drains, settling pits, and check dams to prevent runoff and siltation

- Runoff water will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site
- The vegetation will be retained at the site wherever possible

- Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

#### **11.4.2 Water Environment**

##### **Anticipated Impact**

- Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- As the proposed project acquires 3.2 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

##### **Mitigation Measures**

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

#### **11.4.3 AIR ENVIRONMENT**

##### **Anticipated Impact**

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

##### **Mitigation Measures**

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



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

#### **11.4.4 Noise Environment**

##### ***Anticipated Impact***

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

##### ***Mitigation Measures***

- ❖ 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

#### **11.4.5 Biological Environment**

##### ***Anticipated Impact***

- There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region.
- A total of 17 species belonging to 12 families have been recorded from the mining lease area. 2 trees, 6 shrubs and 9 herbs were identified. The survival rate of uprooted trees is 30% Quarry so instead of one tree 10 saplings are bought and planted in 7.5 conservation zone.
- Carbon released from quarrying machineries and tippers during quarrying would be 34 kg per day, 9065kg per year and 45326 kg over five years, as provided in Table 4.7.

##### ***Mitigation Measures***

- During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time
- Existing roads will be used; new roads will not be constructed to reduce impact on flora
- 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 13067 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 4.19), about 935 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 65335 kg of the total carbon, as provided in Table 4.8.

#### **11.4.6 Socio Economic Environment**

##### ***Anticipated Impact***

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area

- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region

### ***Mitigation Measures***

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

### **11.4.7 Occupational Health**

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

### **11.5 Environment Monitoring Program**

**Table 11.2 Environment Monitoring Program**

| S. No. | Environment Attributes | Location                        | Monitoring |                  | Parameters                                                                                  |
|--------|------------------------|---------------------------------|------------|------------------|---------------------------------------------------------------------------------------------|
|        |                        |                                 | Duration   | Frequency        |                                                                                             |
| 1      | Air Quality            | 2 Locations (1 Core & 1 Buffer) | 24 hours   | Once in 6 months | Fugitive Dust, PM <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 operation             | Peak particle velocity                                                  |
| 7 | Soil                     | 2 Locations (1 Core & 1 Buffer)                                          | –              | Once in six months           | Physical and chemical characteristics                                   |
| 8 | Greenbelt                | Within the project area                                                  | Daily          | Monthly                      | Maintenance                                                             |

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

## 11.6 ADDITIONAL STUDIES

### 11.6.1 Risk Assessment

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

### 11.6.2 Disaster Management Plan

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

- Rescue and treat casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;

- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

### 11.6.3 Cumulative Impact Study

The results on the cumulative impact of the proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.

- The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time
- PPV resulting from proposed project is well below the permissible limit of Peak Particle Velocity of 5 mm/s
- The proposed projects will allocate Rs. 20,00,000/- towards CER as recommended by SEAC
- The proposed projects will directly provide jobs to 59 local people, in addition to indirect jobs
- The proposed projects will plant 3145 about trees in and around the lease area
- The proposed projects will add 535 PCU per day to the nearby roads.

### 11.7 Project Benefits

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

- Direct employment to 23 local people
- Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,
- Strengthening of existing community facilities through the Community Development Program
- Skill development & capacity building like vocational training.
- Rs. 20,00,000 will be allocated for CER

### 11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of **Rs. 30.98Lakhs** as capital cost and **Rs. 13.68Lakhs** as recurring cost/ annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the total recurring cost over 20 years is **Rs. 451.25Lakhs** and the overall EMP cost for 20 years will be **Rs. 482.23Lakhs**, as shown in Table 10.2.

## CHAPTER XII

### DISCLOSURES OF CONSULTANT

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

**Address of the consultancy:**

No: 1/213B Natesan Complex,  
Oddapatti, Dharmapuri – 636705,  
Tamil Nadu, India.  
Email: [info.gtmsdpi@gmail.com](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/<br>Empanelled            | Sector  | Functional Area | Category |
|--------------------------------------------------|---------------------|------------------------------------|---------|-----------------|----------|
| <b>Approved Functional Area Experts &amp; EC</b> |                     |                                    |         |                 |          |
| 1                                                | J.N. Manikandan     | EIA Coordinator (EC)<br>Empanelled | 1(a)(i) | RH, SHW         | B        |
| 2                                                | Dr.G. Prabhakaran   | In-house, FAE                      | 1(a)(i) | SE              | B        |
| 3                                                | Dr. R. Arunbalaji   | In-house, FAE                      | 1(a)(i) | AQ              | B        |
| 4                                                | R. Revathy          | In-house, FAE                      | 1(a)(i) | WP              | B        |
| 5                                                | P. Vellaiyan        | In-house, FAE                      | 1(a)(i) | HG, GEO         | B        |
| 6                                                | C. Kumaresan        | In-house, FAE                      | 1(a)(i) | NV              | B        |
| 7                                                | J.N. Manikandan     | In-house, FAE                      | 1(a)(i) | AP              | B        |
| 8                                                | Dr. D. Kalaimurugan | In-house, FAE                      | 1(a)(i) | SC, EB          | B        |
| 9                                                | G. Kottai Manmadhan | Empanelled                         | 1(a)(i) | LU, LC          | B        |
| <b>Approved Functional Area Associates</b>       |                     |                                    |         |                 |          |
| 9                                                | K. Prithivi         | FAA                                | 1(a)(i) | HG              | B        |
| 10                                               | V. Malavika         | FAA                                | 1(a)(i) | NV, SHW         | B        |
| 11                                               | P. Dhatchayini      | FAA                                | 1(a)(i) | AQ              | B        |
| 12                                               | C. Raghul           | FAA                                | 1(a)(i) | Geo, LU         | B        |
| <b>Team Member</b>                               |                     |                                    |         |                 |          |
| 1                                                | M. Muralidharan     | TM                                 | 1(a)(i) | HW, NV          | B        |

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

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

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

Signature

:



Date

:

Name

: **J.N. Manikandan**

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. Anantra Granite**, Multi Colour Granite quarry project with the extent of 3.77.0ha situated in the cluster with the extent of **6.29.00ha** in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu is true and correct to the best of our knowledge.

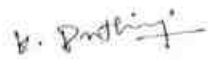
### List of Functional Area Experts Engaged in this Project

| S. No. | Functional Area | Involvement                                                                                                                                                                                                                                                                   | Name of the Experts | Signature                                                                             |
|--------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|
| 1      | AP              | <ul style="list-style-type: none"> <li>○ Identification of different sources of air pollution due to the proposed mine activity</li> <li>○ Prediction of air pollution and propose mitigation measures / control measures</li> </ul>                                          | J.N. Manikandan     |    |
| 2      | WP              | <ul style="list-style-type: none"> <li>○ Suggesting water treatment systems, drainage facilities</li> <li>○ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.</li> </ul>            | R. Revathy          |    |
| 3      | HG              | <ul style="list-style-type: none"> <li>○ Interpretation of ground water table and predict impact and propose mitigation measures.</li> <li>○ Analysis and description of aquifer Characteristics</li> </ul>                                                                   | P. Vellaiyan        |   |
| 4      | GEO             | <ul style="list-style-type: none"> <li>○ Field Survey for assessing the regional and local geology of the area.</li> <li>○ Preparation of mineral and geological maps.</li> <li>○ Geology and Geo morphological analysis/ description and Stratigraphy/ Lithology.</li> </ul> | P. Vellaiyan        |  |
| 5      | SE              | <ul style="list-style-type: none"> <li>○ Revision in secondary data as per Census of India, 2011.</li> <li>○ Impact Assessment &amp; Preventive Management Plan</li> <li>○ Corporate Environment Responsibility.</li> </ul>                                                   | 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</li> </ul>                                                                                                     | Dr. D. Kalaimurugan |  |



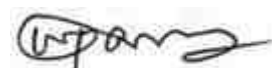
|    |     |                                                                                                                                                                                                                                                                                    |                     |                                                                                       |
|----|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|
|    |     | <p>threatened as per IUCN list.</p> <ul style="list-style-type: none"> <li>○ Impact of the project on flora and fauna.</li> <li>○ Suggesting species for greenbelt development.</li> </ul>                                                                                         |                     |                                                                                       |
| 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>                                                             | G. Kottai Manmadhan |    |
| 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>                                                                                                                    | C. Kumaresan        |  |
| 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. 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                  | C. Raghu        | GEO, LU&LC      | <ul style="list-style-type: none"> <li>Field visits along with FAA</li> <li>Assistance to FAE in both primary and secondary data collection</li> </ul> |  |
| 2                  | K.Prithivi      | HG              | <ul style="list-style-type: none"> <li>Site visit with FAA</li> <li>Provide inputs &amp; Assisting FAE for HG</li> </ul>                               |  |
| 3                  | P. Dhatchayini  | AQ              | <ul style="list-style-type: none"> <li>Site visit with FAA</li> <li>Assistance to FAE in collection of both primary and secondary data</li> </ul>      |  |
| 4                  | V. Malavika     | HW, NV          | <ul style="list-style-type: none"> <li>Site visit with FAA</li> <li>Assistance to FAE in collection of both primary and secondary data</li> </ul>      |  |
| <b>Team Member</b> |                 |                 |                                                                                                                                                        |                                                                                     |
| 1                  | M. Muralidharan | HW, NV          | <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>      |  |

### **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. Anantra Granites**, Multi Colour Granite quarry project with the extent of **3.77.0ha** situated in the cluster with the extent of **6.29.00ha** in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District and Tamil Nadu is true and correct to the best of our knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

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

Validity : Till 31.12.2026



**File No: 13429**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment Authority(SEIAA),**  
**TAMIL NADU)**

\*\*\*



Dated: 11/05/2026



To,

Adalarasu R  
 S.No.733/5, Jakkeri Village, Denkanikottai Taluk, Krishnagiri District - 635113, TAMIL NADU.  
 anantragranite@gmail.com

**Subject:** Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding.

**Sir/Madam,**

**Sub:** SEIAA, Tamil Nadu – Proposed Multi Colour Granite quarry over an extent of 3.77.0 Ha in S.F. Nos. 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu by M/s. Anantra Granites - under project category – “B1” of Item 1(a) “Mining of Minerals” of the Schedule to the EIA Notification, 2006 as amended – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

**Ref:**

1. Online proposal No. SIA/TN/MIN/569803/2026, Dated; 20.02.2026.
2. Minutes of the 707th meeting of SEAC held on 20.04.2026.
3. Minutes of the 1004th meeting of SEIAA held on 06.05.2026.

2. The particulars of the proposal are as below:

|                                                     |                                                     |
|-----------------------------------------------------|-----------------------------------------------------|
| <b>(i) TOR Identification No.</b>                   | TO26B0107TN5610893N                                 |
| <b>(ii) File No.</b>                                | 13429                                               |
| <b>(iii) Clearance Type</b>                         | TOR                                                 |
| <b>(iv) Category</b>                                | B1                                                  |
| <b>(v) Project/Activity Included Schedule No.</b>   | 1(a) Mining of minerals                             |
| <b>(vi) Name of Project</b>                         | Jakkeri Village Multi Colour Granite Mining Project |
| <b>(vii) Name of Company/Organization</b>           | ANANTRA GRANITES                                    |
| <b>(viii) Location of Project (District, State)</b> | KRISHNAGIRI, TAMIL NADU                             |
| <b>(ix) Issuing Authority</b>                       | SEIAA                                               |
| <b>(x) Applicability of General Conditions</b>      | no                                                  |
| <b>(xi) Applicability of Specific Conditions</b>    | no                                                  |

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were

submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2.The above-mentioned proposal has been considered by SEIAA in the meeting held on 06.05.2026. The minutes of the meeting and all the Application and documents submitted [viz. Form-1 Part A, Part B] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

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

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

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

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

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

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

## Annexure 1

### Specific Terms of Reference s for (Mining Of Minerals)

#### 1. Seac Conditions - Site Specific

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1   | <p>1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic &amp; scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <ul style="list-style-type: none"> <li>i. Copy of the agreement forming CMC.</li> <li>ii. The Organization chart of the Committee with defining the role of the members</li> <li>iii. The 'Standard Operating Procedures' (SoP) executing the planned activities.</li> </ul> <p>2. The PP shall install the CCTV camera for the continuous surveillance of mining activity &amp; furnish the photographic/video graphic evidence along with the EIA report.</p> |

#### 2. Seiaa Specific Conditions :

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| 2.1   | <p>After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant <b>Terms of Reference (ToR) along with Public Hearing for the quantity of 3,04,114 MT of RoM Granite which includes 1,21,646 MT of Multi Colour Granite Recovery @40% and 1,82,468 MT of Reject @ 60% upto the depth of 30m BGL and the annual peak production shall not exceed 24,454 MT of Recovery @ 40%</b> as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate</p> |

| S. No | Terms of Reference                                                                                                                |
|-------|-----------------------------------------------------------------------------------------------------------------------------------|
|       | Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the SEIAA Standard conditions. |

### 3. Seiaa Standard Conditions :

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 3.1   | <p><b><u>Cluster Management Committee</u></b></p> <ol style="list-style-type: none"> <li>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.</li> <li>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.,</li> <li>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.</li> <li>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.</li> <li>5. The committee shall deliberate on risk &amp; emergency management plan, fire safety &amp; evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</li> <li>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 in the EIA Report.</li> <li>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.</li> <li>8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.</li> </ol> <p><b><u>Agriculture &amp; Agro-Biodiversity</u></b></p> <ol style="list-style-type: none"> <li>9. Impact on surrounding agricultural fields around the proposed mining Area.</li> <li>10. Impact on soil flora &amp; vegetation around the project site.</li> <li>11. Details of type of vegetation including no. of trees &amp; shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.</li> <li>12. The Environmental Impact Assessment should study the agro-biodiversity, agro- forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</li> <li>13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</li> <li>14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</li> </ol> <p><b><u>Forests</u></b></p> <ol style="list-style-type: none"> <li>15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.</li> <li>16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</li> <li>17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</li> <li>18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</li> </ol> |

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|       | <p><b><u>Water Environment</u></b></p> <p>19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; 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.</p> <p>20. Erosion Control measures.</p> <p>21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, &amp; any ecological fragile areas.</p> <p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment, by the activities.</p> <p>24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ol style="list-style-type: none"> <li>Hydrothermal/Geothermal effect due to destruction in the Environment.</li> <li>Bio-geochemical processes and its foot prints including Environmental stress.</li> <li>Sediment geochemistry in the surface streams.</li> </ol> <p><b><u>Energy</u></b></p> <p>28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.</p> <p><b><u>Climate Change</u></b></p> <p>29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil &amp; below soil carbon stock, soil health and physical, chemical &amp; biological soil features.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p><b><u>Mine Closure Plan</u></b></p> <p>32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.</p> <p><b><u>EMP</u></b></p> <p>33. Detailed Environment Management Plan along with adaptation, mitigation &amp; remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.</p> <p>34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><b><u>Risk Assessment</u></b></p> <p>35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.</p> <p><b><u>Disaster Management Plan</u></b></p> <p>36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards &amp; to cope with disaster/untoward accidents in &amp; around the</p> |

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|       | <p>proposed mine lease area due to the proposed method of mining activity &amp; its related activities covering the entire mine lease period as per precise area communication order issued.</p> <p><b>Others</b></p> <p>37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>38. As per the MoEF&amp; 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.</p> <p>39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic &amp; microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p> |

**Standard Terms of Reference for (Mining of minerals)**

**1.**

| S. No      | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>1.1</b> | 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                                                                                                                                       |
| <b>1.2</b> | A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given                                                                                                                                                                                                                                                                                                                                                         |
| <b>1.3</b> | 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                                                                                                                                                                                                            |
| <b>1.4</b> | All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the areashould 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)                                                                                                                                                |
| <b>1.5</b> | 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                                                                                                                                                                                         |
| <b>1.6</b> | Details about the land proposed for mining activities should be givenwith 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                                                                                                                                                                                                                |
| <b>1.7</b> | 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 |

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|       | 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                                                                                                                                                                                                                                                                                                                                                       |
| 1.8   | 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                                                                                                                                                                                                                                                                                                                                                                               |
| 1.9   | 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                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1.10  | 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                                                                                                                                                                                          |
| 1.11  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1.12  | A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees |
| 1.13  | 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                                                                                                                                                                                                                                                                                                                                                             |
| 1.14  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1.15  | The vegetation in the RF / PF areas in the study area, with necessary details, should be given                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1.16  | 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                                                                                                                                                                                                                                                                                             |
| 1.17  | 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                                                                                           |
| 1.18  | A detailed biological study of the study area [core zone and buffer zone (10 km radius of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |



| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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|       | 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 alongwith 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                                                                                                                                                                                                                            |
| 1.19  | Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1.20  | 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.21  | 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                                                                            |
| 1.22  | 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 |
| 1.23  | 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                                                                                                                                                                                                                                                                                            |
| 1.24  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1.25  | Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| 1.26  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.27  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1.28  | 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                                                                                                                                                       |
| 1.29  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1.30  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.31  | 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 |
| 1.32  | 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                                                                                                                                                                         |
| 1.33  | Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1.34  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1.35  | 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                                                                                                                                                                                                                                                                                                                                                                |
| 1.36  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| S. No | Terms of Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 1.37  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1.38  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.39  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.40  | Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1.41  | The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1.42  | A Disaster management Plan shall be prepared and included in the EIA/EMP Report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1.43  | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1.44  | Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area |

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

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

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

authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on

ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and

modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.

- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community



proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
  - a) Executive Summary of the EIA/EMP Report
  - b) All documents to be properly referenced with index and continuous page numbering.
  - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
  - e) Where the documents provided are in a language other than English, an English translation should be provided.
  - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
  - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(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)
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.



**From**

Dr. R.Elangoan, M.Sc.,Ph.D.,  
Assistant Director,  
Dept. of Geology and Mining,  
Krishnagiri.

**To**

**M/s. Anantra Granites,**  
S.No. 733/5, Jakkeri Village,  
Denkanikottai Taluk,  
Krishnagiri District.

**Sir,****Roc.No.230/2022/Mines Dated: 06.02.2026. -**

**Sub:** Mines and Minerals - Minor Mineral - Multi Colour Granite - Krishnagiri District - Denkanikottai Taluk - Jakkeri Village - Patta land - S.F.Nos. 202/2 (0.81.0), 203/2A (0.44.0), 203/2B (0.10.0), 733/1 (0.37.0), 733/3 (0.86.50) & 733/5 (1.18.50) - Over an extent of 3.77.0 Ha - M/s. Anantra Granites preferred application for the grant of Multi Colour Granite quarry lease - Details of quarries situated within 500m radial distance requested - Quarry details furnished - Reg.

- Ref:**
1. M/s. Anantra Granites preferred application, dated: 14.02.2022.
  2. The District Collector, Krishnagiri Note File Rc.No. 230/2022/Mines, dated: 27.06.2025.
  3. The Government letter No. 26/MMB.2/2025, dated 23.01.2026 (Precise area communication).
  4. The Director of Geology and Mining, Chennai Rc.No. 230/2022/Mines dated: 03.02.2026 (Approval of Mining Plan)
  5. Representation of M/s. Anantra Granites, dated 06.02.2026.

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Kind attention is invited to the references cited above.

R. As7.

2. M/s. Anantra Granites, preferred an application vide the reference 1<sup>st</sup> cited for the grant of quarry lease to quarry Multi Colour Granite in S.F.Nos. 202/2 (0.81.0), 203/2A (0.44.0), 203/2B (0.10.0), 733/1 (0.37.0), 733/3 (0.86.50) & 733/5 (1.18.50) over an extent of 3.77.0 Ha of patta land in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District under the Rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959.

3. Subsequently, M/s. Anantra Granites had been communicated precise area vide reference 2<sup>nd</sup> cited and directed to submit Mining plan and Environmental Clearance for grant of Multi Colour Granite quarry lease over an extent of 3.77.0 hectares of Patta land in S.F.Nos. 202/2 (0.81.0), 203/2A (0.44.0), 203/2B (0.10.0), 733/1 (0.37.0), 733/3 (0.86.50) & 733/5 (1.18.50) in Jakkeri Village, Denkanikottai Taluk, Krishnagiri District for a period of 20 (Twenty) years under the provisions of Rule 19(A) of Tamil Nadu Minor Mineral Concession Rules, 1959.

4. Accordingly, the applicant submitted Mining Plan and the same was approved by the Assistant Director of Geology & Mining vide the reference 4<sup>th</sup> cited.

5. At this juncture, the applicant has requested the details of quarries situated within 500m radial distance from the lease applied area vide letter dated 06.02.2026. As requested by the applicant, the details of quarries situated within 500m radial distance from the subject area is furnished as follows:

R. K. S. J.

### I. Details of Existing Quarries

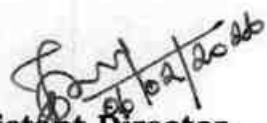
| S. No. | Name of the Lessee                                                                     | Village & Taluk          | S.F.No.                              | Extent in ha | G.O.No. & date                                                             | Lease period             |
|--------|----------------------------------------------------------------------------------------|--------------------------|--------------------------------------|--------------|----------------------------------------------------------------------------|--------------------------|
| 1.     | R. Yasar Arabath,<br>S/o. C. Rabeek Raja,<br>S.M.Nagar,<br>Melur,<br>Madurai District. | Jakkeri & Denkani kottai | 320/3,<br>374/6A,<br>374/6B & 374/6C | 2.52.0       | G.O. (3D) No.17,<br>Natural Resources (MME.2) Department dated: 08.07.2025 | 21.08.2025 to 20.08.2045 |

### II. Details of Expired/Abandoned Quarries

| S. No. | Name of the Applicant/Lessee           | Village & Taluk          | S.F. No.  | Extent (ha) | G.O.No. & date                               | Lease period             |
|--------|----------------------------------------|--------------------------|-----------|-------------|----------------------------------------------|--------------------------|
| 1.     | Tvl. KMB Granites                      | Jakkeri & Denkani kottai | 374/5 (P) | 1.62.0      | G.O.(3D).No. 301 Ind dept. dated: 05.10.1995 | 21.10.1995 to 20.10.2005 |
| 2.     | Tmt. J. Premalatha<br>Tvl. RV Granites | Jakkeri & Denkani kottai | 201 (P)   | 1.62.0      | G.O.(3D).No. 201 Ind dept. dated: 12.07.1995 | 03.08.1995 to 02.08.2005 |

### III. Details of Proposed/applied quarries

| S. No. | Name of the Applicant/Lessee                                                                   | Village& Taluk           | S.F.No.                                                | Extent (ha) | G.O.No. & date | Remarks                                 |
|--------|------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------|-------------|----------------|-----------------------------------------|
| 1.     | M/s. Anantra Granites, S.No. 733/5, Jakkeri Village, Denkanikottai Taluk, Krishnagiri District | Jakkeri & Denkani kottai | 202/2,<br>203/2A,<br>203/2B,<br>733/1<br>733/3 & 733/5 | 3.77.0      | -----          | Instant proposal (Mining plan approved) |

  
**Assistant Director,**  
 Dept. of Geology and Mining,  
 Krishnagiri.

A.A.  
 6.2.26  


#### Copy to:

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

R. A.S.J.



**DIRECTORATE OF GEOLOGY AND MINING**

From

Thiru D. Mohan, I.A.S.,  
Director of Geology and Mining,  
Guindy,  
Chennai - 600 032.

To

M/s. Anantra Granites,  
S.No. 733/5, Jakkeri Village,  
Denkanikottai Taluk,  
Krishnagiri District.

Rc. No. 6324/MM4/2025, dated: 12.02.2026

Sir,

Sub: Mines and Minerals - Minor Mineral - Multi Colour Granite - Krishnagiri District - Denkanikottai Taluk - Jekkeri Village - Patta land in S.F.Nos. 202/2 (0.81.00), 203/2A (0.44.00), 203/2B (0.10.00), 733/1 (0.37.00), 733/3 (0.86.50) & 733/5 (1.18.50) over an extent of 3.77.0 hecets - Quarry lease application for Multi Colour Granite preferred by M/s. Anantra Granites - precise area communicated - Draft Mining Plan recommended and forwarded submitted for approval by Assistant Director, Krishnagiri - Approval accorded.

- Ref: 1. Quarry lease application Preferred by M/s. Anantra Granites, dated: 14.02.2022.  
2. The District Collector, Krishnagiri Note File Rc.No.230/2022/Mines, dated: 27.06.2025.  
3. The Government letter No.26/MMB.2/2025, dated 23.01.2026 (Precise area communication).  
4. Applicant, M/s. Anantra Granites Representation, dated 02.02.2026.  
5. The Assistant Geologist (Mines), Krishnagiri Technical Report, dated: 03.02.2026.  
6. Assistant Director, Krishnagiri letter Roc. No. 230/2022/Mines, dated 03.02.2026

\*\*\*\*\*

Kind attention is invited to the references cited above.

2) The Government have communicated the Precise Area Communication for the quarry lease application preferred by M/s. Anantra Granites, Krishnagiri for quarrying grey granite over an extent of 3.77.0 ha of patta lands in S.F.No. 202/2 (0.81.00), 203/2A (0.44.00), 203/2B (0.10.00), 733/1 (0.37.00), 733/3 (0.86.50) & 733/5 (1.18.50) of Jakkeri village, Denkanikottai taluk, Krishnagiri district and requested the applicant to submit the approved mining plan through the

R. A. S. S.

Commissioner of Geology and Mining and to produce environmental clearance obtained from the competent authority for the subject area.

3) Accordingly, the mining plan submitted by M/s. Anantra Granites is forwarded and recommended by the Assistant Director, G&M, Krishnagiri vide reference 6<sup>th</sup> cited for the subject area for approval. On scrutinizing the draft mining plan submitted by M/s. Anantra Granites and the report of the Assistant Director (G&M), Krishnagiri, the following are submitted.

- i) The Government vide letter No. 26/MMB.2/2025, dated 23.01.2026 has issued Precise Area over an extent of 3.77.0 ha of patta lands in S.F.No. 202/2 (0.81.00), 203/2A (0.44.00), 203/2B (0.10.00), 733/1 (0.37.00), 733/3 (0.86.50) & 733/5 (1.18.50) of Jakkeri village, Denkanikottai taluk, Krishnagiri district.
- ii) It is reported that the Draft Mining Plan prepared by the Qualified Person (QP) was examined with reference to the field conditions and found correct.
- iii) The geological reserves, mineable reserves, year wise production and Development program have been incorporated in the Draft Mining Plan. The conditions imposed in the precise area communication have also been incorporated in the draft mining plan.
- iv) Further reported that there is no archeological monument within 300 m radius and it complies with the rule 36 (1-A) (d) (e) of amended TNMMCR, 1959.
- v) As per the Draft Mining Plan, the total mineable reserves is 8,13,100 MT of ROM with 3,25,240 MT of Colour granite @ 40% recovery upto a depth of 35 m.
- vi) During Mining Plan period the total ROM is **3,04,114** MT and the proposed production of Colour granite is **1,21,646** MT @ 40% recovery for a depth of 35 m.
- vii) The year wise proposed production for the five years is furnished below:-

R. Ash

- 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 thereunder shall be complied with.
- vi. Environment Clearance should be obtained from the competent authority in respect of the subject area as per rule 42 of 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.
- vii. A safety distance of 7.5 m shall be maintained for the adjacent patta lands.
- viii. A safety distance of 10.0 m shall be maintained for the adjacent Government lands in SF.No.732/3 situated on the northern side, SF.No.201 & 733/2 situated on eastern side and SF.No.733/6 situated on south eastern side & S.F.Nos.202/1, 203/1, 237 situated on the western side.
- ix. A safety distance of 10 m shall be maintained as per the recommendations of the Executive Engineer, PWD, upper penniyar basin division, Dharmapuri, for the brooke course in SF.No.202/1 and 203/1 (variporamboke) & 237 (Podugal Poramboke).
- x. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expense, erect, maintain and keep in repair of all boundary pillars.
- xi. A safety distance 50 m has to be provided for the quarry workers' shed situated in S.F.733/6 on the south eastern side of the applied area.

R. AS7.

| Year                 | ROM (MT)        | Grey Granite @ 40% (MT) | Granite Waste @ 60%(MT) | Weathered Rock in (MT) | Topsoil (MT)  |
|----------------------|-----------------|-------------------------|-------------------------|------------------------|---------------|
| 1 <sup>st</sup> Year | 61056           | 24422                   | 36634                   | 43512                  | 29008         |
| 2 <sup>nd</sup> Year | 60208           | 24083                   | 36125                   | 48396                  | 32264         |
| 3 <sup>rd</sup> Year | 60871           | 24349                   | 36522                   |                        |               |
| 4 <sup>th</sup> Year | 61135           | 24454                   | 36681                   |                        |               |
| 5 <sup>th</sup> Year | 60844           | 24338                   | 36506                   |                        |               |
| <b>Total</b>         | <b>3,04,114</b> | <b>1,21,646</b>         | <b>1,82,468</b>         | <b>91,908</b>          | <b>61,272</b> |

viii) It has been proposed to dump the waste on the north and north eastern sides of the lease boundary area.

4) The mining plan submitted by M/s. Anantra Granites, Krishnagiri and report of the Assistant Director (G&M), Krishnagiri have been examined with reference to the provisions of Rule 12 of Granite Conservation and Development Rules, 1999 read with G.O.(Ms). No. 87, Industries (MMC.1), Department dated 22.02.2001. Based on the recommendation of the Assistant Director (G&M), Krishnagiri the mining plan submitted by M/s. Anantra Granites, Krishnagiri is hereby approved subject to the following conditions:

- 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.

R. A. .

- xii. No hindrance shall be caused to the adjacent patta lands and Government poramboke lands while quarrying and transportation of granite.
- xiii. No blasting or transportation of materials in vehicles should be carried out from 6.00 p.m. to 6.00 a.m.
- xiv. The waste materials generated during the course of quarrying should be dumped only within the lease hold area that will be earmarked for the purpose in the mining plan as per rule 31 of GCDR, 1999.
- xv. If anything is found to be concealed as required by the Granite Conservation and Development Rules, 1999 and Tamil Nadu Minor Mineral Concession Rules, 1959 and proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.
- xvi. The applicant shall strictly adhere to the statutory and safety requirements and the applicant should ensure the periodical medical checkup to the quarry workers to safeguard them from quarry related diseases.
- xvii. The applicant shall submit Scheme of Mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above as per GCDR, 1999 rules.
- xviii. The boundary stone should be fixed for the subject quarry and the district administration / Geology and Mining Department should ensure that the quarry operation is restricted only within the area granted for lease
- xix. The conditions mentioned in G.O No. 79 Industries Department dated 06.04.2015 should be complied with.
- xx. The applicant may use mild explosives during quarrying, and storing of explosives if required, by obtaining valid license under explosive Acts and Rules.
- xxi. Child labourers should not be engaged in the quarry works and the quarry workers should be registered in the Tamil Nadu Construction Labour Welfare Board.
- xxii. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules 1959 and other rules and act in force will attract.

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- xxiii. The applicant should remit the Stamp Duty as per the approved modified mining plan during the currency of the lease period.
- xxiv. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.
- xxv. The applicant shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Assistant Director (G&M), Krishnagiri district.
- xxvi. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
- xxvii. This mining plan is approved for the proposals contained therein and applicable from the date of lease deed execution for the quarrying activities to be carried out within the leasehold area.
- xxviii. If any quarry operations are carried out against the prevailing Act and Rules, penal proceedings shall be initiated.
- xxix. The execution of mining plan / review of mining plan shall be subjected to vacation of prohibitory orders / notices, if any.
- xxx. The lease grantee shall submit scheme of mining along with progressive mine closure plan and other statutory requirements within 120 days before the expiry of the five years plan period as per Rule 18(3) of GCDR, 1999.
- xxxi. The order of Hon'ble Supreme Court of India dated 02.08.2017 has to be followed scrupulously.

Encl.: Approved Mining Plan.

Sd/- D.Mohan  
Director of Geology and Mining  
Forwarded / By Order

  
Joint Director

  
13/5/20

**Copy to:**

1. The Additional Chief Secretary to Government (FAC), Natural Resources Department, 4<sup>th</sup> Floor, Secretariat, Chennai-9.

R. AS7.



2. The Director of Mines Safety,  
3<sup>rd</sup> Floor, Left Wing,  
New Additional Building,  
CGO Complex, Shastri Bhawan,  
Nungambakkam, Chennai - 06
3. The District Collector,  
Krishnagiri District.

R. Asst.

# MINING PLAN

FOR JAKKERI VILLAGE MULTI COLOUR GRANITE QUARRY LEASE

## WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land/Opencast, Semi-Mechanized Mining/Non - Forest/  
Non-captive use 'B' 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 : KRISHNAGIRI  
TALUK : DENKANIKOTTAI  
VILLAGE : JAKKERI  
S.F. No's : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5  
EXTENT : 3.77.00 HECTARES

### ADDRESS OF THE APPLICANTS

**M/s.ANANTRA GRANITES,**  
S.No.733/5, Jakkeri Village,  
Denkanikottai Taluk, Krishnagiri District.

### PREPARED BY

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

**QUALIFIED PERSON**

### **GEO TECHNICAL MINING SOLUTIONS**

(A NABET Accredited & ISO Certified Company)

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

Oddapatti, Collectorate Post office,

Dharmapuri-636705. 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)



R. Asa



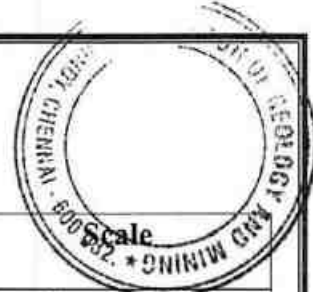
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| 10.     | Copy of Company Pan Card & ID Proof of the authorized signature                         | X            |
| 11.     | Copy of Qualified Person Certificate                                                    | XI           |

R. Ash

**LIST OF PLATES**

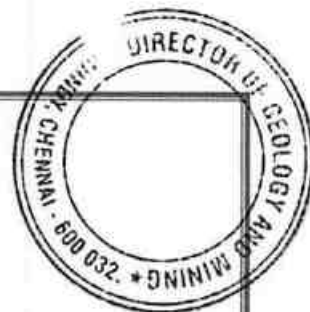
| Sl. No. | Description                                 | Plate No. | Scale                                               |
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| 1       | Key Map                                     | I         | Not to scale                                        |
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M/s.ANANTRA GRANITES,

S.No.733/5, Jakkeri Village,

Denkanikottai Taluk,

Krishnagiri District.



**CONSENT LETTER FROM THE LESSEE**

The Mining Plan in respect of Multi Colour granite quarry lease in S.F.No's : 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5, over an extent of 3.77.0 hectares of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State has been prepared by

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

**(Under rule 13 (1) of Granite Conservation and Development Rules, 1999)**

I request "The Commissioner, Department of Geology and Mining, Guindy, Chennai-600032" to make further correspondence regarding modifications of the mining plan with the said Qualified Person on this following address

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

**GEO TECHNICAL MINING SOLUTIONS**

(A NABET Accredited & ISO Certified Company)

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Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, 7010076633,

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

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

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

Place: Krishnagiri, TN

Date:

*R. Asf*  
Signature of the applicant  
(M/s.Anantra Granites)

*R. Asf*

M/s.ANANTRA GRANITES,

S.No.733/5, Jakkeri Village,

Denkanikottai Taluk,

Krishnagiri District.



### DECLARATION

The Mining Plan in respect of Multi Colour granite quarry lease in S.F.No's : 203/2A, 203/2B, 733/1, 733/3 & 733/5 over an extent of 3.77.0 hectares of Jakkeri Village, Denkanikottai Taluk, Krishnagiri 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: Krishnagiri, TN

Date:

*R. Asf*  
Signature of the applicant  
(M/s.Anantra Granites)

*R. Asf*

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

**QUALIFIED PERSON**

**GEO TECHNICAL MINING SOLUTIONS**

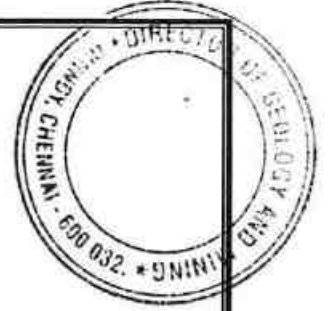
**(ISO certified Company)**

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

Ph: +91 9443937841, +917010076633,

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

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



**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 for Multi Colour granite quarry lease in S.F.No's: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5, over an extent of 3.77.0hectares of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State prepared to **M/s.Anantra Granites**, Krishnagiri.

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

Place: Dharmapuri, TN

Date:

Signature of the Qualified Person

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

**GEO TECHNICAL MINING SOLUTIONS**

A NABET Accredited and ISO Certified Company

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Collectorate Post Office, Oddapatti,

Dharmapuri-636705, TamilNadu, India

185  
Dr.S.KARUPPANNAN,M.Sc.,Ph.D.

QUALIFIED PERSON

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

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



**CERTIFICATE**

I certify that, in preparation of Mining plan in respect of Multi Colour granite quarry lease in S.F.No's: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 over an extent of 3.77.0 hectares of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State prepared to **M/s.Anantra Granites**, Krishnagiri, Covers all the provisions of Mines Act, Rules, and Regulations etc., made there in and if any specific permissions required the applicant should approach "**The Director General of Mines and Safety**", Chennai. The standards prescribed by DGMS with respect to mines health will be strictly implemented.

Place: Dharmapuri, TN

Date:

Signature of the Qualified Person

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



# MINING PLAN

## FOR JAKKERI VILLAGE MULTI COLOUR GRANITE MINING LEASE WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land /Opencast-Semi Mechanized Mining/Non-Forest/Non-Captive Use –  
“B” 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:**

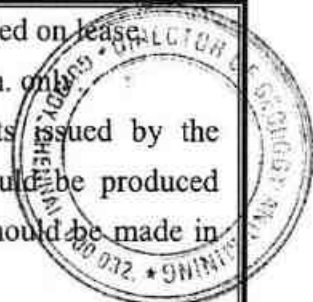
- a) **Introduction:** The Mining plan with progressive quarry closure plan is prepared for M/s.Anantra Granites, residing/office at S.No.733/5, Jakkeri Village, Denkanikottai Taluk, Krishnagiri District and filed with application for new proposal has requested to grant the quarrying lease for Multi Colour granite in S.F.No's:202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 , over an extent of 3.77.00 hectares of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu State to the District Collector, Krishnagiri dated 27.06.2025 and forwarded to the Director, Department of Geology and Mining, Guindy, Chennai vide letter no.6324/MM4/2025, Dated: 31.12.2025.
- b) **Letter of Additional Chief Secretary of Tamil Nadu:** The Additional Chief Secretary to Government of Tamil Nadu has directed to the applicant M/s.Anantra Granites, through his precise area communication letter 26/MMB.2/2025, Dated 23.01.2026, to furnish approved mining plan through the Commissioner 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, Krishnagiri District, Denkanikottai Taluk, Jakkeri Village in S.F.No's: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5, over an extent of 3.77.0hectares 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 shall be maintained for the adjacent patta lands.
  - 2) A safety distance of 10.0 meters shall be maintained for the adjacent Government lands in SF. No.732/3 situated on the northern side, SF.No.201 &



733/2 situated on eastern side and SF.No.733/6 situated on south eastern side & S.F.Nos.202/1, 203/1, 237 situated on the western side.

- 3) A safety distance of 10 meters shall be maintained as per the recommendations of the Executive Engineer, PWD, upper penniyar basin division, Dharmapuri, for the brooke course in SF.No.202/1 and 203/1 (variporamboke) & 237 (Podugal Poramboke).
- 4) A safety distance 50 metres has to be provided for the quarry workers shed situated in S.F.733/6 on the south eastern side of the applied area.
- 5) Environment Clearance should be obtained from the competent authority in respect of the subject area as per rule 42 of TNMMCR, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- 6) As per rule 12 (V) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expenses erect, maintain and keep in repair of all the boundary pillars with DGPS readings.
- 7) 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.
- 8) The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows:
  - The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
  - The applicant firm shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
  - A soft copy of the digitalized map with DGPS readings should be submitted in the CD to the Deputy Director, (G&M), Krishnagiri.
- 9) The applicant firm have to follow the conditions mentioned by the departments a) the Executive Engineer, PWD; b) the Principal Chief Conservator of Forest, Chennai; c) the Wildlife Warden, Hosur Forest Division; d) the Chief Engineer, Agricultural Engineering, Chennai; e) the Member Secretary of Hill Area Conservation Authority / Director of Town and Country Planning.
- 10) The applicant firm should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No. 2921/MM4/2019, dated 01.02.2018 and subsequent corrigendum dated 13.08.2019 using the empanelled agencies before execution of quarry lease.

R. Ash

- 
- 11) The quarry operation should be restricted only in the area granted on lease.
  - 12) Quarry activity should be carried out from 6.00 am. to 6.00 p.m. only.
  - 13) Quarried materials should be transported only with permits issued by the Assistant Director / Deputy Director (G&M) and they should be produced before the forest check post officials and necessary entries should be made in the register.
  - 14) The waste materials generated during the course of quarrying should be dumped only within the lease hold area.
  - 15) The applicant firm should not damage the Government land situated around the applied area if any.
  - 16) The District administration and Geology and Mining Department should ensure the conditions imposed in G.O.Ms.No.79, Industries Department dated 06.04.2015.
  - 17) No pollution should be caused to the water bodies situated near the applied area if any.
  - 18) The applicant firm should use mild explosives during quarrying.
  - 19) As per the Hon'ble Supreme Court of India order dated 08.01.2020 in W.P.(C) No.144/2014, after ceasing quarry operation re-grassing the quarry area and any other area which may have been disturbed due to the quarrying activity and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
  - 20) Child labourers should not be engaged for quarry works and all the quarry labourers should be registered with the Labour Welfare Board of Government of Tamil Nadu and should be enrolled in the Group Insurance Scheme.
  - 21) The District Collector, Krishnagiri shall obtain a sworn-in-affidavit from the applicant, containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB.2/2002-7, Industries Department, dated 09.01.2003 are complied with. Further, the District Administration / Geology and Mining Department should ensure the conditions imposed in G.O.(Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015.
- c) **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 The Additional Chief Secretary of Tamil Nadu letter No. 26/MMB.2/2025, Dated 23.01.2026.
- d) **Geological resources and Mineable reserves:** Geological resource of total ROM is estimated to be 3373528MT (Note: MT = Metric Tonne) including the resources of safety zone. Of which, Multi Colour granite is about 1198639MT at the recovery of

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40%, granite rejects are 1797959MT at the waste of 60%, Weathered rock is 226158MT and topsoil is 150772MT (Refer Plate No's. IVA). The mineable reserve of total ROM is estimated to be 1063040MT by deducting the reserve safety zone, block in benches from the total Geological resources. Of which, Multi Colour granite is about 325240MT at the recovery of 40%, granite rejects are 487860MT at the waste of 60%, Weathered rock is 149964MT and topsoil is 99976MT up to a depth of 35m below the ground level. (Refer Plate No's. VA).

e) **Proposed production schedule:** Total proposed production of ROM is about 457294MT. Of which, Multi Colour granite is about 121646MT at the recovery of 40%, granite rejects are 182468MT at the waste of 60%, Weathered rock is 91908MT and topsoil is 61272MT up to a depth of 30m below the ground level for first five years mining plan period. Annual Peak production is 24454MT of Multi Colour granite (Refer Plate No. VIIIA).

f) **Environmental sensitivity of the lease area: -**

1. **Interstate Boundary:** There is no interstate boundary situated around 10km radius from the lease area.
2. **Wildlife Sanctuaries any:** There is a Cauvery North wild life sanctuary situated about 3.6km radius away on South east side of the lease area.
3. **Forest (conservation) Act, 1980:** There is no Reserved Forest is situated around 60m radius from the lease area.
4. **CRZ Notification, 2019:** There is no Sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 2019.

#### 1.0 **GENERAL:**

|    |                         |   |                                                      |
|----|-------------------------|---|------------------------------------------------------|
| a. | Name of the Applicant   |   | M/s.Anantra Granites,                                |
|    | Applicant address       | : | S.No.733/5, Jakkeri Village,<br>Denkanikottai Taluk, |
|    | District                | : | Krishnagiri                                          |
|    | State                   | : | Tamil Nadu                                           |
|    | Pin code                | : | ....                                                 |
|    | Phone                   | : | ....                                                 |
|    | Fax                     | : | Nil                                                  |
|    | Gram                    | : | Nil                                                  |
|    | Telex                   | : | Nil                                                  |
|    | E-mail                  | : | --                                                   |
| b. | Status of the applicant |   |                                                      |
|    | Private individual      | : | ---                                                  |
|    | Cooperative Association | : | ---                                                  |

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|    |                                                                                    |   |                                                                                                                                                                                                                                                        |
|----|------------------------------------------------------------------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Private company                                                                    | : | Private company                                                                                                                                                                                                                                        |
|    | Public Company                                                                     | : | ---                                                                                                                                                                                                                                                    |
|    | Public Sector Undertaking                                                          | : | ---                                                                                                                                                                                                                                                    |
|    | Joint Sector Undertaking                                                           | : | ---                                                                                                                                                                                                                                                    |
|    | Other (pl. specify)                                                                | : | ---                                                                                                                                                                                                                                                    |
| c. | Mineral(s) Which are occurring in the area and which the applicant intends to mine | : | Multi Colour granite quarry lease                                                                                                                                                                                                                      |
| 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 QP preparing the Mining Plan                                           | : | Dr. S.KARUPPANNAN, M.Sc.,Ph.D.                                                                                                                                                                                                                         |
|    | Address                                                                            | : | <b>GEO TECHNICAL MINING SOLUTIONS</b><br>No: 1/213-B, Ground Floor,<br>Natesan Complex, Oddapatti,<br>Collectorate Post office, Dharmapuri-636705<br>Ph: +91 9443937841, +917010076633,<br>E-mail: info.gtmsdpi@gmail.com,<br>Website: www.gtmsind.com |
|    | Phone                                                                              | : | +91 9443937841, 7010076633                                                                                                                                                                                                                             |
|    | Fax                                                                                | : | Nil                                                                                                                                                                                                                                                    |
|    | e-mail                                                                             | : | info.gtmsdpi@gmail.com                                                                                                                                                                                                                                 |
|    | Telex                                                                              | : | Nil                                                                                                                                                                                                                                                    |
|    | Registration Number                                                                | : | Nil                                                                                                                                                                                                                                                    |
|    | Date of grant/renewal                                                              | : | Nil                                                                                                                                                                                                                                                    |
|    | Valid upto                                                                         | : | Nil                                                                                                                                                                                                                                                    |
| f. | Name of the prospecting agency                                                     | : | The Commissioner,<br>Department of Geology and Mining                                                                                                                                                                                                  |
|    | Address                                                                            | : | Thiru.Ve.Ka.Industrial Estate,Guindy, Chennai-600032                                                                                                                                                                                                   |
|    | Phone                                                                              | : | ----                                                                                                                                                                                                                                                   |
| g. | Reference No. and date of consent letter from the State government                 | : | The Additional Chief Secretary to Government,<br>Government of Tamil Nadu, Letter.<br>No.26/MMB.2/2025, Dated 23.01.2026                                                                                                                               |

**2.0 LOCATION AND ACCESSIBILITY:**

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

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| Khasra No./ Plot No./ Block Range / Felling Series etc.:                                       |              |                      |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                                                   |
|------------------------------------------------------------------------------------------------|--------------|----------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------|
| Survey No.                                                                                     | Sub division | Total Extent in Hect | Patta No                       | Name of the Land the Owner                                                                                                                                                                                                                                                                                                                                                                                                                                           | Mine lease Applied S.F. No. | Mine lease Applied Area out of total area in hect |
| 202                                                                                            | 2            | 0.81.00              | 9162                           | 1.M/s.Anantra Granites<br>2.Mr.R.Adalarasu<br>3.Mr.R.Subash                                                                                                                                                                                                                                                                                                                                                                                                          | 202/2                       | 0.81.00                                           |
| 203                                                                                            | 2A           | 0.44.00              |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 203/2A                      | 0.44.00                                           |
| 203                                                                                            | 2B           | 0.10.00              |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 203/2B                      | 0.10.00                                           |
| 733                                                                                            | 1            | 0.37.00              |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 733/1                       | 0.37.00                                           |
| 733                                                                                            | 3            | 0.86.50              |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 733/3                       | 0.86.50                                           |
| 733                                                                                            | 5            | 1.18.50              |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 733/5                       | 1.18.50                                           |
| <b>Total Extent</b>                                                                            |              | <b>3.77.00</b>       | <b>Total lease area extent</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>3.77.00</b>              |                                                   |
| Lease area (hectares)                                                                          |              |                      |                                | : 3.77.00 hectares                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                                                   |
| Whether the area is recorded to be in forest (please specify whether protected, reserved, etc) |              |                      |                                | : The proposed lease area is recorded as patta land. (Ref. Anne. No: V)                                                                                                                                                                                                                                                                                                                                                                                              |                             |                                                   |
| Ownership / Occupancy                                                                          |              |                      |                                | : This is a patta land S.F.No: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 is registered on the name of M/s.Anantra Granites Mr.R.Adalarasu, Mr.R.Subash as vide patta No.9162 (Ref. Annex. No:V).                                                                                                                                                                                                                                                                   |                             |                                                   |
| Existence of Public Road / Railway line if any nearby and approximate distance                 |              |                      |                                | : <ul style="list-style-type: none"> <li>✓ Exploited Multi Colour granite materials will be transported to the approach road is situated on the South side.</li> <li>✓ There is no NH road situated around 5km radius from the lease area.</li> <li>✓ There is a SH-85 road situated about 0.8km radius away on the North side of the lease area.</li> <li>✓ There is a railway line situated about 1.2km radius away on the North side of the lease area</li> </ul> |                             |                                                   |

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Toposheet No. with latitude and longitude : Toposheet No. 57 H/14  
 Latitude : From 12° 34' 25.47134"N  
 To 12° 34' 40.4821361"N  
 longitude: From 77° 52' 47.90351"E  
 to 77° 52' 53.17461"E

Geo-Coordinates of the lease boundary:

| DGPS SURVEY WAS CONDUCTED IN STATIC METHOD<br>(BASE POINT 2 HOURS DGPS POINT)                       |                     |                     |                 |                  |                     |
|-----------------------------------------------------------------------------------------------------|---------------------|---------------------|-----------------|------------------|---------------------|
| ID                                                                                                  | Latitude (Global)   | Longitude (Global)  | Easting (Meter) | Northing (Meter) | Feature Code        |
| BS                                                                                                  | 12° 34' 30.56913"N  | 77° 52' 51.80270"E  | 813068.800      | 1391869.590      | Base Station        |
| ROVER POINTS 2 HOURS FOR BOUNDARY PILLER AND 20 MINUTES FOR<br>INTERMEDIATE PILLER IN STATIC METHOD |                     |                     |                 |                  |                     |
| 1                                                                                                   | 12° 34' 39.35825"N  | 77° 52' 51.57785"E  | 813059.043      | 1392139.804      | Boundary Pillar     |
| 2                                                                                                   | 12° 34' 37.74220"N  | 77° 52' 51.75963"E  | 813065.080      | 1392090.170      | Intermediate Pillar |
| 3                                                                                                   | 12° 34' 36.36133"N  | 77° 52' 51.91504"E  | 813070.239      | 1392047.754      | Boundary Pillar     |
| 4                                                                                                   | 12° 34' 34.78625"N  | 77° 52' 52.32493"E  | 813083.153      | 1391999.450      | Intermediate Pillar |
| 5                                                                                                   | 12° 34' 33.21110"N  | 77° 52' 52.73491"E  | 813096.067      | 1391951.147      | Intermediate Pillar |
| 6                                                                                                   | 12° 34' 31.63606"N  | 77° 52' 53.14481"E  | 813108.982      | 1391902.843      | Intermediate Pillar |
| 7                                                                                                   | 12° 34' 31.52140" N | 77° 52' 53.17461"E  | 813109.921      | 1391899.329      | Boundary Pillar     |
| 8                                                                                                   | 12° 34' 31.06082"N  | 77° 52' 51.96410"E  | 813073.508      | 1391884.763      | Boundary Pillar     |
| 9                                                                                                   | 12° 34' 31.94524"N  | 77° 52' 51.76732"E  | 813067.265      | 1391911.896      | Boundary Pillar     |
| 10                                                                                                  | 12° 34' 33.54993"N  | 77° 52' 51.50184"E  | 813058.706      | 1391961.158      | Intermediate Pillar |
| 11                                                                                                  | 12° 34' 35.15462"N  | 77° 52' 51.23643"E  | 813050.148      | 1392010.420      | Intermediate Pillar |
| 12                                                                                                  | 12° 34' 36.75941"N  | 77° 52' 50.97101"E  | 813041.590      | 1392059.682      | Intermediate Pillar |
| 13                                                                                                  | 12° 34' 37.09633" N | 77° 52' 50.91530"E  | 813039.793      | 1392070.024      | Boundary Pillar     |
| 14                                                                                                  | 12° 34' 36.58504"N  | 77° 52' 50.86435"E  | 813038.426      | 1392054.283      | Boundary Pillar     |
| 15                                                                                                  | 12° 34' 34.96765"N  | 77° 52' 51.03251"E  | 813044.050      | 1392004.601      | Intermediate Pillar |
| 16                                                                                                  | 12° 34' 33.35025"N  | 77° 52' 51.20063"E  | 813049.673      | 1391954.918      | Intermediate Pillar |
| 17                                                                                                  | 12° 34' 32.87912"N  | 77° 52' 51.24964" E | 813051.312      | 1391940.444      | Boundary Pillar     |
| 18                                                                                                  | 12° 34' 31.29651"N  | 77° 52' 51.62862"E  | 813063.294      | 1391891.901      | Intermediate Pillar |
| 19                                                                                                  | 12° 34' 29.71392" N | 77° 52' 52.00760"E  | 813075.275      | 1391843.358      | Intermediate Pillar |
| 20                                                                                                  | 12° 34' 28.30614"N  | 77° 52' 52.34474"E  | 813085.934      | 1391800.176      | Boundary Pillar     |
| 21                                                                                                  | 12° 34' 27.70553"N  | 77° 52' 52.87321"E  | 813102.103      | 1391781.879      | Boundary Pillar     |
| 22                                                                                                  | 12° 34' 26.70730"N  | 77° 52' 51.56683"E  | 813062.975      | 1391750.750      | Intermediate Pillar |
| 23                                                                                                  | 12° 34' 25.70910"N  | 77° 52' 50.26044"E  | 813023.848      | 1391719.620      | Intermediate Pillar |
| 24                                                                                                  | 12° 34' 25.47134"N  | 77° 52' 49.94914"E  | 813014.525      | 1391712.203      | Boundary Pillar     |
| 25                                                                                                  | 12° 34' 26.13802"N  | 77° 52' 49.13595"E  | 812989.734      | 1391732.438      | Boundary Pillar     |
| 26                                                                                                  | 12° 34' 27.74785"N  | 77° 52' 49.36698"E  | 812996.169      | 1391782.022      | Intermediate Pillar |
| 27                                                                                                  | 12° 34' 29.35774"N  | 77° 52' 49.59790"E  | 813002.605      | 1391831.606      | Intermediate Pillar |

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|                                                               |                                                                                                                                                                                                                                                                                                                                                                           |                    |                                    |                          |                     |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------|--------------------------|---------------------|
| 28                                                            | 12° 34' 30.07896"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 49.70147"E | 813005.488                         | 1391853.819              | Boundary Pillar     |
| 29                                                            | 12° 34' 30.78990"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 48.21292"E | 812960.285                         | 1391875.191              | Intermediate Pillar |
| 30                                                            | 12° 34' 30.93775" N                                                                                                                                                                                                                                                                                                                                                       | 77° 52' 47.90331"E | 812950.883                         | 1391879.636              | Boundary Pillar     |
| 31                                                            | 12° 34' 32.47883"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 48.43073"E | 812966.296                         | 1391927.201              | Intermediate Pillar |
| 32                                                            | 12° 34' 33.98442"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 48.94601"E | 812981.355                         | 1391973.673              | Boundary Pillar     |
| 33                                                            | 12° 34' 35.59494"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 49.17214"E | 812987.643                         | 1392023.276              | Intermediate Pillar |
| 34                                                            | 12° 34' 37.20540"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 49.39835"E | 812993.930                         | 1392072.879              | Intermediate Pillar |
| 35                                                            | 12° 34' 38.81592"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 49.62441"E | 813000.218                         | 1392122.482              | Intermediate Pillar |
| 36                                                            | 12° 34' 40.41361"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 49.84876"E | 813006.456                         | 1392171.688              | Boundary Pillar     |
| 37                                                            | 12° 34' 39.43920"N                                                                                                                                                                                                                                                                                                                                                        | 77° 52' 51.14874"E | 813046.054                         | 1392142.153              | Boundary Pillar     |
| Land use pattern (Forest, Agricultural, Grazing, Barren etc.) |                                                                                                                                                                                                                                                                                                                                                                           |                    | : It is a fresh quarry lease area. |                          |                     |
| b).                                                           | <i>Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.</i> |                    |                                    | : Refer plate no-IA & IB |                     |

#### i) INFRASTRUCTURE AND COMMUNICATION:

| S.No | Description              | Place             | Distance | Direction |
|------|--------------------------|-------------------|----------|-----------|
| a.   | Nearest post office      | Bommathathanur    | 1.8Km    | Southeast |
| b.   | Nearest police station   | Kelamangalm       | 4.1Km    | Northwest |
| c.   | Nearest fire station     | Denkanikottai     | 12.2Km   | Southwest |
| d.   | Nearest medical facility | Kelamangalm       | 4.0Km    | Northwest |
| e.   | Nearest school           | Bommathathanur    | 1.8Km    | Southeast |
| f.   | Nearest railway station  | Periya Nagathunai | 3.6Km    | Southeast |
| g.   | Nearest port facility    | Chennai           | 281Km    | Northeast |
| h.   | Nearest airport          | Bangalore         | 70Km     | Northwest |
| i.   | Nearest DSP office       | Denkanikottai     | 10.0Km   | Southwest |
| j.   | Nearest villages         | Jakeri            | 1.1km    | North     |
|      |                          | Anusonai          | 1.7km    | East      |
|      |                          | Bommathathanur    | 1.8km    | South     |
|      |                          | Vanagiri          | 1.3km    | West      |

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## PART – A

### 3.0 GEOLOGY AND MINERAL RESERVES:

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

|     |            |   |                                                                                                                                                                      |
|-----|------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (i) | Topography | : | The lease area exhibits an elevated terrain and maximum altitude of about 814m AMSL. The slope is towards Southwest side and falls in Toposheet no. <b>57 H/14</b> . |
|-----|------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

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

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

**Order of superposition as under,**

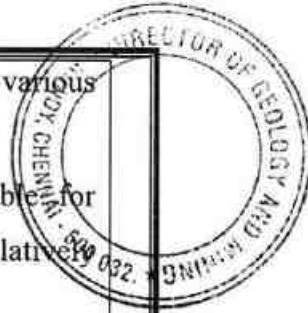
| Age                  | Group | Rock Formation      |
|----------------------|-------|---------------------|
| Recent to Sub recent | ----  | Top Soil (2m Thick) |

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|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                      |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------|
|       | Archean to Lower Proterozoic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Migmatite complex | Pegmatite and Quartz/veins<br>Dolerite dyke<br>Peninsular gneisses and<br>Migmatites |
|       | Archean                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Charnockite Group | Charnockite, Garnetiferous<br>quartzo-feldspathic,<br>gneisses<br>Biotite            |
| (iii) | <p><b>Local / Mine Geology of The Mineral Deposit:</b></p> <p><b>a) Topography of the proposed lease area:</b></p> <p>The lease area exhibits an elevated topography and maximum altitude of about 814m AMSL.</p> <p>The Multi Colour granite is covered with 2m thickness of reddish gravelly soil, 3m thickness of Weathered rock and followed by fresh Multi Colour granite. The Multi Colour granite is medium to coarse grained with feldspar and quartz is major constituents, Garnet, Biotite and other mafic minerals area accessories. The gneissic formation is having wavy pattern of alternate layer which adds the austenitic beauty for the rock. This Multi Colour granite is commercially called as "Paradiso" which is widely used for slabs, Tiles and monuments after cutting and polishing.</p> <p>The surface plan showing elevation, contour, accessibility road and Geological map was prepared the lease area.</p> <p><b>b) Mode of origin:</b></p> <p>Multi Colour granite is a coarse – grained (phaneritic) intrusive igneous rock composed mostly of quartz, alkali feldspar, and plagioclase. It forms from magma with a high content of silica and alkali metal oxides that slowly cools and solidifies underground.</p> <p><b>c) Physiography of the rocks:</b></p> <ul style="list-style-type: none"> <li>• It has very dense silica content. Since the rock is made largely of silica from magma, it contains a large amount of silica.</li> <li>• Due to the large presence of silica in its composition, granite is highly resistant to decay.</li> <li>• Granite is an easily quarried stone. This is due to the presence of mural joint.</li> <li>• Similar to the quarrying, the rift and the grain that are present in</li> </ul> |                   |                                                                                      |

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abundance in granite make its dressing easy for utilizing in various purposes.

- The igneous property of granite makes it incredibly polishable for construction purposes as a polished and hard surface can last relatively longer than other stones.
- Granite offers a reasonable resistance to fire due to the presence of fewer minerals.
- Similarly, Granite also offers a reasonable resistance to frost due to the presence of fewer minerals.
- Granite is relatively free from fractures.

**d) Chemical composition of rocks:**

Granite is a grey-coloured plutonic rock found throughout the continental crust, most commonly in mountainous areas. It consists of coarse grains of quartz (10-50%), potassium feldspar, and sodium feldspar. These minerals make up more than 60% of the rock. Other common minerals include mica (muscovite and biotite) and hornblende.

**Order of superposition of rocks in the proposed site:**

| Age                           | Group | Rock Formation       |
|-------------------------------|-------|----------------------|
| Recent to Sub recent          | ----  | Topsoil              |
| Archaean to lower Proterozoic | --    | Multi Colour Granite |

- (iv) Drainage Pattern : There are no major water bodies like rivers, etc., located within a radius of 50m and 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:*

- a. Present status: QP 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 area. Hence, QP

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|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | personally examined during mining survey.                                                                                                                                |                           |                               |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|----------------|---------------------------|-------------------------------|---|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|---|-----|-----|-----|-----|
| b. Surface Plan                                                                                  | :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Surface plan showing elevation, contours and accessibility road was prepared at the scale of 1: 2000, as shown in Plate No.III                                           |                           |                               |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| c. 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. IV&IVA. |                           |                               |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| c)                                                                                               | <p><b><i>Broadly indicate the Yearwise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below :-</i></b></p> <table><tr><th>Year</th><th>No.of boreholes</th><th>Total meterage</th><th>No.of Pits and Dimensions</th><th>No.of Trenches and Dimensions</th></tr><tr><td>I</td><td>N.A</td><td>---</td><td>---</td><td>N.A</td></tr><tr><td>II</td><td>N.A</td><td>---</td><td>---</td><td>N.A</td></tr><tr><td>III</td><td>N.A</td><td>---</td><td>---</td><td>N.A</td></tr><tr><td>IV</td><td>N.A</td><td>---</td><td>---</td><td>N.A</td></tr><tr><td>V</td><td>N.A</td><td>---</td><td>---</td><td>N.A</td></tr></table> <p>No future programmed proposed in this area. It's a fresh quarry lease. Hence exploration proposal is not required and its homogeneous parent rock to this mining project.</p> |                                                                                                                                                                          | Year                      | No.of boreholes               | Total meterage | No.of Pits and Dimensions | No.of Trenches and Dimensions | I | N.A | --- | --- | N.A | II | N.A | --- | --- | N.A | III | N.A | --- | --- | N.A | IV | N.A | --- | --- | N.A | V | N.A | --- | --- | N.A |
| Year                                                                                             | No.of boreholes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Total meterage                                                                                                                                                           | No.of Pits and Dimensions | No.of Trenches and Dimensions |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| I                                                                                                | N.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ---                                                                                                                                                                      | ---                       | N.A                           |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| II                                                                                               | N.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ---                                                                                                                                                                      | ---                       | N.A                           |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| III                                                                                              | N.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ---                                                                                                                                                                      | ---                       | N.A                           |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| IV                                                                                               | N.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ---                                                                                                                                                                      | ---                       | N.A                           |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |
| V                                                                                                | N.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ---                                                                                                                                                                      | ---                       | N.A                           |                |                           |                               |   |     |     |     |     |    |     |     |     |     |     |     |     |     |     |    |     |     |     |     |   |     |     |     |     |

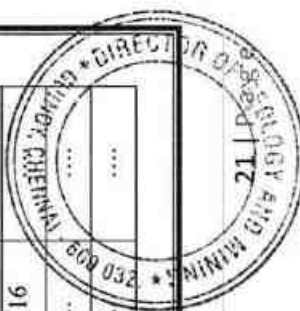
***(d) Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated 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 longitudinal and Five transverse sections to calculate the volume of material up to the depth of 35m below the ground level. The longitudinal and transverse cross sections were assigned XY-AB, XY-CD, XY-EF, X1Y1-GH & X2Y2-IJ using the cross-sectional method, total ROM is estimated to be **3373528MT** including the resources of safety zone. Of which, Multi Colour granite is about **1198639MT** at the rate of 40%, granite rejects are **1797959MT** at the Waste of 60%, Weathered rock is **226158MT** and Topsoil is **150772MT**. (Refer Plate No. IV & IVA).

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## GEOLOGICAL RESOURCES

| Section | Bench | Length in (m) | Width in (m) | Depth in (m) | ROM in M <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite In (MT) | Multi Colour Granite 40% Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT | Top Soil in MT |
|---------|-------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-----------------------------------------|--------------------------------------|----------------------|----------------|
| XY-AB   | I     | 84            | 64           | 2            | 10752                 | 2            | 21504             | ....                | ....                                    | ....                                 | ....                 | 21504          |
|         | I     | 84            | 64           | 3            | 16128                 | 2            | 32256             | ....                | ....                                    | ....                                 | 32256                | ....           |
|         | II    | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
|         | III   | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
|         | IV    | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
|         | V     | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
|         | VI    | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
| XY-CD   | VII   | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ....                 | ....           |
|         | TOTAL |               |              |              | 188160                | ....         | 481152            | 427392              | 170957                                  | 256435                               | 32256                | 21504          |
|         | I     | 95            | 52           | 2            | 9880                  | 2            | 19760             | ....                | ....                                    | ....                                 | ....                 | 19760          |
|         | I     | 95            | 52           | 3            | 14820                 | 2            | 29640             | ....                | ....                                    | ....                                 | 29640                | ....           |
|         | II    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|         | III   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|         | IV    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
| XY-EF   | V     | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|         | VI    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|         | VII   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|         | TOTAL |               |              |              | 172900                | ....         | 442130            | 392730              | 157092                                  | 235638                               | 29640                | 19760          |
|         | I     | 119           | 94           | 2            | 22372                 | 2            | 44744             | ....                | ....                                    | ....                                 | ....                 | 44744          |
|         | I     | 119           | 94           | 3            | 33558                 | 2            | 67116             | ....                | ....                                    | ....                                 | 67116                | ....           |
|         | II    | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ....                 | ....           |
| XY-EF   | III   | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ....                 | ....           |



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|             |     |     |    |   |         |      |         |         |         |         |        |        |
|-------------|-----|-----|----|---|---------|------|---------|---------|---------|---------|--------|--------|
|             | IV  | 119 | 94 | 5 | 55930   | 2.65 | 148215  | 148215  | 59286   | 88929   | ....   | ....   |
|             | V   | 119 | 94 | 5 | 55930   | 2.65 | 148215  | 148215  | 59286   | 88929   | ....   | ....   |
|             | VI  | 119 | 94 | 5 | 55930   | 2.65 | 148215  | 148215  | 59286   | 88929   | ....   | ....   |
|             | VII | 119 | 94 | 5 | 55930   | 2.65 | 148215  | 148215  | 59286   | 88929   | ....   | ....   |
| TOTAL       |     |     |    |   |         |      |         |         |         |         |        |        |
| XIYI-GH     | I   | 183 | 33 | 2 | 12078   | .... | 1001150 | 889290  | 355716  | 533574  | 67116  | 44744  |
|             | I   | 183 | 33 | 3 | 18117   | 2    | 24156   | ....    | ....    | ....    | ....   | 24156  |
|             | II  | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
|             | III | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
|             | IV  | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
|             | V   | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
|             | VI  | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
|             | VII | 183 | 33 | 5 | 30195   | 2.65 | 80017   | 80017   | 32006.8 | 48010.2 | ....   | ....   |
| TOTAL       |     |     |    |   |         |      |         |         |         |         |        |        |
| X2Y2-II     | I   | 108 | 94 | 2 | 20304   | 2    | 40608   | ....    | ....    | ....    | ....   | 24156  |
|             | I   | 108 | 94 | 3 | 30456   | 2    | 60912   | ....    | ....    | ....    | 60912  | 40608  |
|             | II  | 108 | 94 | 5 | 50760   | 2.65 | 134514  | 134514  | 53805.6 | 80708.4 | ....   | ....   |
|             | III | 108 | 94 | 5 | 50760   | 2.65 | 134514  | 134514  | 53805.6 | 80708.4 | ....   | ....   |
|             | IV  | 108 | 94 | 5 | 50760   | 2.65 | 134514  | 134514  | 53805.6 | 80708.4 | ....   | ....   |
|             | V   | 108 | 94 | 5 | 50760   | 2.65 | 134514  | 134514  | 53805.6 | 80708.4 | ....   | ....   |
|             | VI  | 108 | 94 | 5 | 50760   | 2.65 | 134514  | 134514  | 53805.6 | 80708.4 | ....   | ....   |
| TOTAL       |     |     |    |   |         |      |         |         |         |         |        |        |
| GRAND TOTAL |     |     |    |   |         |      |         |         |         |         |        |        |
|             |     |     |    |   | 355320  | .... | 908604  | 807084  | 332833  | 484250  | 60912  | 40608  |
|             |     |     |    |   | 1319255 | .... | 3373528 | 2996598 | 1198639 | 1797959 | 226158 | 150772 |

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

The mineable reserves of total ROM are estimated to be **1063040MT** by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth 35m below the ground level. Of which, Multi Colour granite is about **325240MT** at the recovery of 40%, granite rejects are **487860MT** at the Waste of 60%, Weathered rock is **149964MT** and Top soil is **99976MT**. The commercially viable Multi Colour granite has been prepared on 1: 2000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no. V&VA).

| MINEABLE RESERVES |       |               |              |              |                       |              |                   |                     |                                         |                                      |                      |                |
|-------------------|-------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-----------------------------------------|--------------------------------------|----------------------|----------------|
| Section           | Bench | Length in (m) | Width in (m) | Depth in (m) | ROM in M <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite in (MT) | Multi Colour Granite 40% Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT | Top Soil in MT |
| XY-AB             | I     | 74            | 64           | 2            | 9472                  | 2            | 18944             | ....                | ....                                    | ....                                 | ....                 | 18944          |
|                   | I     | 74            | 64           | 3            | 14208                 | 2            | 28416             | ....                | ....                                    | ....                                 | 28416                | ....           |
|                   | II    | 69            | 64           | 5            | 22080                 | 2.65         | 58512             | 58512               | 23405                                   | 35107                                | ....                 | ....           |
|                   | III   | 64            | 64           | 5            | 20480                 | 2.65         | 54272             | 54272               | 21709                                   | 32563                                | ....                 | ....           |
|                   | IV    | 29            | 64           | 5            | 9280                  | 2.65         | 24592             | 24592               | 9836                                    | 14756                                | ....                 | ....           |
| TOTAL             |       |               |              |              | 75520                 | ....         | 184736            | 137376              | 54950                                   | 82426                                | 28416                | 18944          |
| XY-CD             | I     | 95            | 52           | 2            | 9880                  | 2            | 19760             | ....                | ....                                    | ....                                 | ....                 | 19760          |
|                   | I     | 95            | 52           | 3            | 14820                 | 2            | 29640             | ....                | ....                                    | ....                                 | 29640                | ....           |
|                   | II    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
|                   | III   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ....                 | ....           |
| TOTAL             |       |               |              |              | 74100                 | ....         | 180310            | 130910              | 52364                                   | 78546                                | 29640                | 19760          |
| XY-EF             | I     | 109           | 74           | 2            | 16132                 | 2            | 32264             | ....                | ....                                    | ....                                 | ....                 | 32264          |
|                   | I     | 109           | 74           | 3            | 24198                 | 2            | 48396             | ....                | ....                                    | ....                                 | 48396                | ....           |
|                   | II    | 104           | 64           | 5            | 33280                 | 2.65         | 88192             | 88192               | 35277                                   | 52915                                | ....                 | ....           |
|                   | III   | 99            | 54           | 5            | 26730                 | 2.65         | 70835             | 70835               | 28334                                   | 42501                                | ....                 | ....           |
|                   | IV    | 94            | 44           | 5            | 20680                 | 2.65         | 54802             | 54802               | 21920                                   | 32882                                | ....                 | ....           |
|                   | V     | 84            | 34           | 5            | 14280                 | 2.65         | 37842             | 37842               | 15137                                   | 22705                                | ....                 | ....           |
|                   | VI    | 74            | 24           | 5            | 8880                  | 2.65         | 23532             | 23532               | 9413                                    | 14119                                | ....                 | ....           |
|                   | VII   | 64            | 14           | 5            | 4480                  | 2.65         | 11872             | 11872               | 4749                                    | 7123                                 | ....                 | ....           |
| TOTAL             |       |               |              |              | 148660                | ....         | 367735            | 287075              | 114830                                  | 172245                               | 48396                | 32264          |
| X2Y2-IJ           | I     | 98            | 74           | 2            | 14504                 | 2            | 29008             | ....                | ....                                    | ....                                 | ....                 | 29008          |
|                   | I     | 98            | 74           | 3            | 21756                 | 2            | 43512             | ....                | ....                                    | ....                                 | 43512                | ....           |
|                   | II    | 93            | 64           | 5            | 29760                 | 2.65         | 78864             | 78864               | 31546                                   | 47318                                | ....                 | ....           |
|                   | III   | 88            | 54           | 5            | 23760                 | 2.65         | 62964             | 62964               | 25185                                   | 37779                                | ....                 | ....           |
|                   | IV    | 83            | 44           | 5            | 18260                 | 2.65         | 48389             | 48389               | 19356                                   | 29033                                | ....                 | ....           |
|                   | V     | 78            | 34           | 5            | 13260                 | 2.65         | 35139             | 35139               | 14055                                   | 21084                                | ....                 | ....           |
|                   | VI    | 68            | 24           | 5            | 8160                  | 2.65         | 21624             | 21624               | 8650                                    | 12974                                | ....                 | ....           |
|                   | VII   | 58            | 14           | 5            | 4060                  | 2.65         | 10759             | 10759               | 4304                                    | 6455                                 | ....                 | ....           |
| TOTAL             |       |               |              |              | 133520                | ....         | 330259            | 257739              | 103096                                  | 154643                               | 43512                | 29008          |
| GRAND TOTAL       |       |               |              |              | 431800                | ....         | 1063040           | 813100              | 325240                                  | 487860                               | 149964               | 99976          |

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**4.0 MINING:**

- a. Briefly describe the existing / proposed method for developing / working the deposit with all design parameters.  
(Note: In case of pocket deposits, sequence of development/ working may be indicated on the same plan)
- : It is a fresh quarry lease and its works for open cast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cast 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. Doesn't any change of mining method in future.

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

Total proposed production of ROM is about **457294MT**. Of which, Multi Colour granite is about **121646MT** at the recovery of 40%, granite rejects are **182468MT** at the waste of 60%, Weathered rock is **91908MT** and topsoil is **61272MT** up to a depth of 30m below the ground level for first five years mining plan period. Annual Peak production is **24454MT** of Multi Colour granite.

| Year  | Pit No.(s) | Topsoil (MT) | Total ROM (MT) | ROM Granite in (MT) | Saleable Multi Colour granite @ 40% (MT) | grey granite Rejects @ 60% (MT) | Weathered rock in (MT) | Saleable Gravel (MT) | Overburden / Multi Colour graniteratio |
|-------|------------|--------------|----------------|---------------------|------------------------------------------|---------------------------------|------------------------|----------------------|----------------------------------------|
| I     | I          | 29008        | 133576         | 61056               | 24422                                    | 36634                           | 43512                  | ---                  | 1 : 4.5                                |
| II    | I          | 32264        | 140868         | 60208               | 24083                                    | 36125                           | 48396                  | ---                  | 1 : 4.8                                |
| III   | I          | ---          | 60871          | 60871               | 24349                                    | 36522                           | ---                    | ---                  | 1 : 1.5                                |
| IV    | I          | ---          | 61135          | 61135               | 24454                                    | 36681                           | ---                    | ---                  | 1 : 1.5                                |
| V     | I          | ---          | 60844          | 60844               | 24338                                    | 36506                           | ---                    | ---                  | 1 : 1.5                                |
| Total | ---        | 61272        | 457294         | 304114              | 121646                                   | 182468                          | 91908                  | ---                  | 1 : 2.8                                |

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

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**Composite plans and Year wise sections (In case of 'B' category of quarry lease):**

| YEARWISE PRODUCTION RESERVES |          |         |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
|------------------------------|----------|---------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-------------------------------------|--------------------------------------|----------------------|----------------|------|
| Year                         | Section  | Bench   | Length in (m) | Width in (m) | Depth in (m) | ROM in M <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite in (MT) | Multi Colour Granite Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT | Top Soil in MT |      |
| I- Year                      | X2Y2-IJ  | I       | 98            | 74           | 2            | 14504                 | 2            | 29008             | ....                | ....                                | ....                                 | ....                 | 29008          |      |
|                              |          | I       | 98            | 74           | 3            | 21756                 | 2            | 43512             | ....                | ....                                | ....                                 | 43512                | ....           |      |
|                              |          | II      | 72            | 64           | 5            | 23040                 | 2.65         | 61056             | 61056               | 24422                               | 36634                                | ....                 | ....           |      |
| TOTAL                        |          |         |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
| II - Year                    | X2Y2-IJ  | II      | 21            | 64           | 5            | 6720                  | 2.65         | 17808             | 17808               | 7123                                | 10685                                | ....                 | ....           |      |
|                              | XY-EF    | I       | 109           | 74           | 2            | 16132                 | 2            | 32264             | ....                | ....                                | ....                                 | ....                 | 32264          |      |
|                              |          | I       | 109           | 74           | 3            | 24198                 | 2            | 48396             | ....                | ....                                | ....                                 | ....                 | 48396          |      |
|                              |          | II      | 50            | 64           | 5            | 16000                 | 2.65         | 42400             | 42400               | 16960                               | 25440                                | ....                 | ....           |      |
| TOTAL                        |          |         |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
| III - Year                   | XY-EF    | II      | 49            | 64           | 5            | 15680                 | 2.65         | 41552             | 41552               | 16621                               | 24931                                | ....                 | ....           |      |
|                              | X2Y2-IJ  | III     | 27            | 54           | 5            | 7290                  | 2.65         | 19319             | 19319               | 7728                                | 11591                                | ....                 | ....           |      |
|                              |          | TOTAL   |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
| IV - Year                    | X2Y2-IJ  | III     | 61            | 54           | 5            | 16470                 | 2.65         | 43645             | 43645               | 17458                               | 26187                                | ....                 | ....           |      |
|                              |          | IV      | 30            | 44           | 5            | 6600                  | 2.65         | 17490             | 17490               | 6996                                | 10494                                | ....                 | ....           |      |
|                              |          | TOTAL   |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
|                              | V - Year | X2Y2-IJ | IV            | 36           | 44           | 5                     | 7920         | 2.65              | 20988               | 20988                               | 8396                                 | 12592                | ....           | .... |
| V                            |          |         | 56            | 34           | 5            | 9520                  | 2.65         | 25228             | 25228               | 10091                               | 15137                                | ....                 | ....           |      |
| VI                           |          |         | 46            | 24           | 5            | 5520                  | 2.65         | 14628             | 14628               | 5851                                | 8777                                 | ....                 | ....           |      |
| TOTAL                        |          |         |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
| GRAND TOTAL                  |          |         |               |              |              |                       |              |                   |                     |                                     |                                      |                      |                |      |
|                              |          |         |               |              |              | 22960                 | ....         | 60844             | 60844               | 24338                               | 36506                                | 91908                | 61272          |      |
|                              |          |         |               |              |              | 191350                | ....         | 457294            | 304114              | 121646                              | 182468                               |                      |                |      |

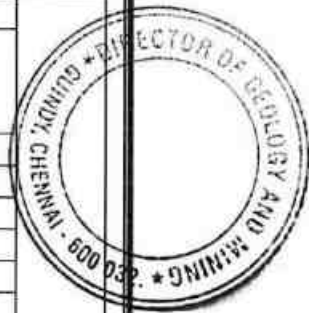


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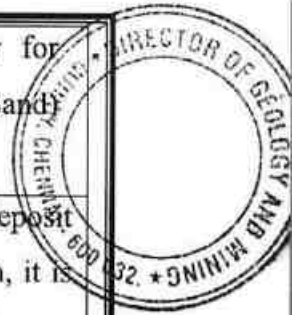
| d.                             | Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | : Composite plan not prepared in this proposed lease area. It is "B" category of quarry lease.                                                  |                                |          |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------|--|--|--|-------|------------------------|----------|----------|----------|---|----------|----|----|---|----------------|----|----|---|----|----------------------|----|----|---|-----|----|----|---|----|----|----|---|-------------|--|--|--|-----|
| e.                             | <p><b>Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:</b></p> <p>At this rate of production, the expected life of quarry is calculated for periods and production details are given as below: -</p> <p><b>Grey granite:</b></p> <p>Mineable reserves of Multi Colour granite@ 40% = 325240MT</p> <p>Five years production @ 40% = 121646MT</p> <p>Annual peak production of Multi Colour granite = 24454MT</p> <p>Remaining mineable reserves are = 203594MT</p> <p>The regular working of the quarry and its production depends upon the demand from the market. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated the life of quarry etc., are only a tentative figure.</p>                                                                                                                         |                                                                                                                                                 |                                |          |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| f.                             | <p><b>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:</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                 |                                |          |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| (i)                            | Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | : Consider the indefinite depth the Multi Colour granite deposit is proved beyond the workable limits about a depth 35m below the ground level. |                                |          |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| (ii)                           | <p>Whether ultimate pit limit has been determined and demarcated on surface and geological plan:-</p> <p>The ultimate pit limit has been determined and demarcated at conceptual plan periods as given below</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">ULTIMATE PIT – SECTION (XY-AB)</th> </tr> <tr> <th>Bench</th> <th>Overburden/<br/>Mineral</th> <th>L<br/>(m)</th> <th>W<br/>(m)</th> <th>D<br/>(m)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">I</td> <td>Top Soil</td> <td>74</td> <td>64</td> <td>2</td> </tr> <tr> <td>Weathered Rock</td> <td>74</td> <td>64</td> <td>3</td> </tr> <tr> <td>II</td> <td rowspan="3">Multi Colour Granite</td> <td>69</td> <td>64</td> <td>5</td> </tr> <tr> <td>III</td> <td>64</td> <td>64</td> <td>5</td> </tr> <tr> <td>IV</td> <td>29</td> <td>64</td> <td>5</td> </tr> <tr> <td colspan="4">Total Depth</td> <td>20m</td> </tr> </tbody> </table> |                                                                                                                                                 | ULTIMATE PIT – SECTION (XY-AB) |          |  |  |  | Bench | Overburden/<br>Mineral | L<br>(m) | W<br>(m) | D<br>(m) | I | Top Soil | 74 | 64 | 2 | Weathered Rock | 74 | 64 | 3 | II | Multi Colour Granite | 69 | 64 | 5 | III | 64 | 64 | 5 | IV | 29 | 64 | 5 | Total Depth |  |  |  | 20m |
| ULTIMATE PIT – SECTION (XY-AB) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                 |                                |          |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| Bench                          | Overburden/<br>Mineral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | L<br>(m)                                                                                                                                        | W<br>(m)                       | D<br>(m) |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| I                              | Top Soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 74                                                                                                                                              | 64                             | 2        |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
|                                | Weathered Rock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 74                                                                                                                                              | 64                             | 3        |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| II                             | Multi Colour Granite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 69                                                                                                                                              | 64                             | 5        |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| III                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 64                                                                                                                                              | 64                             | 5        |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| IV                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 29                                                                                                                                              | 64                             | 5        |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |
| Total Depth                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                 |                                | 20m      |  |  |  |       |                        |          |          |          |   |          |    |    |   |                |    |    |   |    |                      |    |    |   |     |    |    |   |    |    |    |   |             |  |  |  |     |

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| ULTIMATE PIT – SECTION (XY-CD)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          |          |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| Bench                            | Overburden/<br>Mineral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L<br>(m) | W<br>(m) | D<br>(m) |
| I                                | Top Soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 95       | 52       | 2        |
|                                  | Weathered Rock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 95       | 52       | 3        |
| II                               | Multi Colour Granite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 95       | 52       | 5        |
| III                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 95       | 52       | 5        |
| Total Depth                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          | 15m      |
| ULTIMATE PIT – SECTION (XY-EF)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          |          |
| Bench                            | Overburden/<br>Mineral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L<br>(m) | W<br>(m) | D<br>(m) |
| I                                | Top Soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 109      | 74       | 2        |
|                                  | Weathered Rock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 109      | 74       | 3        |
| II                               | Multi Colour Granite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 104      | 64       | 5        |
| III                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 99       | 54       | 5        |
| IV                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 94       | 44       | 5        |
| V                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 84       | 34       | 5        |
| VI                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 74       | 24       | 5        |
| VII                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 64       | 14       | 5        |
| Total Depth                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          | 35m      |
| ULTIMATE PIT – SECTION (X1Y1-IJ) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          |          |
| Bench                            | Overburden/<br>Mineral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L<br>(m) | W<br>(m) | D<br>(m) |
| I                                | Top Soil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 98       | 74       | 2        |
|                                  | Weathered Rock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 98       | 74       | 3        |
| II                               | Multi Colour Granite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 93       | 64       | 5        |
| III                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 88       | 54       | 5        |
| IV                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 83       | 44       | 5        |
| V                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 78       | 34       | 5        |
| VI                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 68       | 24       | 5        |
| VII                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 58       | 14       | 5        |
| Total Depth                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |          | 35m      |
| (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 are <b>182468MT</b> (up to 60%) and Weathered rock is <b>91908MT</b> (Totally <b>274376MT</b> ) will be removed and dumped in the North & East side of the lease area average dimensions of (L147m X W35m X H11.4m & L169m X W16m X H17m) for the period of five years. The topsoil is <b>61272MT</b> will be removed and stacked for earth bund in the Northwestern side of the lease area. As per G.O (Ms)No.94, Industries (MME.1) Department Date:09.05.2022. The Granite Waste not Capable of being sold as Dimensional blocks that shall be reduced to the size equal to or less than 15cm X 10cm, |          |          |          |

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|      |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                                                                                                                                  | so as to be used as road metal or for production of manufactured sand (M-Sand) or for any other useful purposes.                                                                                                                                                                                                                                                                                                                                     |
| (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:-                   | : As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.                                                                                                                                                                                                                                                                                                              |
| (v)  | Whether post mining land use envisaged:-                                                                                                                                         | : At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.                                                                                                                                                                                                                                                                                                  |
| g.   | <b>Open cast Mines:</b>                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| (i)  | Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)                                                                            | : The mining operation is open-cast, semi-mechanized methods are adopted and 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 6m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal. |
| (ii) | Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice | : The Multi Colour granite is proposed to quarry at 5m bench height & width conventional open cast method.<br>i) Drill hole diameter 32mm<br>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.                                                                                                    |

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|    |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                                                                                                                                   | <p>iii) Spacing and burden: The spacing shall be about 0.1m to 0.3m from hole to hole and burden goes up to 1.6m for the splitting of the rock.</p> <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>                                                                                                                                                                                                                                                                                                          |
|    | a. Details of Topsoil/ Overburden                                                                                                                                                                                                                                                 | <p>The topsoil is 61272MT will be removed and stacked for earth bund in the north &amp; western side of the lease area to prevent inherent entry of cattle's and human as per rules 106, Metalliferous Mines Regulations, 1961. If Multi Colour granite may be unsold will be keep within the lease boundary.</p>                                                                                                                                                                                                                                                                                                              |
|    | b. Mineral waste and side burden waste: -                                                                                                                                                                                                                                         | <p>The Multi Colour granite rejects are 182468MT (up to 60%) and Weathered rock is 91908MT (Totally 274376MT) will be removed and dumped in the North &amp; East side of the lease area average dimensions of (L147m X W35m X H11.4m &amp; L169m X W16m X H17m) for the period of five years. As per G.O (Ms)No.94, Industries (MME.1) Department Date:09.05.2022. The Granite Waste not Capable of being sold as Dimensional blocks that shall be reduced to the size equal to or less than 15cm X 10cm, so as to be used as road metal or for production of manufactured sand (M-Sand) or for any other useful purposes.</p> |
| h. | <b>Underground Mines:</b>                                                                                                                                                                                                                                                         | <p>: It is an open cast quarry operation only</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| i. | <p><b>Extent of mechanization:</b></p> <p>Being a fresh quarry lease, 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</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

R. Ash

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.

The following machinery already deployed in this quarry by project proponent: -

**(1) (a) Drilling Machines:**

| Type        | No | Dia of hole (mm) | Size / Capacity | Make | Motive power          | H.P. |
|-------------|----|------------------|-----------------|------|-----------------------|------|
| Jack Hammer | 4  | 32 mm            | Hand held       | ---  | Compressor Air        | --   |
| Compressor  | 2  | ---              | Air             | ---  | Diesel/<br>Electrical | --   |

**(1) (b) Cutting equipment's:**

- i. Diamond wire saw machine = 2 no's
- ii. Line drilling machinery = 1 no's

**(2) Loading Equipment:**

| Type      | No | H.P                   | Size/Capacity | Make   | Motive power |
|-----------|----|-----------------------|---------------|--------|--------------|
| Excavator | 1  | 2.9-4.5m <sup>3</sup> | --            | Diesel | --           |

**(3) 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 "B" 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 production purposes.                                                                                     |
| (e) Main destination to which ore is transported (giving to and from distance) | : | The excavated Multi Colour granite transported to needy buyers                                                                                     |

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(b) Details of hauling / transport equipment:

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

**(4).Miscellaneous:**

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

(A) Operations : The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only.

(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.

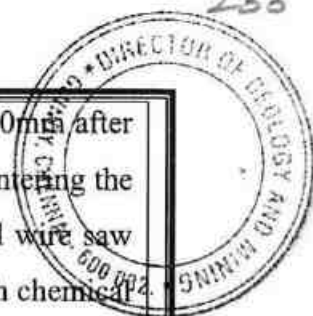
**5. BLASTING:**

*a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.*

**Blasting pattern:** It is an Eco-friendly quarry operation, no blasting is proposed, Diamond wire saw cutting method is adopted by the lessee. 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)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.

**Chemical Blasting Method:** 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

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to 6 meters are drilled in close spacing. The spacing is generally 5 to 10mm after the entire line is drilled, it is plugged to prevent any foreign materials entering the hole, later two vertical and one bottom cut are made with slotters and wire saw machines. After these operations are complete, the holes are loaded with chemical generates a crack which is through the holes drilled. The crack is expanded any hydraulic bags are used to pull the rock.

**b) Miscellaneous:**

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

**a) For operation:**

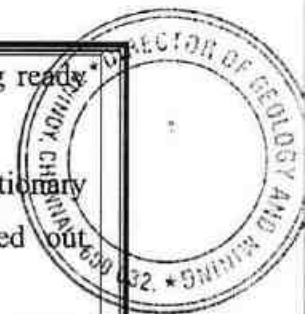
1. Drill rods 0.4m, 0.5, 0.6m, 0.75m, 1.65m, 2.25m, 3m and 3.6m.
2. Steel alloy chains of sufficient length of 12mm, 16mm, 18mm sizes.
3. "D" Shackles to link the chain length,
4. Rubber hose of required length,
5. Hose clamps to link the compressor delivery hoses,
6. Feather and wedges of 6" and 12"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

|                                                                              |   |                |
|------------------------------------------------------------------------------|---|----------------|
| c) Powder factor in ore and overburden / waste / development heading / stope | : | Not applicable |
|------------------------------------------------------------------------------|---|----------------|

|                                                                    |   |                |
|--------------------------------------------------------------------|---|----------------|
| 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 will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/mines manager. |
|-------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

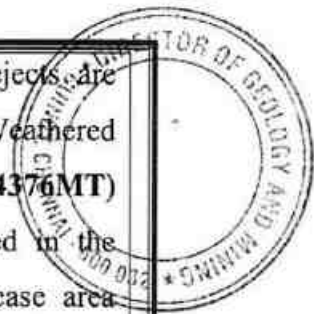
R. A. S. F.



|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2. First Aid Box will be keeping ready at all the time.<br>3. Necessary precautionary announcement will be carried out before the blasting operation.                                                                                                                                              |                          |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------|-----------------------------|---------------------|--------------------------|---|-------|-------|-------|----|-------|-------|-------|-----|-----|-----|-------|----|-----|-----|-------|---|-----|-----|-------|--------------|--------------|--------------|---------------|
| 6.           | <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 65m in summer and 60m in rainy season from the general ground level in the adjacent bore wells of the area.                                                                                                                                             |                          |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
|              | b) Workings expected to be _____ m. above / reach below water table by the year _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | : Ultimate mining depth is 35m 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 shall be less than 300 Lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. |                          |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| 7.           | <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 next five years:                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                    |                          |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
|              | <table border="1"> <thead> <tr> <th>Year</th><th>Topsoil/<br/>Overburden (MT)</th><th>Weathered rock (MT)</th><th>Mineral<br/>rejects/Waste</th></tr> </thead> <tbody> <tr> <td>I</td><td>29008</td><td>43512</td><td>36634</td></tr> <tr> <td>II</td><td>32264</td><td>48396</td><td>36125</td></tr> <tr> <td>III</td><td>---</td><td>---</td><td>36522</td></tr> <tr> <td>IV</td><td>---</td><td>---</td><td>36681</td></tr> <tr> <td>V</td><td>---</td><td>---</td><td>36506</td></tr> <tr> <td><b>Total</b></td><td><b>61272</b></td><td><b>91908</b></td><td><b>182468</b></td></tr> </tbody> </table> |                                                                                                                                                                                                                                                                                                    |                          | Year | Topsoil/<br>Overburden (MT) | Weathered rock (MT) | Mineral<br>rejects/Waste | I | 29008 | 43512 | 36634 | II | 32264 | 48396 | 36125 | III | --- | --- | 36522 | IV | --- | --- | 36681 | V | --- | --- | 36506 | <b>Total</b> | <b>61272</b> | <b>91908</b> | <b>182468</b> |
| Year         | Topsoil/<br>Overburden (MT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Weathered rock (MT)                                                                                                                                                                                                                                                                                | Mineral<br>rejects/Waste |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| I            | 29008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 43512                                                                                                                                                                                                                                                                                              | 36634                    |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| II           | 32264                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 48396                                                                                                                                                                                                                                                                                              | 36125                    |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| III          | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ---                                                                                                                                                                                                                                                                                                | 36522                    |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| IV           | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ---                                                                                                                                                                                                                                                                                                | 36681                    |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| V            | ---                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ---                                                                                                                                                                                                                                                                                                | 36506                    |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| <b>Total</b> | <b>61272</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>91908</b>                                                                                                                                                                                                                                                                                       | <b>182468</b>            |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |
| (b)          | Land chosen for disposal of waste with proposed justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | : The granite rejects are dumped on west side.                                                                                                                                                                                                                                                     |                          |      |                             |                     |                          |   |       |       |       |    |       |       |       |     |     |     |       |    |     |     |       |   |     |     |       |              |              |              |               |

R. Ash





- (c) Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated year wise.
- : The Multi Colour granite rejects are **182468MT** (up to 60%) and Weathered rock is **91908MT** (Totally **274376MT**) will be removed and dumped in the North & East side of the lease area average dimensions of (L147m X W35m X H11.4m & L169m X W16m X H17m) for the period of five years. The topsoil is **61272MT** will be removed and stacked for earth bund in the North & western side of the lease area.
- As per G.O (Ms)No.94, Industries (MME.1) Department Date:09.05.2022. The Granite Waste not Capable of being sold as Dimensional blocks that shall be reduced to the size equal to or less than 15cm X 10cm, so as to be used as road metal or for production of manufactured sand (M-Sand) or for any other useful purposes.

**8. USES OF MINERAL:**

- (a) Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use) :
- The quarried Multi Colour granite blocks are used to make floors, monuments etc.
- (b) Indicate physical and chemical specifications stipulated by buyers :
- The materials produced at this quarry are Multi Colour granite which is used in floors, furniture, counter tops and monuments.
- The properties of granite which are normally valued for exploitation are compressive strength, tensile strength, density, p-wave velocity, etc. For

R. Ash



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                        |      |                |                |      |  |  |              |     |  |  |                     |     |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------|----------------|------|--|--|--------------|-----|--|--|---------------------|-----|
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | marketability, other requirements like colour, texture, granularity, size, water absorption, porosity, hardness, moisture content, etc. are also essential. Raw blocks should be free from normal defects like fractures, joints, shears, hairline cracks, segregation, veins, etc.                                                                                                                    |      |                |                |      |  |  |              |     |  |  |                     |     |
| (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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | : No blending process is involved in quarry. Blocks approved for export are shipped from harbor to exporter's designations.                                                                                                                                                                                                                                                                            |      |                |                |      |  |  |              |     |  |  |                     |     |
| 9.  | <b>OTHERS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                        |      |                |                |      |  |  |              |     |  |  |                     |     |
| (a) | <b>Describe briefly the following</b><br>Site services                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | : Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for mine laborers. No manual mine or stock 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. |      |                |                |      |  |  |              |     |  |  |                     |     |
| (b) | <p>Employment potential:</p> <p>As per Mines safety under the provisions of Metalliferous Mines Regulations, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision.</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 MMR, 1961 norms.</p> <table border="1"> <tr> <td>1.</td> <td>Highly Skilled</td> <td>Quarry Manager</td> <td>1No.</td> </tr> <tr> <td></td> <td></td> <td>Mines Forman</td> <td>1No</td> </tr> <tr> <td></td> <td></td> <td>Mechanical Engineer</td> <td>1No</td> </tr> </table> |                                                                                                                                                                                                                                                                                                                                                                                                        | 1.   | Highly Skilled | Quarry Manager | 1No. |  |  | Mines Forman | 1No |  |  | Mechanical Engineer | 1No |
| 1.  | Highly Skilled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Quarry Manager                                                                                                                                                                                                                                                                                                                                                                                         | 1No. |                |                |      |  |  |              |     |  |  |                     |     |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mines Forman                                                                                                                                                                                                                                                                                                                                                                                           | 1No  |                |                |      |  |  |              |     |  |  |                     |     |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mechanical Engineer                                                                                                                                                                                                                                                                                                                                                                                    | 1No  |                |                |      |  |  |              |     |  |  |                     |     |

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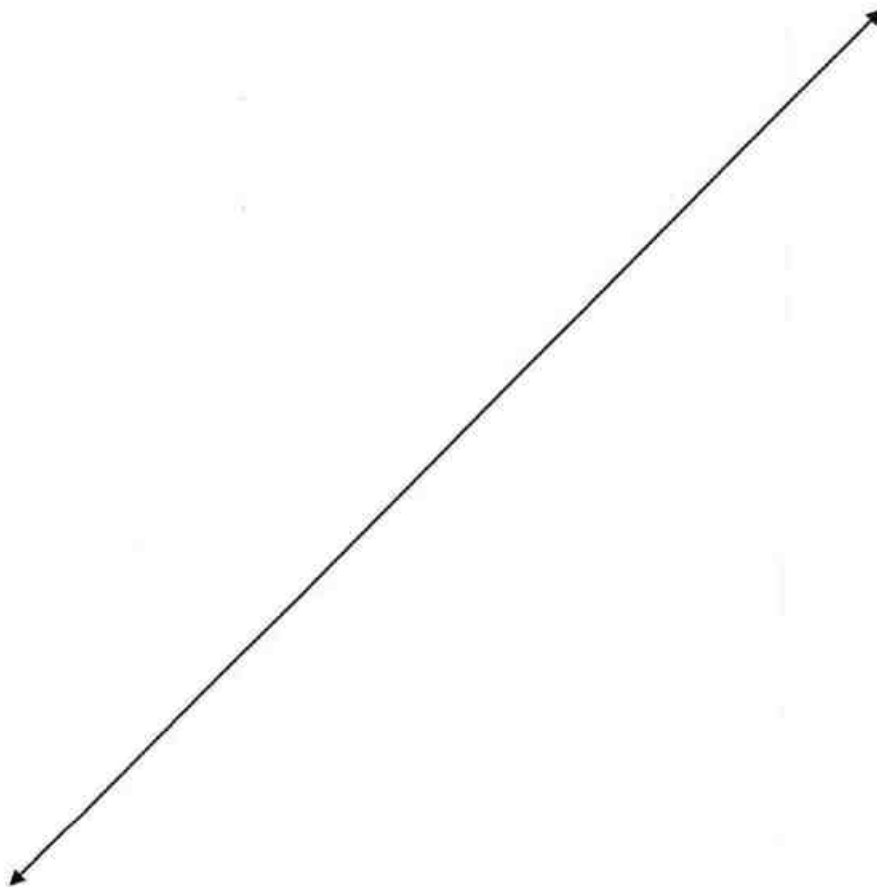


|     |                                                                                                                                                                                                                                                                                                                                                |                        |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                                                                                                                                                                                                                                                                                | Accountant cum & admin | 1No.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2.  | Skilled                                                                                                                                                                                                                                                                                                                                        | Earth moving Operator  | 1No                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                                                                                                                                                                                                                                                                                                                                | Line drilling Operator | 1 Nos.                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     |                                                                                                                                                                                                                                                                                                                                                | Wire saw Operator      | 2 No.                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                                                                                                                                                                                                                                                                                                                                | Driver                 | 2No                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 3.  | Semi – skilled                                                                                                                                                                                                                                                                                                                                 | Helpers, Greaser's     | 1 No                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4.  | Unskilled                                                                                                                                                                                                                                                                                                                                      | Cutter                 | 4Nos                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     |                                                                                                                                                                                                                                                                                                                                                | Musdoor / Labours      | 8 Nos                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                                                                                                                                                                                                                                                                                                                                | <b>Total =</b>         | <b>23Nos</b>                                                                                                                                                                                                                                                                                                                                                                                                           |
| 10  | <b>MINERAL PROCESSING/BENEFICIATIONS:</b>                                                                                                                                                                                                                                                                                                      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (a) | If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.                            | :                      | Excavated Multi Colour granite raw blocks shall be directly sale to the needy buyers.                                                                                                                                                                                                                                                                                                                                  |
| (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). | :                      | No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system. |
| (c) | A flow sheet or schematic diagram of the processing procedure should be attached.                                                                                                                                                                                                                                                              | :                      | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                         |
| (d) | Specify quantity and type of chemicals to be used in the processing plant.                                                                                                                                                                                                                                                                     | :                      | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                         |

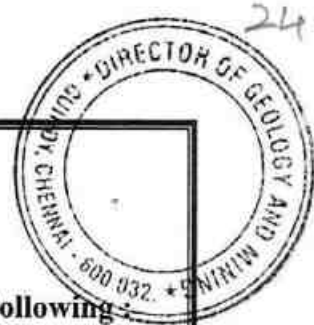
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|     |                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| (e) | Specify quantity and type of chemicals to be stored on site / plant.                                                                                   | : Not applicable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (f) | Indicate quantity (KLD per day) of water required for mining and processing and sources of supply of water. Disposal of water and extent of recycling. | : Drinking is 0.500KLD, <del>utilized water</del> is 0.7KLD, Dust suppression is 1.0KLD and Green Belt is 1.0KLD. Minimum quantity of water 3.2KLD per day has to be maintained as per the Mines Rules, 1952. Drinking water will be bought to authorized vendor of the nearby the village. The dust suppression and green belt development will be bought to water tanker.<br>The sewage water to a tune of 0.7KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit. |



R. A. S. T.



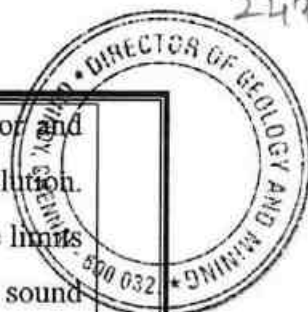
## PART – B

### 11.0 ENVIRONMENTAL MANAGEMENT PLAN:

a) Attach a note on the statuts of Baseline information with regard to the Following:

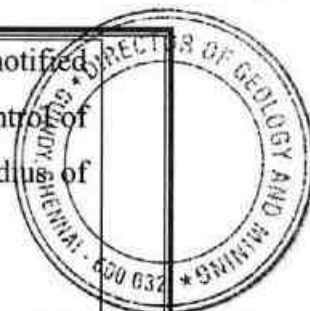
| 11.1           | Existing land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present land use pattern is given as below.                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                     |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|----------------------|----|-------------------|-----|---|------------|-----|---|-------------------------|-----|---|------|-----|---|------------|-----|---|-----------------|---------|----------------|--|----------------|
|                | <table border="1"> <thead> <tr> <th>S. No.</th><th>Land Use</th><th>Present area (Hect.)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Area under Mining</td><td>Nil</td></tr> <tr> <td>2</td><td>Waste dump</td><td>Nil</td></tr> <tr> <td>3</td><td>Office (Infrastructure)</td><td>Nil</td></tr> <tr> <td>4</td><td>Road</td><td>Nil</td></tr> <tr> <td>5</td><td>Green Belt</td><td>Nil</td></tr> <tr> <td>6</td><td>Unutilized area</td><td>3.77.00</td></tr> <tr> <td colspan="2"><b>Total =</b></td><td><b>3.77.00</b></td></tr> </tbody> </table> |                                                                                                                                                                                                                                                                                                     | S. No. | Land Use | Present area (Hect.) | 1. | Area under Mining | Nil | 2 | Waste dump | Nil | 3 | Office (Infrastructure) | Nil | 4 | Road | Nil | 5 | Green Belt | Nil | 6 | Unutilized area | 3.77.00 | <b>Total =</b> |  | <b>3.77.00</b> |
| S. No.         | Land Use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Present area (Hect.)                                                                                                                                                                                                                                                                                |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 1.             | Area under Mining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Nil                                                                                                                                                                                                                                                                                                 |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 2              | Waste dump                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Nil                                                                                                                                                                                                                                                                                                 |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 3              | Office (Infrastructure)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Nil                                                                                                                                                                                                                                                                                                 |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 4              | Road                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Nil                                                                                                                                                                                                                                                                                                 |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 5              | Green Belt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Nil                                                                                                                                                                                                                                                                                                 |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 6              | Unutilized area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.77.00                                                                                                                                                                                                                                                                                             |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| <b>Total =</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>3.77.00</b>                                                                                                                                                                                                                                                                                      |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 11.2           | Water Regime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | : Water table in this area is noticed at a depth of 65m in summer and 60m in rainy season from the general ground level and presently the quarrying of Multi Colour granite is ultimate up to a depth of 35m below ground level. Hence, it will not affect the ground water depletion of this area. |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 11.3           | Flora and Fauna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | : There is no major flora observed in this area and except acacia bushes, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.                                                             |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |
| 11.4           | Quality of air, ambient noise level and water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | : Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.<br><br>In this quarry, the machinery operations                                                                         |        |          |                      |    |                   |     |   |            |     |   |                         |     |   |      |     |   |            |     |   |                 |         |                |  |                |

R. Ash



|      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |           | 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. |            |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------|------------|---|---------|-------|-------|------|---|----------|------|-------|------|---|----------------|-------|-------|-----|---|----------|------|-------|------|--|--|--|
| 11.5 | Climatic conditions:<br>Krishnagiri, India weather forecasted for the maximum temperature of 29°C / 84°F. Min temperature will be 18°C/64°F. Most precipitation falling will be 8.20mm/0.32inch. Windiest day is expected to see wind of upto 17kmph/ 11mph.                                                                                                                                                                             |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 11.6 | Human Settlement:<br>The nearest villages are found in the buffer zone with population as per 2011 census.                                                                                                                                                                                                                                                                                                                               |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
|      | <table><tr><th>S.No</th><th>Village</th><th>Direction</th><th>Distance in Kms</th><th>Population</th></tr><tr><td>1</td><td>Jakkeri</td><td>North</td><td>1.1km</td><td>3957</td></tr><tr><td>2</td><td>Anusonai</td><td>East</td><td>1.7km</td><td>2709</td></tr><tr><td>3</td><td>Bommathathanur</td><td>South</td><td>1.8km</td><td>856</td></tr><tr><td>4</td><td>Vanagiri</td><td>West</td><td>1.3km</td><td>1359</td></tr></table> | S.No      | Village                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Direction  | Distance in Kms | Population | 1 | Jakkeri | North | 1.1km | 3957 | 2 | Anusonai | East | 1.7km | 2709 | 3 | Bommathathanur | South | 1.8km | 856 | 4 | Vanagiri | West | 1.3km | 1359 |  |  |  |
| S.No | Village                                                                                                                                                                                                                                                                                                                                                                                                                                  | Direction | Distance in Kms                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Population |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 1    | Jakkeri                                                                                                                                                                                                                                                                                                                                                                                                                                  | North     | 1.1km                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3957       |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 2    | Anusonai                                                                                                                                                                                                                                                                                                                                                                                                                                 | East      | 1.7km                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2709       |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 3    | Bommathathanur                                                                                                                                                                                                                                                                                                                                                                                                                           | South     | 1.8km                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 856        |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 4    | Vanagiri                                                                                                                                                                                                                                                                                                                                                                                                                                 | West      | 1.3km                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1359       |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 11.7 | Public buildings, places of worship and monuments                                                                                                                                                                                                                                                                                                                                                                                        | :         | No infrastructure like residential building, places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.                                                                                                                                                                                                                                                                                                           |            |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |
| 11.8 | Attach plans showing the locations of sampling stations                                                                                                                                                                                                                                                                                                                                                                                  | :         | The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.                                                                                                                                                                                                                 |            |                 |            |   |         |       |       |      |   |          |      |       |      |   |                |       |       |     |   |          |      |       |      |  |  |  |





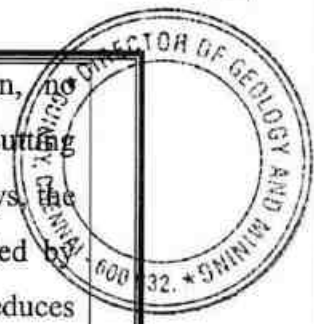
|      |                                                                                                                 |                                                                                                                                        |
|------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 11.9 | Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974 | : The lease area doesn't fall under notified area under Water (Prevention & Control of Pollution), Act, 1974 within the radius of 1km. |
|------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

a) *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>The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form:</p> <table border="1"> <thead> <tr> <th>S. No.</th><th>Land Use</th><th>Area in use during the quarrying period (Hect.)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Under quarrying area</td><td>1.49.50</td></tr> <tr> <td>2</td><td>Infrastructure</td><td>0.02.00</td></tr> <tr> <td>3</td><td>Roads</td><td>0.05.00</td></tr> <tr> <td>4</td><td>Waste dump</td><td>0.78.50</td></tr> <tr> <td>5</td><td>Green belt</td><td>1.20.00</td></tr> <tr> <td>6</td><td>Drainage &amp; Settling Tank</td><td>0.10.00</td></tr> <tr> <td>7</td><td>Unutilized</td><td>0.12.00</td></tr> <tr> <td></td><td><b>Total</b></td><td><b>3.77.00</b></td></tr> </tbody> </table> |                                                 | S. No. | Land Use | Area in use during the quarrying period (Hect.) | 1. | Under quarrying area | 1.49.50 | 2 | Infrastructure | 0.02.00 | 3 | Roads | 0.05.00 | 4 | Waste dump | 0.78.50 | 5 | Green belt | 1.20.00 | 6 | Drainage & Settling Tank | 0.10.00 | 7 | Unutilized | 0.12.00 |  | <b>Total</b> | <b>3.77.00</b> |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------|----------|-------------------------------------------------|----|----------------------|---------|---|----------------|---------|---|-------|---------|---|------------|---------|---|------------|---------|---|--------------------------|---------|---|------------|---------|--|--------------|----------------|
| S. No. | Land Use                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Area in use during the quarrying period (Hect.) |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 1.     | Under quarrying area                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.49.50                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 2      | Infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.02.00                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 3      | Roads                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.05.00                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 4      | Waste dump                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.78.50                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 5      | Green belt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.20.00                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 6      | Drainage & Settling Tank                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.10.00                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
| 7      | Unutilized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.12.00                                         |        |          |                                                 |    |                      |         |   |                |         |   |       |         |   |            |         |   |            |         |   |                          |         |   |            |         |  |              |                |
|        | <b>Total</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>3.77.00</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. |

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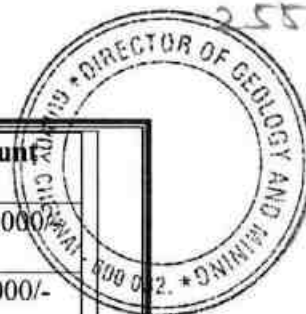


|        |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| v).    | Vibration levels<br>(due to blasting) | It is an Eco-friendly quarry operation, no blasting is proposed, Diamond wire saw cutting method is adopted by the lessee. Now 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 shall be recoded using mini seismograph devises as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms. |
| vi).   | Water regime                          | Drinking water will be bought to authorized vendor of the nearby the village. The dust suppression and green belt development will be bought to water tanker.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 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> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| viii). | Historical monuments<br>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 61272MT 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. If Multi Colour granite may be unsold will be keep within the lease boundary.                                                                                                                                     |
| ii).  | Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given. | : | The present mining is proposed to a depth of 30m below ground level 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. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the Multi Colour granite persist still at deeper level. |
| iii). | <p><i>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.</i></p> <p>Safety barrier, nearby school area and Nearest Panchayat approach Roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below</p>       |   |                                                                                                                                                                                                                                                                                                                                                                                                                     |



| Year   | Place                                 | Area in Sq.m | No.of Plants | Rate of survival | Rate                | Amount in Rs |
|--------|---------------------------------------|--------------|--------------|------------------|---------------------|--------------|
| First  | Lease Boundary                        | 12000        | 1300         | 80%              | @100 Rs Per sapling | 1,30,000/-   |
| Second | Approach road and Nearby Village Road | --           | 400          | 80%              |                     | 40,000/-     |
| Third  | Schools                               | --           | 300          | 80%              |                     | 30,000/-     |
| Total  |                                       |              |              |                  |                     | 2,00,000/-   |

|        |                                                                                                                                                                     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 are <b>182468MT</b> (up to 60%) and Weathered rock is <b>91908MT</b> (Totally <b>274376MT</b> ) will be removed and dumped in the North & East side of the lease area average dimensions of (L147m X W35m X H11.4m & L169m X W16m X H17m) for the period of five years.<br>As per G.O (Ms)No.94, Industries (MME.1) Department Date:09.05.2022. The Granite Waste not Capable of being sold as Dimensional blocks that shall be reduced to the size equal to or less than 15cm X 10cm, so as to be used as road metal or for production of manufactured sand (M-Sand) or for any other useful purposes. |
| 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| vii).  | Measures for minimizing adverse effects on water regime.                                                                                                            | : | There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| viii). | Protective measures for ground vibrations / air blast caused by blasting,                                                                                           | : | It is a small "B" category open cost, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|      |                                                                                                                                         |   |                                                                                                                     |
|------|-----------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------|
| ix). | Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity. | : | No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity. |
| x).  | Socioeconomic benefits arising out of mining.                                                                                           | : | The nearest villages are will get employment benefits.                                                              |

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

Not applicable. It is "B" category quarry

**12.0 PROGRESSIVE MINE CLOSURE PLAN:**

|      |                                                                                                            |   |                                                                                                                                                                                                                                                                                                                     |
|------|------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12.1 | Steps proposed for phased restoration, reclamation of already mined out area.                              | : | The present mining is proposed to depth of 30m below ground level. The mined-out area will be fenced on top of open cast working with S1 fencing to arrest the entry of cattle's and public in to the quarry site.                                                                                                  |
| 12.2 | Measures to be under taken on mine closure as per Act & Rules                                              | : | Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 1300 trees are proposed lease boundary for mining plan period. No immediate proposals for closure of pit as the Multi Colour granite persist still at deeper level. |
| 12.3 | Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area | : | The quarry lease is a fresh mining lease for 20 years lease period.                                                                                                                                                                                                                                                 |
| 12.4 | Mine closure activity                                                                                      | : | The mined-out area will be fenced on top of open cast working with S1 fencing. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the Multi Colour granite persist still at deeper level.                                                              |
| 12.5 | Safety and security                                                                                        | : | Safety measures implement to the prevent access to surface opening excavations will be taken as per Metalliferous Mines Regulations, 1961, it                                                                                                                                                                       |



|      |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                         | is a small open cast mining method adopted.<br>Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.                                                                                                                                                                                                                                                                                                                                                                 |
| 12.6 | Disaster management and Risk Assessment                                 | : Open cast mining method is adopted in this quarry. If the benches are made with proposed height and width no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first 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. 23 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(tnreginet.gov.in) | : Rs. 18,90,655, /- |

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|          |                                                                                                                 |                                       |
|----------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------|
|          | 2. Labour Shed                                                                                                  | Rs. 50,000,/-                         |
|          | 3. Sanitary Facility                                                                                            | : Rs. 1,50,000/-                      |
|          | 4. Fencing                                                                                                      | : Rs. 6,00,000/-                      |
|          | 5. Other expenses (Security guard, bin, etc)                                                                    | : Rs. 5,00,000/-                      |
|          | <b>Total</b>                                                                                                    | <b>: Rs. 31,90,655/-</b>              |
| <b>B</b> | <b>B. Machinery cost</b>                                                                                        | <b>: Rs. 25,00,000/- (Hire Basis)</b> |
| <b>C</b> | <b>Total Expenditure of EMP cost (for five years)</b>                                                           |                                       |
|          | 1. Drinking Water Facility                                                                                      | : Rs. 1,50,000/-                      |
|          | 2. Sanitary facility & Maintenance                                                                              | : Rs. 1,50,000/-                      |
|          | 3. Permanent water sprinkler                                                                                    | : Rs. 1,50,000/-                      |
|          | 4. Afforestation and maintenance                                                                                | : Rs. 2,00,000/-                      |
|          | 5. Safety Kits                                                                                                  | : Rs. 1,00,000/-                      |
|          | 6. Provision of tyre washing facility                                                                           | : Rs. 1,00,000/-                      |
|          | 7. Surface runoff management structures like garland drain, settling pond & Bund (0.10.0Hect or 1000Sq.m X 400) | : Rs. 4,00,000/-                      |
|          | 8. Environment monitoring                                                                                       | : Rs. 5,00,000/-                      |
|          | <b>Total</b>                                                                                                    | <b>: Rs. 17,50,000/-</b>              |
| <b>D</b> | <b>Total Project Cost (A+B+C)</b>                                                                               | <b>: Rs. 74,40,655/-</b>              |

### **13.0 FINANCIAL ASSURANCE:**

Not applicable, it is a small "B" 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 The Additional Chief Secretary of Tamil Nadu, vide letter No. 26/MMB.2/2025, Dated 23.01.2026
- (iv) Total proposed production of ROM is about 457294MT. Of which, Multi Colour granite is about 121646MT at the recovery of 40% and granite rejects are 182468MT at the Waste of 60%, Weathered rock is 91908MT and Top soil is 61272MT up to a depth of 30m below the ground level for first five years mining plan period.

R. A. S. J.



**17.0 CSR Expenditure:**

CSR (Corporate Social responsibility) shall provide by the applicant @ 20% 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:

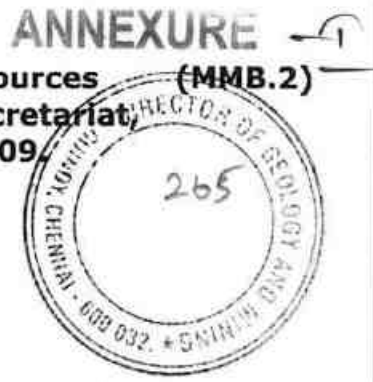
Signature of the Qualified Person

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

*Ummi* 4/7  
**DIRECTOR**  
Department of Geology & Mining  
Guindy, Chennai - 600 032.

*E*  
*10/2/26*  
This Mining Plan is Approved  
Subject to the Conditions / Stipulation  
Indicated in the Mining Plan Approval

Letter No. 6324/MM4 Dated 12-02-2026.  
2025



**Letter No.26/MMB.2/2025, dated: 23.01.2026**

From

Thiru.Shunchonngam Jatak Chiru, I.A.S.,  
Additional Chief Secretary to Government (FAC).

To

✓ M/s.Anantra Granites,  
S.No.733/5,Jekkeri Village,  
Denkanikottai Village,  
Krishnagiri District.

Sir,

Sub: Natural Resources - Minor Mineral - Multi Colour  
Granite - Quarry lease application preferred by  
M/s.Anantra Granites, Krishnagiri for quarrying of  
Multi Colour Granite over an extent of 3.77.0  
hectares of patta lands in S.F.Nos.202/2 etc., of  
Jakkeri Village, Denkanikottai Taluk, Krishnagiri  
District - Precise area - Communicated - Approved  
Mining Plan and Environmental Clearance - Called  
for.

- Ref: 1. Your Quarry Lease Application dated:  
14.02.2022.
2. From the District Collector, Krishnagiri, Note File  
Roc.No.230/2022/Mines, dated:27.06.2025.
3. From the Director of Geology and Mining,  
Chennai, Note File No.6324/MM4/2025,  
dated:31.12.2025.

\*\*\*\*\*

I am directed to invite attention to the references second and third cited, wherein the District Collector, Krishnagiri and the Director of Geology and Mining, Chennai have recommended and forwarded your quarry lease application for grant of quarry lease for quarrying of Multi Colour Granite over an extent of 3.77.0 hectares of patta lands in S.F.Nos.202/2 (0.81.00 hectare), 203/2A (0.44.00 hectare), 203/2B (0.10.00 hectare), 733/1 (0.37.00 hectare), 733/3 (0.86.50 hectare) and 733/5 (1.18.50 hectare) of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District for a period of 20 years under Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. The Government have carefully examined the recommendations of the District Collector, Krishnagiri and the Director of Geology and Mining and decided to communicate precise area for quarrying Multi Colour Granite over an extent of 3.77.0 hectares of patta lands in S.F.Nos.202/2 (0.81.00 hectare), 203/2A (0.44.00 hectare), 203/2B (0.10.00 hectare),

(p.t.o)

R. A. S. J.



733/1 (0.37.00 hectare), 733/3 (0.86.50 hectare) and 733/5 (1.18.50 hectare) of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District. Accordingly, the Government hereby communicate the above said area recommended by the Director of Geology and Mining as precise area under sub-rule (13) of Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease for a period of 20 years, for quarrying Multi Colour Granite over an extent of 3.77.0 hectares of patta lands in S.F.Nos.202/2 etc., of Jakkeri Village, Denkanikottai Taluk, Krishnagiri District.

3. I, therefore, request you to furnish the Approved Mining Plan for the above-mentioned Precise Area through the Commissioner of Geology and Mining within a period of 3 months as per rule 12 of the Granite Conservation and Development Rules, 1999 and to submit the Environmental Clearance obtained from the competent authority for the above said area as per rule 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959, for grant of quarry lease subject to the following conditions: -

- (i) A safety distance of 7.5 metres shall be maintained for the adjacent patta lands.
- (ii) A safety distance of 10.0 metres shall be maintained for the adjacent Government lands in SF.No.732/3 situated on the northern side, SF.No.201 & 733/2 situated on eastern side and SF.No.733/6 situated on south eastern side & S.F.Nos.202/1, 203/1, 237 situated on the western side.
- (iii) A safety distance of 10 metres shall be maintained as per the recommendations of the Executive Engineer, PWD, upper penniyar basin division, Dharmapuri, for the brooke course in SF.No.202/1 and 203/1 (variporamboke) & 237 (Podugal Poramboke).
- (iv) A safety distance 50 metres has to be provided for the quarry workers' shed situated in S.F.733/6 on the south eastern side of the applied area.
- (v) Environment Clearance should be obtained from the competent authority in respect of the subject area as per rule 42 of TNMMCR, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- (vi) As per rule 12 (V) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at his own expenses erect, maintain and keep in repair of all the boundary pillars with DGPS readings.
- (vii) 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.

R. ASJ





- (viii) The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows:
- The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 9 meters.
  - The applicant firm shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
  - A soft copy of the digitalized map with DGPS readings should be submitted in the CD to the Deputy Director, (G&M), Krishnagiri.
- (ix) The applicant firm have to follow the conditions mentioned by the departments a) the Executive Engineer, PWD; b) the Principal Chief Conservator of Forest, Chennai; c) the Wildlife Warden, Hosur Forest Division; d) the Chief Engineer, Agricultural Engineering, Chennai; e) the Member Secretary of Hill Area Conservation Authority / Director of Town and Country Planning.
- (x) The applicant firm should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No. 2921/MM4/2019, dated 01.02.2018 and subsequent corrigendum dated 13.08.2019 using the empanelled agencies before execution of quarry lease.
- (xi) The quarry operation should be restricted only in the area granted on lease.
- (xii) Quarry activity should be carried out from 6.00 am. to 6.00 p.m. only.
- (xiii) Quarried materials should be transported only with permits issued by the Assistant Director / Deputy Director (G&M) and they should be produced before the forest check post officials and necessary entries should be made in the register.
- (xiv) The waste materials generated during the course of quarrying should be dumped only within the lease hold area.
- (xv) The applicant firm should not damage the Government land situated around the applied area if any.
- (xvi) The District administration and Geology and Mining Department should ensure the conditions imposed in G.O.Ms.No.79, Industries Department dated 06.04.2015.
- (xvii) No pollution should be caused to the water bodies situated near the applied area if any.
- (xviii) The applicant firm should use mild explosives during quarrying.

R. Asf

- (xix) As per the Hon'ble Supreme court of India order dated 08.01.2020 in W.P.(C) No.144/2014, after ceasing quarrying operation, re-grassing the quarry area and any other area which may have been disturbed due to the quarrying activity should be restored to a condition which is fit for growth of fodder, flora, fauna etc.,
- (xx) Child labourers should not be engaged for quarry works and all the quarry labourers should be registered with the Labour Welfare Board of Government of Tamil Nadu and should be enrolled in the Group Insurance Scheme.
- (xxi) The District Collector, Krishnagiri shall obtain a sworn-in-affidavit from the applicant, containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB.2/2002-7, Industries Department, dated 09.01.2003 are complied with. Further, the District Administration / Geology and Mining Department should ensure the conditions imposed in G.O.(Ms)No.79, Industries (MMC.1) Department, dated 06.04.2015.



Yours faithfully,

*[Signature]*  
23/01/20

for Additional Chief Secretary to Government (FAC).

Copy to:

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

The District Collector, Krishnagiri District.

*R. Asf*

ANNEXURE



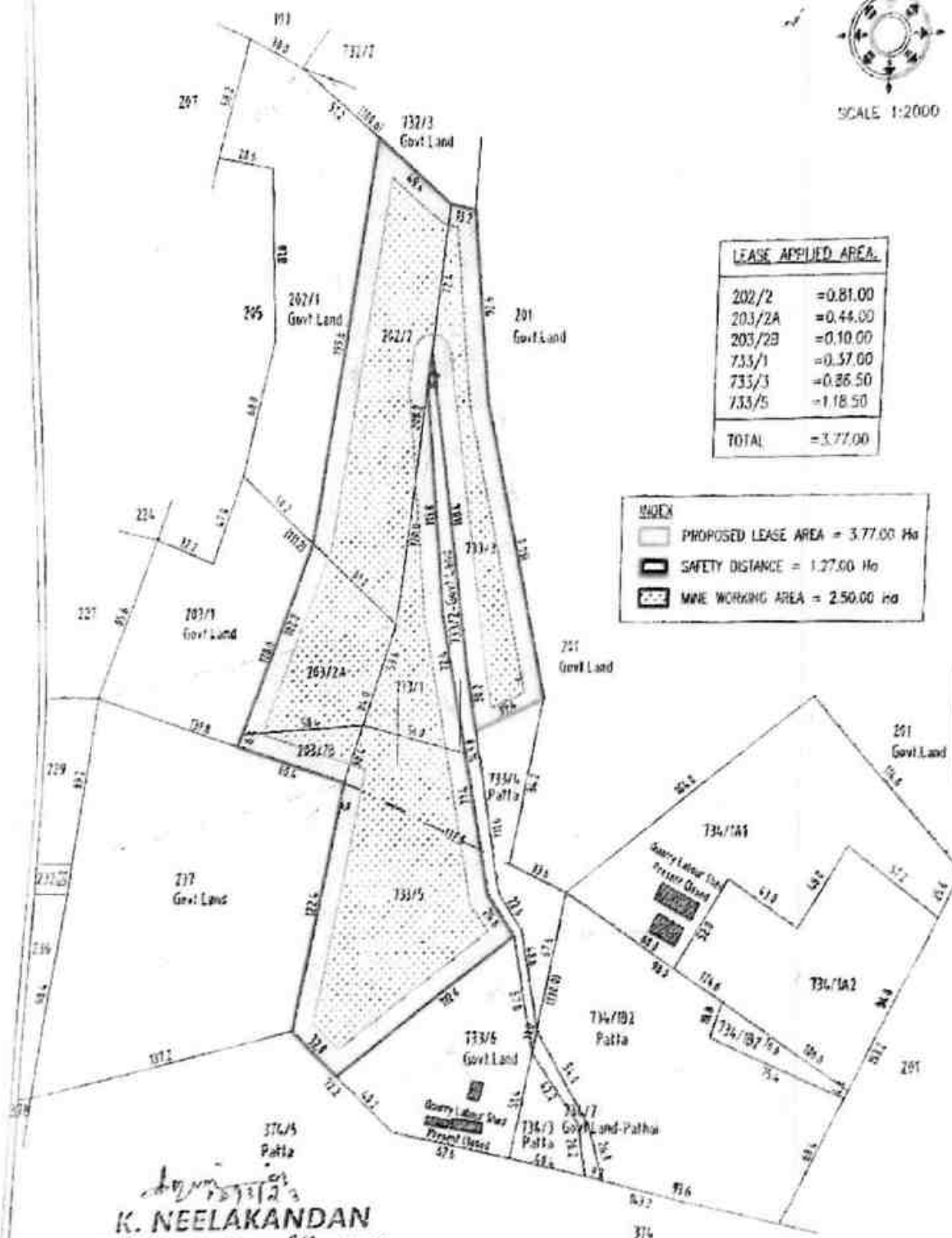
PLAN SHOWING THE COMBINED SKETCH OF S.F.No.202,203 & 733,  
JAKKERI VILLAGE, DENKANIKOTTAI TALUK, KRISHNAGIRI DISTRICT.



SCALE 1:2000

| LEASE APPLIED AREA. |          |
|---------------------|----------|
| 202/2               | =0.81.00 |
| 203/2A              | =0.44.00 |
| 203/2B              | =0.10.00 |
| 733/1               | =0.37.00 |
| 733/3               | =0.86.50 |
| 733/5               | =1.18.50 |
| TOTAL               | =3.77.00 |

| INDEX |                                  |
|-------|----------------------------------|
|       | PROPOSED LEASE AREA = 3.77.00 Ha |
|       | SAFETY DISTANCE = 1.27.00 Ha     |
|       | MAINE WORKING AREA = 2.50.00 Ha  |



*K. Neelakandan*  
**K. NEELAKANDAN**  
 Sub-Inspector of Survey,  
 D/o. Deputy Director, Geology and Mining,  
 Krishnagiri District.

SCALE 1:2000

R. Ash

District : Krishnagiri

Taluk : Denkanikottai

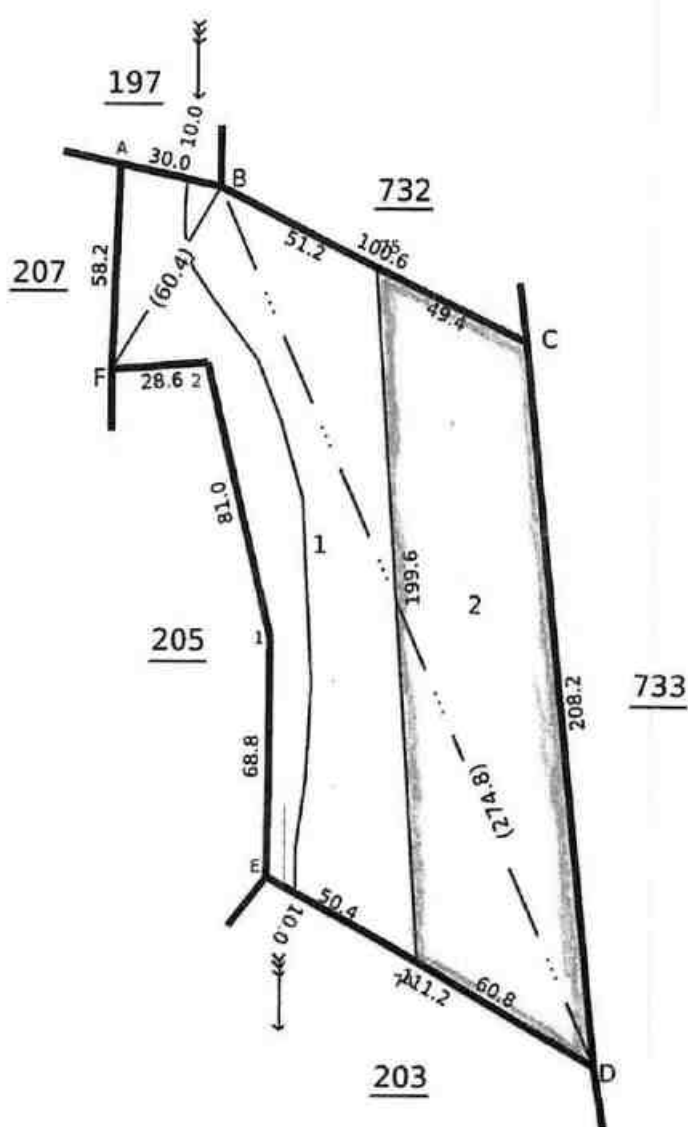
Village : Jakkeri [65]



Survey No : 202

Area : Hect 01 Ares 94.00

Scale : 1 : 2000



LEASE APPLIED AREA



Signed By Tahsildar

Name of approver : mani

Date of Approval : 15-02-2018



Date of Issue: 22-01-2026 11:36:29

Survey and Settlement Department, Government of TamilNadu

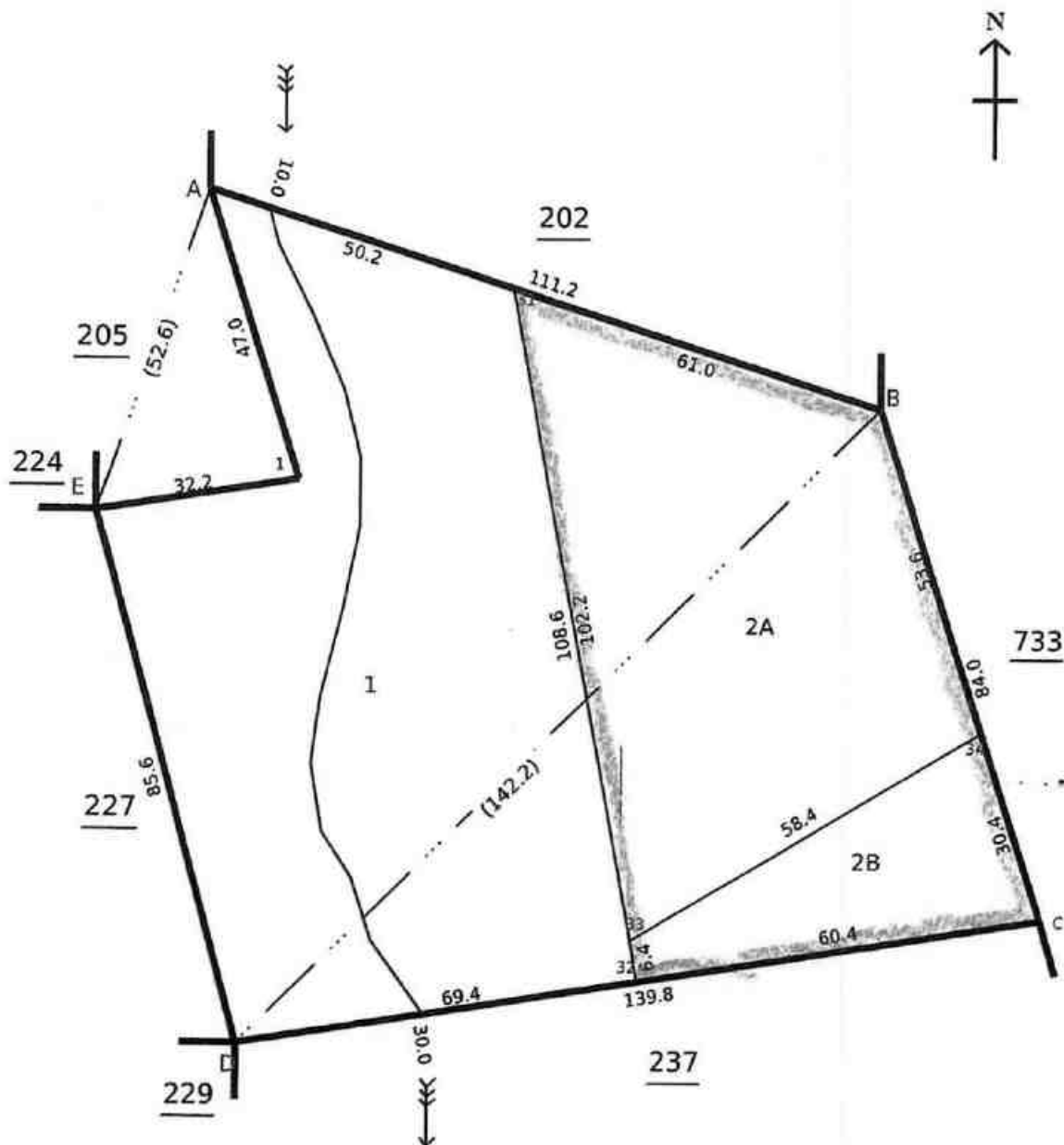
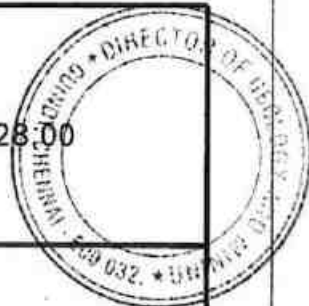
240 fv.1

R. A. J.

District : Krishnagiri  
Taluk : Denkanikottai  
Village : Jakkeri [65]



Survey No : 203  
Area : Hect 01 Ares 28.00  
Scale : 1 : 1000



LEASE APPLIED AREA 

Signed By Tahsildar  
Name of approver : mani  
Date of Approval : 15-02-2018



Date of Issue: 22-01-2026 11:39:24

Survey and Settlement Department, Government of TamilNadu

240 fv.1

R. Asha



பி.பி.சுப்பிரமணியம்

பெரியகிண்குருடா

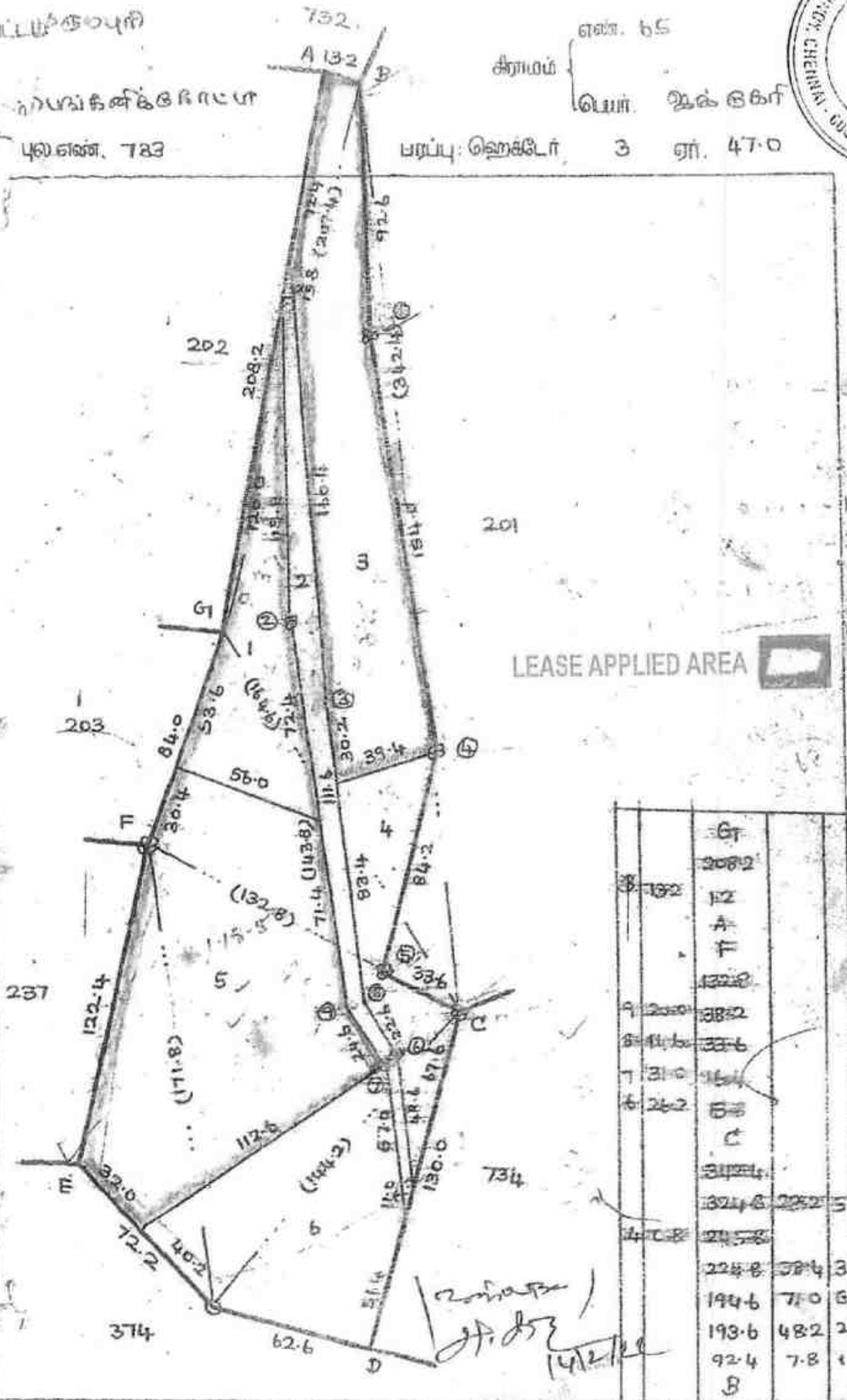
460 எண், 783

எனது 65

கிராமம்

பெயர்: இம் இவர்

பரப்பு: ஹெக்டேர் 3 ஏர். 47.0



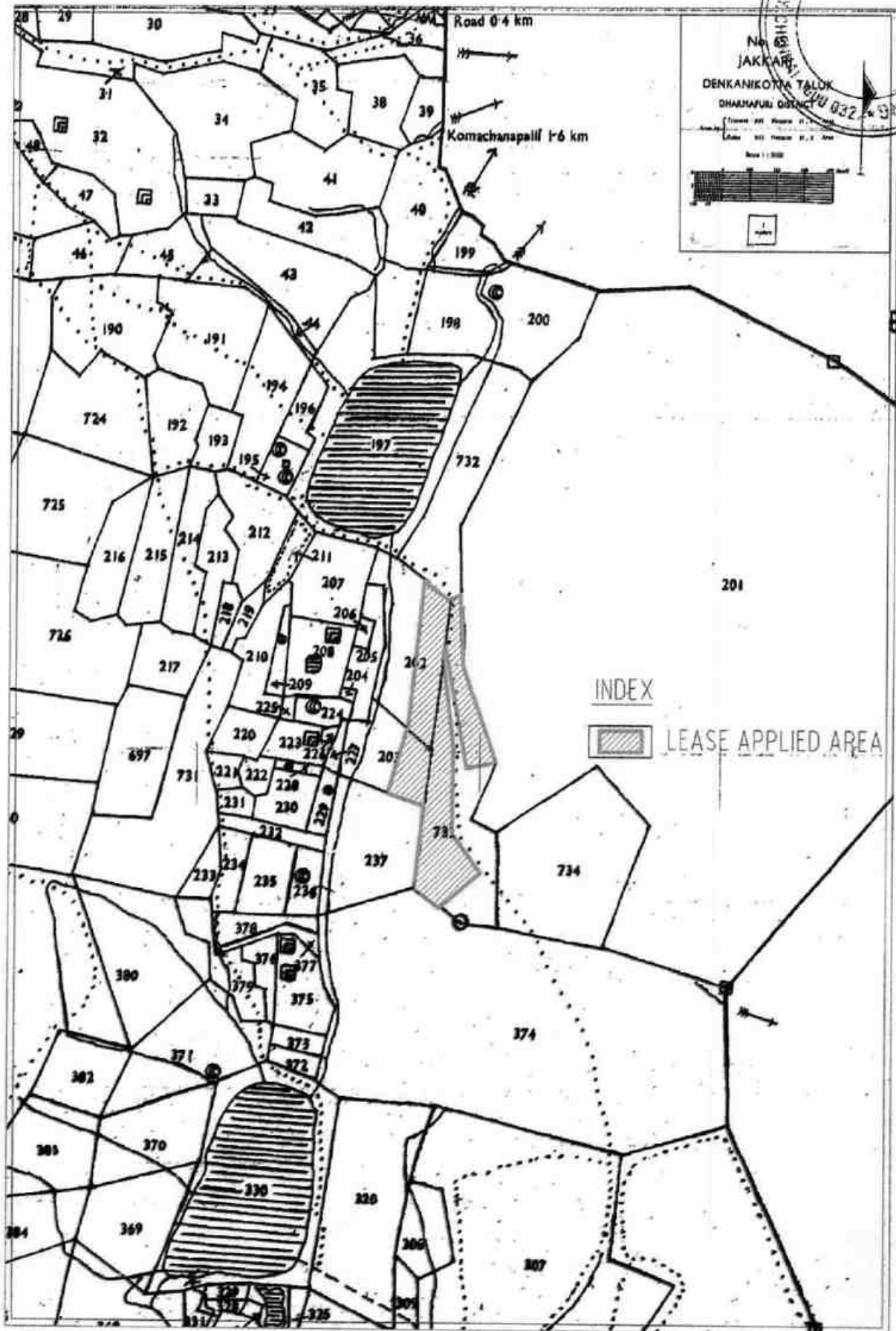
1928: *Polypodium downii*  
15.4.85 FS.

அனாவு. 16.15 = 2000 கி.மீ.

R. Asf



ANNEXURE



R. Ash

## அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி

|                              |            |                                |                             |
|------------------------------|------------|--------------------------------|-----------------------------|
| 1. புல எண்                   | 202        | 9. மண் வயனமும்<br>ரகமும்       | 8 - 4                       |
| 2. உட்பிரிவு எண்             | 2          | 10. மண் தரம்                   | 9                           |
| 3. பழைய புல<br>உட்பிரிவு எண் | -2         | 11. தீர்வை (ரூ - ஹெ)           | 1.38                        |
| 4. பகுதி                     | -          | 12. பரப்பு (ஹெக்டேர் -<br>ஏர்) | 0 - 81.00                   |
| 5. அரசு / ரயத்துவாரி         | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ<br>- பை)  | 1.12                        |
| 6. நிலத்தின் வகை             | பஞ்சை      | 14. பட்டா எண்                  | 9162                        |
| 7. பாசன ஆதாரம்               | -          | 15. குறிப்பு                   | -                           |
| 8. இரு போகமா                 | -          | 16. பெயர்                      | ANANTRA GRANITES<br>மற்றும் |
|                              |            |                                | 26பர்                       |

## குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற  
இணைய தளத்தில் 31/10/065/202/2/30528 என்ற குறிப்பு எண்ணை உள்ளீடு  
செய்து உறுதி செய்துகொள்ளவும்.

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## அ-பதிவேடு விவரங்கள் - ஊரகம்



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மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி

|                              |            |                                |                             |
|------------------------------|------------|--------------------------------|-----------------------------|
| 1. புல எண்                   | 203        | 9. மண் வயனமும்<br>ரகமும்       | 8 - 4                       |
| 2. உட்பிரிவு எண்             | 2A         | 10. மண் தரம்                   | 9                           |
| 3. பழைய புல<br>உட்பிரிவு எண் | -2         | 11. தீர்வை (ரூ - ஹெ)           | 1.38                        |
| 4. பகுதி                     | P          | 12. பரப்பு (ஹெக்டேர் -<br>ஏர்) | 0 - 44.00                   |
| 5. அரசு / ரயத்துவாரி         | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ<br>- பை)  | 0.61                        |
| 6. நிலத்தின் வகை             | பஞ்சை      | 14. பட்டா எண்                  | 9162                        |
| 7. பாசன ஆதாரம்               | -          | 15. குறிப்பு                   | -                           |
| 8. இரு போகமா                 | -          | 16. பெயர்                      | ANANTRA GRANITES<br>மற்றும் |
|                              |            |                                | 2பேர்                       |

குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற  
இணைய தளத்தில் 31/10/065/203/2A/30528 என்ற குறிப்பு எண்ணை உள்ளீடு  
செய்து உறுதி செய்துகொள்ளவும்.

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## அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி

|                              |            |                                |                             |
|------------------------------|------------|--------------------------------|-----------------------------|
| 1. புல எண்                   | 203        | 9. மண் வயனமும்<br>ரகமும்       | 8 - 4                       |
| 2. உட்பிரிவு எண்             | 2B         | 10. மண் தரம்                   | 9                           |
| 3. பழைய புல<br>உட்பிரிவு எண் | -2         | 11. தீர்வை (ரூ - ஹெ)           | 1.38                        |
| 4. பகுதி                     | -          | 12. பரப்பு (ஹெக்டேர் -<br>ஏர்) | 0 - 10.00                   |
| 5. அரசு / ரயத்துவாரி         | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ<br>- பை)  | 0.14                        |
| 6. நிலத்தின் வகை             | பஞ்சை      | 14. பட்டா எண்                  | 9162                        |
| 7. பாசன ஆதாரம்               | -          | 15. குறிப்பு                   | -                           |
| 8. இரு போகமா                 | -          | 16. பெயர்                      | ANANTRA GRANITES<br>மற்றும் |
|                              |            |                                | 2பேர்                       |

## குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற  
இணைய தளத்தில் 31/10/065/203/2B/30528 என்ற குறிப்பு எண்ணை உள்ளீடு  
செய்து உறுதி செய்துகொள்ளவும்.

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## அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி

|                           |            |                             |                                |
|---------------------------|------------|-----------------------------|--------------------------------|
| 1. புல எண்                | 733        | 9. மண் வயனமும் ரகமும்       | 8 - 4                          |
| 2. உட்பிரிவு எண்          | 1          | 10. மண் தரம்                | 9                              |
| 3. பழைய புல உட்பிரிவு எண் | 733-1      | 11. தீர்வை (ரூ - ஹெ)        | 1.38                           |
| 4. பகுதி                  | P          | 12. பரப்பு (ஹெக்டேர் - ஏர்) | 0 - 37.00                      |
| 5. அரசு / ரயத்துவாரி      | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ - பை)  | 0.52                           |
| 6. நிலத்தின் வகை          | பஞ்சை      | 14. பட்டா எண்               | 9162                           |
| 7. பாசன ஆதாரம்            | -          | 15. குறிப்பு                | -                              |
| 8. இரு போகமா              | -          | 16. பெயர்                   | ANANTRA GRANITES மற்றும் 2பேர் |

## குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
 1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 31/10/065/733/1/80528 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

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## அ-பதிவேடு விவரங்கள் - ஊரகம்

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மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி



|                              |            |                                |                                   |
|------------------------------|------------|--------------------------------|-----------------------------------|
| 1. புல எண்                   | 733        | 9. மண் வயனமும்<br>ரகமும்       | 8 - 4                             |
| 2. உட்பிரிவு எண்             | 3          | 10. மண் தரம்                   | 9                                 |
| 3. பழைய புல<br>உட்பிரிவு எண் | -3         | 11. தீர்வை (ரூ - ஹெ)           | 1.38                              |
| 4. பகுதி                     | P          | 12. பரப்பு (ஹெக்டேர் -<br>ஏர்) | 0 - 86.50                         |
| 5. அரசு / ரயத்துவாரி         | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ<br>- பை)  | 1.20                              |
| 6. நிலத்தின் வகை             | பஞ்சை      | 14. பட்டா எண்                  | 9162                              |
| 7. பாசன ஆதாரம்               | -          | 15. குறிப்பு                   | -                                 |
| 8. இரு போகமா                 | -          | 16. பெயர்                      | ANANTRA GRANITES<br>மற்றும் 26பர் |

## குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
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செய்து உறுதி செய்துகொள்ளவும்.

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## அ-பதிவேடு விவரங்கள் - ஊரகம்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

கிராமம் : ஜெக்கேரி

|                              |            |                                |                             |
|------------------------------|------------|--------------------------------|-----------------------------|
| 1. புல எண்                   | 733        | 9. மண் வயனமும்<br>ரகமும்       | 8 - 4                       |
| 2. உட்பிரிவு எண்             | 5          | 10. மண் தரம்                   | 9                           |
| 3. பழைய புல<br>உட்பிரிவு எண் | -5         | 11. தீர்வை (ரூ - ஹெ)           | 1.38                        |
| 4. பகுதி                     | P          | 12. பரப்பு (ஹெக்டேர் -<br>ஏர்) | 1 - 18.50                   |
| 5. அரசு / ரயத்துவாரி         | ரயத்துவாரி | 13. மொத்த தீர்வை (ரூ<br>- பை)  | 1.62                        |
| 6. நிலத்தின் வகை             | பஞ்சை      | 14. பட்டா எண்                  | 9162                        |
| 7. பாசன ஆதாரம்               | -          | 15. குறிப்பு                   | -                           |
| 8. இரு போகமா                 | -          | 16. பெயர்                      | ANANTRA GRANITES<br>மற்றும் |
|                              |            |                                | 2பேர்                       |

## குறிப்பு:



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து  
1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற  
இணைய தளத்தில் 31/10/065/733/5/80528 என்ற குறிப்பு எண்ணை உள்ளீடு  
செய்து உறுதி செய்துகொள்ளவும்.

Back | Home

R. A. S.

1/22/26, 2:58 PM

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்



தமிழ்நாடு அரசு

வருவாய் மற்றும் பேரிடர் மேலாண்மைத் துறை

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



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : டெங்கனிகோட்டா

வருவாய் இராமம் : ஜெக்கேரி

பட்டா எண் : 9162

உரிமையாளர்கள் பெயர்

1. -
2. RAMATHILAGAN
3. RAVI

- |      |                  |
|------|------------------|
| ...  | ANANTRA GRANITES |
| மகன் | ADALARASU        |
| மகன் | SUBASH           |



R. A. S.

1/22/26, 2:58 PM

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்

| புல எண் | உட்பிரிவு | புன்செய்   |         | நுன்செய்   |         | மற்றவை     |         | குறிப்புகள்                                                                                                       |
|---------|-----------|------------|---------|------------|---------|------------|---------|-------------------------------------------------------------------------------------------------------------------|
|         |           | பரப்பு     | தீர்வை  | பரப்பு     | தீர்வை  | பரப்பு     | தீர்வை  |                                                                                                                   |
|         |           | ஹெக் - ஏர் | ரூ - பை | ஹெக் - ஏர் | ரூ - பை | ஹெக் - ஏர் | ரூ - பை |                                                                                                                   |
| 202     | 2         | 0 - 81.00  | 1.12    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>09/02/2022 10:34:34 AM<br>Zonal Deputy Tahsildar      |
| 203     | 2A        | 0 - 44.00  | 0.61    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>I<br>Zonal Deputy Tahsildar<br>09/02/2022 10:34:34 AM |
| 203     | 2B        | 0 - 10.00  | 0.14    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>I<br>Zonal Deputy Tahsildar<br>09/02/2022 10:34:34 AM |
| 733     | 1         | 0 - 37.00  | 0.52    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>I<br>Zonal Deputy Tahsildar<br>09/02/2022 10:34:34 AM |
| 733     | 3         | 0 - 86.50  | 1.20    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>I<br>Zonal Deputy Tahsildar<br>09/02/2022 10:34:34 AM |
| 733     | 5         | 1 - 18.50  | 1.62    | --         | --      | --         | --      | 2022/0103/31/207645-<br>-----<br>Digitally signed: Anand<br>I<br>Zonal Deputy Tahsildar<br>09/02/2022 10:34:34 AM |
|         |           | 3 - 77.00  | 5.21    |            |         |            |         |                                                                                                                   |

## குறிப்பு :

|                                                                                     |                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை 1.தாங்கள் <a href="https://eservices.tn.gov.in">https://eservices.tn.gov.in</a> என்ற இணைய தளத்தில் P/31/10/065/09162/100528 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும். |
|                                                                                     | 2. இத் தகவல்கள் 22-01-2026 அன்று 02:57:46 PM நேரத்தில் அச்சடிக்கப்பட்டது.                                                                                                                                                                                                  |
|                                                                                     | 3.கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்                                                                                                                                                                            |

R. A. S.

ANNEXURE



## FORM C

(See rule 9(a))

## Acknowledgement of Registration of Firms

The Registrar of Firms, TamilNadu, hereby acknowledges the receipt of the statement prescribed by Section 58(1) of the Indian Partnership Act, 1932. The statement has been filed and the name of the firm ANANTRA GRANITES has been entered in the Register of Firms as No FR/Krishnagiri/296/2021.



Date 15-Dec-2021

Station : Krishnagiri



Digitally Signed by Thiru/ Tml/ Selvi

Kavitha K

Registrar of Firms

3. maj  
15/12/21

15/12/2021

Digitally signed by  
KAVITHA K  
KUMAR  
Date: 2021.12.15  
05:23:44 IST

R. A. S.





தமிழ்நாடு தமில்நாடு TAMILNADU

Anantra Granites  
HSE

BZ 909713

Shanmuga Sundara  
Stamp Vendor L.No:17/2009/I  
HO: 635 109. (T.)

ANANTRA GRANITES,  
S.NO. 733/5,  
Jakkeri Village,  
Krishnagiri District.

### PARTNERSHIP DEED

This DEED OF PARTNERSHIP executed at Jakkeri Village, on this Ninth day of December, Two thousand One, between:-

- 1 **R.ADALARASU**, son of Rama Thilagan (Aadhaar No.954216910374), about 29 years, Hindu Religion, residing at No.2/389, Poosaripatti Village, Sogathur Post, Dharmapuri Taluk, Dharmapuri District, Tamil Nadu, hereinafter called, the party of the "FIRST PART" WITNESSETH
- 2 **R.SUBASH**, son of Ravi (Aadhaar No.411229804565), about 24 years, Hindu Religion, residing at No.97/1Paparapati Post, Dharmapuri Taluk, Dharmapuri District, 636809, Tamil Nadu, hereinafter called, the party of the "SECOND PART" WITNESSETH

R. ASH.

R. சிபராஜ்

R. ASH



தமிழ்நாடு தமில்நாடு TAMILNADU

Anantra Granites  
Hosur

BZ 909714

*[Signature]*  
Sundara  
Stamp Vendor L.No:17/2889/Y  
HOSUR - 635 109. (T.N.)

Date: 26-11-2021

- 2 -

WHEREAS the above said parties desire to do the business of Manufacturing and production of granite blocks from his own quarry or quarries or quarries obtained on lease from government of private parties and selling it in India or export to other countries', and purchase of granite blocks and sell in India or export to other countries, and other business or businesses which are incidental or connected with the above, in the name and style of 'ANANTRA GRANITES'.

WHEREAS the above parties desire that the terms and conditions under they agreed may be reduced into writing.

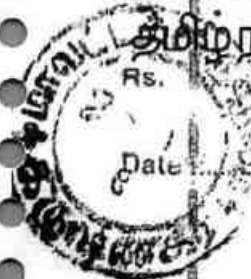
NOW THIS DEED OF PARTNERSHIP WITNESSETH AS FOLLOWS:-

- 1 The Name of the firm shall be "ANANTRA GRANITES"
- 2 The duration of the firm shall one determinable at the WILL of the partners.

R. Ash

R. K. Manoj

R. Ash



தமிழ்நாடு தமில்நாடு TAMILNADU

Anantha Granites  
Hosur

BZ 909715  
Shanmuga Sundari  
Stamp Vendor L.No:17/2009/  
HOSUR - 535 109. (T.)

- 3 -

- 3 The registered office of the firm shall be situated S.No. 733/5, Jakkeri village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu, and any other place or places as may be decided by the partners mutually.
- 4 The principal place of business shall be situated at S.No. 733/5, Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu, and any other place or places as may be decided by the partners mutually. Branch or branches may be opened at any other place or places as may be decided by partners mutually.
- 5 The object of the firm shall be to carry on the business of manufacturing and production of granite blocks from own quarry or quarries and the quarries obtained on lease from the government or private parties and sell in India or export to other countries, and any other business or businesses which are incidental or connected with the above.

R. ASH.

R. சிபராஜ்

R. ASH



தமிழ்நாடு தமில்நாடு TAMILNADU

Anantha Granites  
HOSUR

BZ 909716  
Sundar  
Stamp Vendor L.No:17/2009  
HOSUR - 635 109. (T)

- 4 -

- 6 Each partner shall contribute Rs. 5,00,000/- (Five Lakhs Rupees only) towards their share in the capital of the firm. Further capital required for the purpose of the partnership shall be contributed either from themselves, or from such other financial institution in a such a manner mutually agreed upon.
- 7 Partner will entitled to interest on capital at the rate of 12% per annum. Interest rate may be increased respectively if circumstance so warrant and it shall be done by a supplementary agreement.
- 8 All the partners are working partners and they shall devote their full time in conducting the business of the firm efficiently. They are entitled to remuneration at the rate of Rs.1,20,000/- per partner, per year. The above working partner shall not be paid any remuneration, where the infirm incurs loss after payment of interest on capital of the partners. Where the firm's profit are insufficient, the above salary payment will be reduced proportionate, to bring such available profit to NIL. The above payment is subject to the ceiling prescribed and when profits are computed as per the provisions of the Income Tax Act, 1961.

R. Asha.

R. Asha

R. Asha





தமிழ்நாடு தமிழ்நாடு TAMILNADU

Anantash Ganapites  
HOSUR

BZ 909717

Sundara  
State Vendor L.No:17/2009/K  
HOSUR - 635 109. (T.N)

Date: 26.11.2021

- 5 -

- 9 Any partner shall only with the consent in writing of other partners, shall assign alienate in any manner, his share of interest in the firm.
- 10 Any partner shall borrow money from any one, on behalf of the firm, only with the consent in writing of all other partners and both of them shall have to sign the loan documents, so as to bind the firm.
- 11 Bank account or accounts shall be opened in the name of the firm, in any bank or banks and it shall be operated by R Adalarasu, partner of the firm.
- 12 R Adalarasu, partner shall be the managing partner of the firm.

R. Adar.

R. Adar.

R. Adar.



தமிழ்நாடு தமில்நாடு TAMILNADU

Rs.

Date

26-11-2021

Anantha Ganapites  
HISUR

BZ 909718

Sankaraj Sundari  
Stamp Vendor L No: 17/2009/  
HQ. 003 109. (1)

- 6 -

- 13 It is agreed that the death, insolvency of retirement of any the partner, shall not dissolve the form. Any partner retiring from the partnership shall give 3 month notice of his intention to retire from the firm. On the retirement, death, insolvency balance standing the credit of the partner retiring, deceased or becoming of insolvent as the case may be but neither to a division in specie in specie of the firm nor to a share in the good will or firm.
- 14 Proper books of accounts, for the partnership business, shall be kept and maintained and such books shall be closed to profit and loss account once in a year of 31<sup>st</sup> March. First of such books shall be closed to profit and loss account on 31<sup>st</sup> March 2022.
- 15 The net profit or loss of the firm as per the books of accounts maintained by the firm after deducting of all expenses relating to the business of the including rent.

R. Ash.

R. K. Prasad

R. Ash.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

Rs.

100/-

Ananta Granites  
HOSUR

Date

26-11-2021

BZ 909719  
Shanmuga Sundaram  
Stamp Vendor L.No:17/2009/K  
HOSUR - 635 109. (T.N)

- 7 -

salaries and other establishment expenses as well as interest and remuneration payable to the partners in accordance with this deed or partnership are any supplementary deed, shall be divided and distributed amongst the partners equality.

- 16 It is agreed that in case of any doubt as to the wiring or interpretation of any clause of the partnership deed, that shall be settled by mutual discussions, In respect of the unsettled matters, the provisions of the Indian Arbitration Act shall apply. In respect of the matters not specifically referred herein, the provisions of the Indian partnership act, 1932, and terms and condition prevalent in similar trades shall apply.

R. Ash.

R. Ash.

R. Ash.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

Ananta Kumarites  
HDSVR

BZ 909720  
Shanmuga Sundara  
Stamp Vendor L No:17/2009/K  
MOBILE - 835 103 (T.N)

- 8 -

IN WITNESS WHEREOF the parties hereto have signed into this deed of partnership on the day and year first above written.

Witnesses:

1. P. Hingon  
P. HAYALANNAN S/O PERUMAL  
2/378 -A, POOSARI PATTI (WILL)  
SOGATHUR (PO) DHARMAPUR (DT)  
PIN - 636809

2. B. Elang  
B. Elavarasan S/O Balu  
3/52 Melmarthukanoo  
Sogathur (PO) Dharmapuri (DT)  
Pin - 636809

1. R. Aff.

2. R. Aff.

Partners.

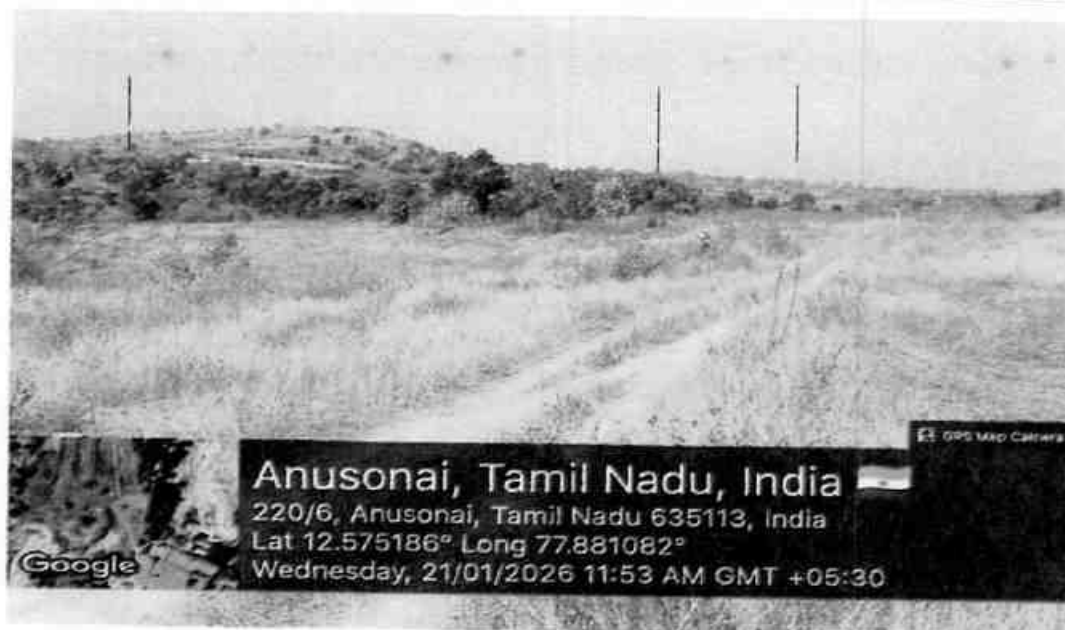
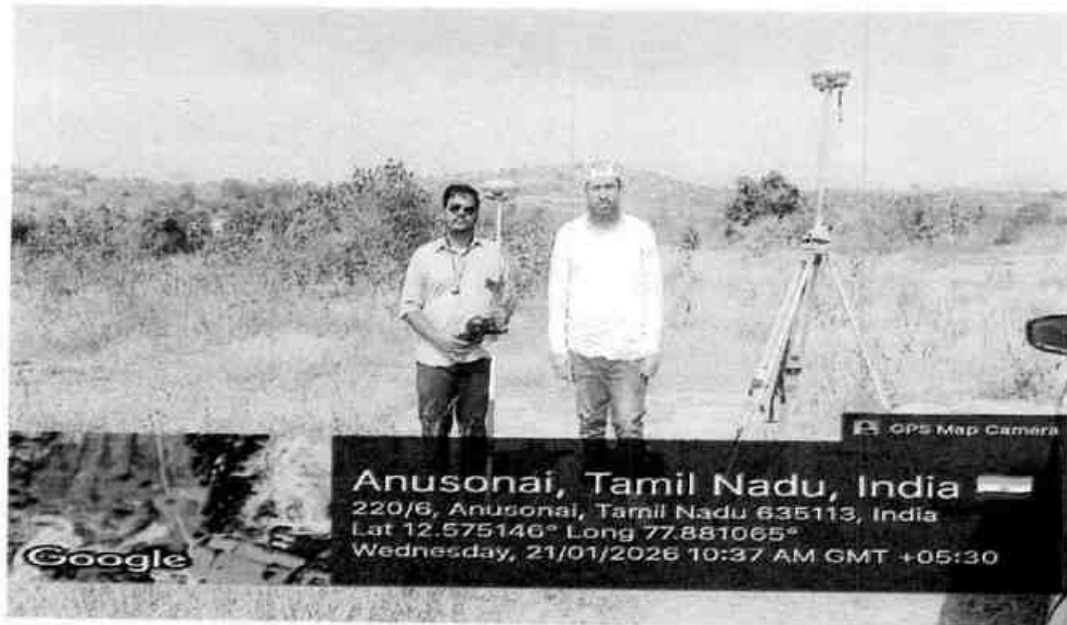
R. Aff.





### PHOTOCOPY OF THE APPLIED LEASE AREA

Field Photos in Respect of Multi colour granite quarry lease in S.F.No's: 202/2, 203/2A, 203/2B, 733/1, 733/3 & 733/5 of Patta land, over an extent of 3.77.00 hectares of Jakkeri village, Denkanikottai Taluk, Krishnagiri Tamil Nadu State belongs to **M/s.ANANTRA GRANITES**,



R. Ast



தமிழ்நாடு தமிழ்நாடு TAMILNADU

R. 100

EH 964479

S.N. Bhaagyan

S.N. Bhaagyan

STAMP VENDOR, HOSUR

L.No 3891/B1/2000

Dt. 23/12/2025

M/s Anantra Granites,

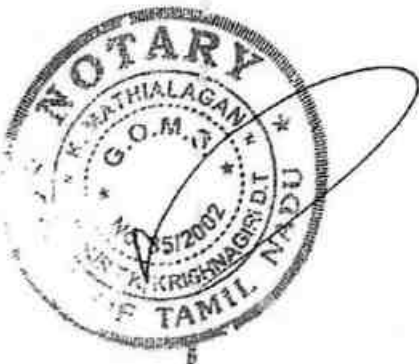
Denkanikottai

To Whomsoever It May Concern

This is to certify that M/s. Anantra Granites, a Partnership Firm, having its place of business at S.No. 733/5, Jakkeri Village, Denkanikottai Taluk, Krishnagiri District, Tamil Nadu, is represented by the following partners:

1. Mr. R. Adalarasu – Managing Partner
2. Mr. R. Subash – Partner

We hereby authorise Mr. R. Adalarasu, Managing Partner of the firm, to act as the Authorised Person on behalf of M/s. Anantra Granites for all official, statutory, legal, banking, departmental, and other related matters.



K. MATHIALAGAN, B.A.B.  
ADVOCATE & NOTARY M.S. - 412/1993  
41C Taluk Office Road Opp Court Complex,  
HOSUR - 635 109, Call : 9443232658

R. Adar.

-2-



He is authorised to sign, submit, verify documents, represent the firm before authorities, and carry out all acts necessary in connection with the business of the firm.

This authorisation shall remain valid until revoked in writing by the partners.

Thanking you.

For M/s. Anantra Granites

R. A. S.

(Managing Partner)

Mr. R. Adalarasu

R. A. S.

(Managing Partner & Authorised Person)

Mr. R. Subash

R. Subash

(Partner)

Date : 23.12.2025

Place : JAKKERI



**K. MATHIALAGAN, B.A.B.L.**  
ADVOCATE & NOTARY M.S - 412/1993  
41G, Taluk Office Road, Opp. Court Complex,  
HOSUR - 635 109. Cell : 9443233650

R. A. S.



आयकर विभाग  
INCOME TAX DEPARTMENT

भारत सरकार  
GOVT. OF INDIA

स्थायी लेखा संख्या कार्ड  
Permanent Account Number Card

ABXFA1775G

नाम / Name  
ANANTRA GRANITES

निगमन / गठन की तारीख  
Date of Incorporation / Formation  
15/12/2021

11012022

R. A. S.


**இந்திய அரசு**  
**Government of India**


**ஆடலாசு ரா**  
**Adalarasu R**  
**பிறந்த நாள்/DOB: 15/04/1992**  
**ஆண்/ MALE**

Download Date: 10/12/2020



Issue Date: 06/11/2015

**9542 1691 0374**

**VID : 9133 9149 3617 6400**

**எனது ஆதார். எனது அடையாளம்**


**இந்திய அடையாள அமைப்பு அமைதி**  
**Unique Identification Authority of India**

**முகவரி:**  
**தஞ்சை / தாய் பெயர்: ராமலிங்கன், 2309,**  
**புளரிபட்டி, சோகைத்தூர் போஸ்ட்,**  
**ஏ.ரெட்டிஅலி, தருமபுரி,**  
**தமிழ் நாடு - 636809**

**Address:**  
**S/O. Ramathilagan, 2309, pusripatti,**  
**sogaihur post, A.Reddihalli, Dharmapuri,**  
**Tamil Nadu - 636809**



**9542 1691 0374**

**VID : 9133 9149 3617 6400**

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R. A. S.



भारत सरकार  
GOVERNMENT OF INDIA



சுபாஷ் இரவி  
Subash Ravi  
பிறந்த நாள்/DOB: 05/06/1997  
ஆண்/ MALE  
Mobile No: 9715773010  
4112 2980 4565



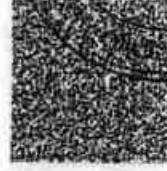
என் ஆதார், என் அடையாளம்



भारतीय विशिष्ट पहचान प्राधिकरण  
UNIQUE IDENTIFICATION AUTHORITY OF INDIA

முகவரி:  
அதிகாரி / தலைவர்: ரவி, 97/1, வள்ளூர்,  
பாப்பராபட்டி, தர்மபுரி, தமிழ்நாடு - 636809

Address:  
S/O. Ravi, 97/1, VALLUR, PAPPARAPATTI,  
Papparapatti, Dharmapuri,  
Tamil Nadu - 636809



4112 2980 4565



1587  
1589 300 1947

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Bengaluru-560 001

R. Ash

Reg No. 03BBH1007  
Col Code 013 / 106



அறிவியல் புலம்  
FACULTY OF SCIENCE

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2005 ஆம் ஆண்டு ஏப்ரல் மீதம்  
நடந்த பயன்பாட்டு புவிவியமைப்பியல் தேர்வில்  
S கருப்பண்ணன் என்பவர்  
தனிச்சிறப்புடன் முதல் வகுப்பில் தேர்ச்சி பெற்றார் என்று தக்க  
தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர்  
என்னும் பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

*The Syndicate of the Periyar University hereby makes known*  
that **KARUPPANNAN S** has been  
admitted to the **DEGREE OF MASTER OF SCIENCE in**  
**APPLIED GEOLOGY**  
*he/she having been certified by duly appointed Examiners to be qualified*  
*to receive the same and was placed in the* **FIRST CLASS WITH DISTINCTION**  
*at the Examination held in* **APR-2005**



Given under the seal of this university

R. A. S.



IAC No. 142/TNGST. No. 2702141  
CST No. 704829/SLM/Dt. 7-4-99



## BALAJI MINES

Proprietor: E. SANTHARAMAN,  
PURITY LIME STONE SUPPLIERS,  
5/88, CHINNAGOLLAPATTI, KANNANKURICHI P.O.,  
SALEM-636 008. Tamil Nadu.



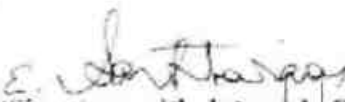
Mines : Devar Malai Village, Kulithalai Tk., KARUR Dt. (Via) Karur to Palayam.

Date: 15-6-2010

### EXPERIENCE CERTIFICATE

I E.SANTHARAMAN being the Managing Director of BALAJI MINES do hereby certify that Thiru. S.KARUPPANNAN, son of T.SUNDARAM (Whose signature is appended) worked as a Geologist in Balaji Mine, Devar malai village, Kulithalai Taluk, Karur District, from 01.06.2005 to 10.10.2010. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved his continuous attendance at the mine, and have been efficiently performed by him.

I believe him to be of good character and a fit and proper person to be examined for Certificate of Competency.

  
(Signature with date and official Seal)

TIN No: 33852702141  
CST No: 704829/7-4-99  
**BALAJI MINES**  
5/88, Chinnagollapatty,  
Kannankurichi (P.O), SALEM-8.

  
(Signature of Candidate)

R. A. S. J.





Cell: 94876 33358

**SRI RAMAJAYAM**

**GRANITES**

751, Krishnagiri Main Road Opp E.B. Office MATHUR - 636 203  
email: sriramajayamgranites@gmail.com

Cell: 94432  
04348-20



Date 13.10.2011

### EXPERIENCE CERTIFICATE

This is to certify that **Mr. Karuppannan Sundaram** has been worked as a "Senior Geologist" in our company from 11<sup>th</sup> October 2010 to 11<sup>th</sup> October 2011. During this period, he has been involved in the Quality Control for Granite block extraction from quarry. Involvement of his work is highly appreciated and have been efficiently worked in our company. The duties connected with his work have been continuous attendance at the quarry.

I wish him all the best in all his future endeavors.

For SRI RAMAJEYAM GRANITES

*K. R. Sundaram*  
Proprietor

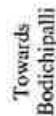
13/10/2011

Attested /

*K. R. Sundaram*  
18/10/2011

**DEPUTY DIRECTOR  
DEPARTMENT OF GEOLOGY AND MINING  
DHARMAPURI**

*R. N. S.*



**APPLICANT:**

**M/s.ANANTRA GRANITES,**

S.No.733/5,

JAKKERI VILLAGE,

DENKANIKOTTAITALUK,

KRISHNAGIRI DISTRICT.

**LOCATION:**

S.F.No. : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5

EXTENT : 3.77.0 Hects,

VILLAGE

TALUK : DENKANIKOTTAI,

DISTRICT : KRISHNAGIRI.

## INDEX

MINE LEASE AREA

APPROACH ROAD

CART ROAD

SH-85 RADO

RAILWAY

## HABITATION

## KEY MAP

Not to Scale

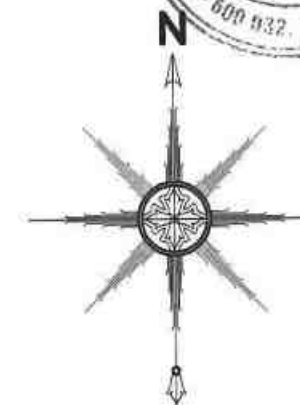
Prepared By:

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TO THE BEST OF MY KNOWLEDGE

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

335

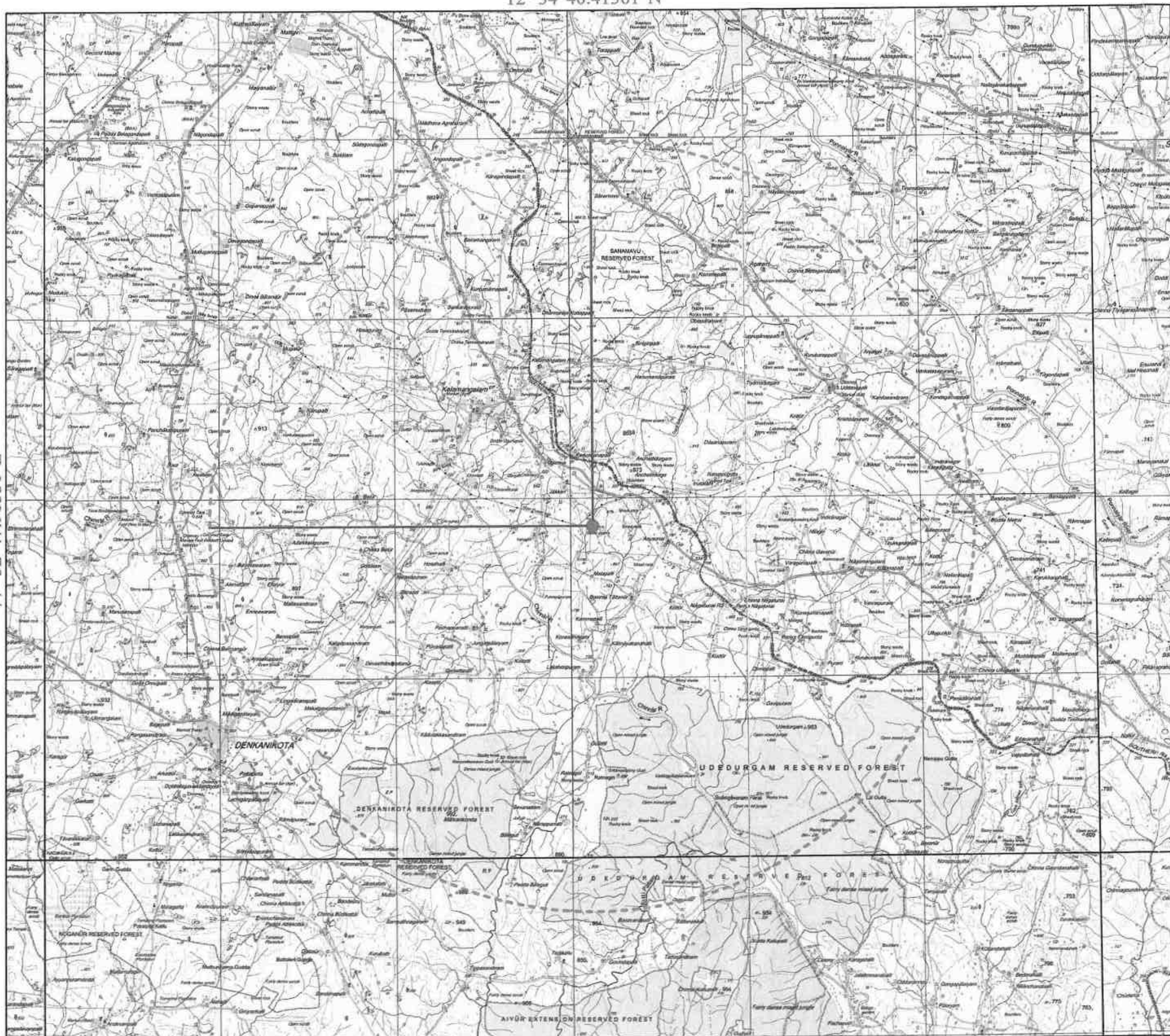
R. A. S. J.



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



77° 52' 47.90331"E



2. A57.

GRANITES,  
GE,  
AITALUK

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

S.F.No. : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5

EXTENT : 3.77.0 Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

TOPO SHEET No : 57-H/14

LATITUDE : 12° 34' 25.47134"N to 12° 34' 40.41361"N

LONGITUDE : 77° 52' 47.90331"E to 77° 52' 53.17461"E

MINE LEASE AREA

10KM RADIUS

[illegible]

TOPOSHEET MAP

SCALE- 1:1,00,000

Prepared By:

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



Towards  
Bodichipalli 12° 34' 40.41361"N

341



PLATE No-IC

**APPLICANT:**

M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**

S.F.No. : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5

EXTENT : 3.77.0Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

**INDEX**

MINE LEASE AREA



APPROACH ROAD



CART ROAD



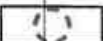
SH-85 ROAD



100m RADIUS



200m RADIUS



300m RADIUS



400m RADIUS



500m RADIUS



1Km RADIUS



EXISTING PIT



SHRUBS & TREES



LATITUDE : 12° 34' 25.47134"N to 12° 34' 40.41361"N

LONGITUDE : 77° 52' 47.90331"E to 77° 52' 53.17461"E

**SATELLITE IMAGERY MAP**

SCALE- 1:10,000

Prepared By:

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



77° 52' 47.90331"E

R. A. S. J.

OCTOBER TO DECEMBER



343

PLATE No-ID

**APPLICANT:**

M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**

S.F.No. : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5  
EXTENT : 3.77.0Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

**INDEX**

MINE LEASE AREA



APPROACH ROAD



CART ROAD



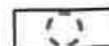
SH-85 ROAD



100m RADIUS



200m RADIUS



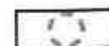
300m RADIUS



400m RADIUS



500m RADIUS



1Km RADIUS



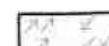
EXISTING PIT



SHRUBS & TREES



WIND DIRECTION



LATITUDE : 12° 34' 25.47134"N to 12° 34' 40.41361"N

LONGITUDE : 77° 52' 47.90331"E to 77° 52' 53.17461"E

**ENVIRONMENTAL PLAN**

SCALE- 1:10,000

Prepared By:

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BEEN CHECKED BY ME AND IS CORRECT  
TO THE BEST OF MY KNOWLEDGE

*[Signature]*

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

12° 34' 40.41361"N

Towards  
Bodichipalli

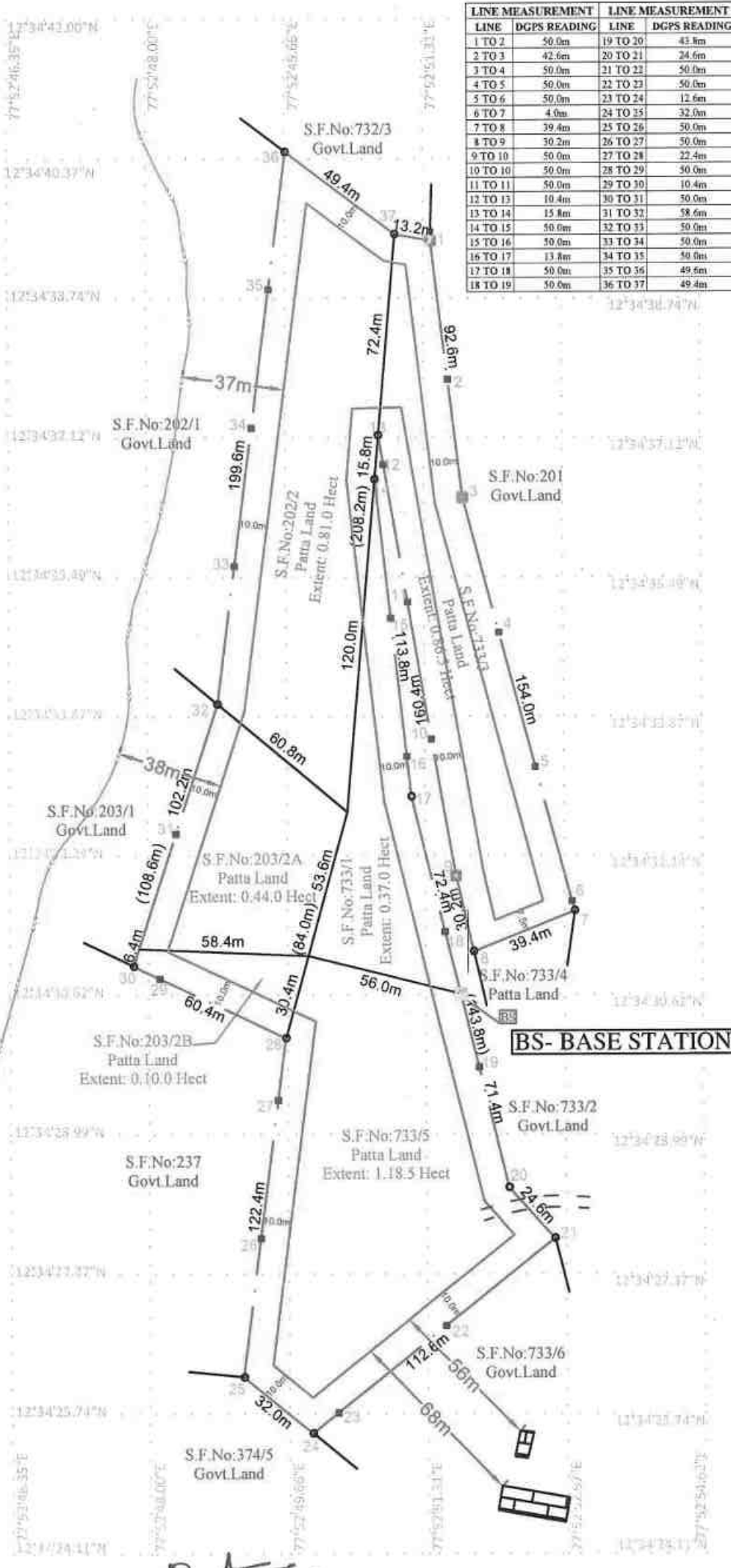
Towards  
Irudhukkottai

77° 52' 47.90331"E

JULY TO SEPTEMBER

R. A. S.





| LINE     | DGPS READING | LINE     | DGPS READING |
|----------|--------------|----------|--------------|
| 1 TO 2   | 50.0m        | 19 TO 20 | 43.8m        |
| 2 TO 3   | 42.6m        | 20 TO 21 | 24.6m        |
| 3 TO 4   | 50.0m        | 21 TO 22 | 50.0m        |
| 4 TO 5   | 50.0m        | 22 TO 23 | 50.0m        |
| 5 TO 6   | 50.0m        | 23 TO 24 | 12.6m        |
| 6 TO 7   | 4.0m         | 24 TO 25 | 32.0m        |
| 7 TO 8   | 39.4m        | 25 TO 26 | 50.0m        |
| 8 TO 9   | 30.2m        | 26 TO 27 | 50.0m        |
| 9 TO 10  | 50.0m        | 27 TO 28 | 22.4m        |
| 10 TO 11 | 50.0m        | 28 TO 29 | 50.0m        |
| 11 TO 12 | 50.0m        | 29 TO 30 | 10.4m        |
| 12 TO 13 | 10.4m        | 30 TO 31 | 50.0m        |
| 13 TO 14 | 15.8m        | 31 TO 32 | 58.6m        |
| 14 TO 15 | 50.0m        | 32 TO 33 | 50.0m        |
| 15 TO 16 | 50.0m        | 33 TO 34 | 50.0m        |
| 16 TO 17 | 13.8m        | 34 TO 35 | 50.0m        |
| 17 TO 18 | 50.0m        | 35 TO 36 | 49.6m        |
| 18 TO 19 | 50.0m        | 36 TO 37 | 49.4m        |

DGPS SURVEY WAS CONDUCTED IN STATIC METHOD (BASE POINT 2 HOURS DGPS POINT)

| ID | Latitude (Global)   | Longitude (Global)  | Easting (Meter) | Northing (Meter) | Feature Code |
|----|---------------------|---------------------|-----------------|------------------|--------------|
| BS | 12° 34' 30.56913" N | 77° 52' 51.80270" E | 813068.800      | 1391869.590      | BASE STATION |

ROVER POINTS 2 HOURS FOR BOUNDARY PILLER AND 20 MINUTES FOR INTERMEDIATE PILLER IN STATIC METHOD

|    |                     |                     |            |             |                     |
|----|---------------------|---------------------|------------|-------------|---------------------|
| 1  | 12° 34' 39.35825" N | 77° 52' 51.57785" E | 813059.043 | 1392139.804 | Boundary Pillar     |
| 2  | 12° 34' 37.74220" N | 77° 52' 51.75963" E | 813065.080 | 1392090.170 | Intermediate Pillar |
| 3  | 12° 34' 36.36133" N | 77° 52' 51.91504" E | 813070.239 | 1392047.754 | Boundary Pillar     |
| 4  | 12° 34' 34.78625" N | 77° 52' 52.32493" E | 813083.153 | 1391999.450 | Intermediate Pillar |
| 5  | 12° 34' 33.21110" N | 77° 52' 52.73491" E | 813096.067 | 1391951.147 | Intermediate Pillar |
| 6  | 12° 34' 31.63606" N | 77° 52' 53.14481" E | 813108.982 | 1391902.843 | Intermediate Pillar |
| 7  | 12° 34' 31.52140" N | 77° 52' 53.17461" E | 813109.921 | 1391899.329 | Boundary Pillar     |
| 8  | 12° 34' 31.06082" N | 77° 52' 51.96410" E | 813073.508 | 1391884.763 | Boundary Pillar     |
| 9  | 12° 34' 31.94524" N | 77° 52' 51.76732" E | 813067.265 | 1391911.896 | Boundary Pillar     |
| 10 | 12° 34' 33.54993" N | 77° 52' 51.50184" E | 813058.706 | 1391961.158 | Intermediate Pillar |
| 11 | 12° 34' 35.15462" N | 77° 52' 51.23643" E | 813050.148 | 1392010.420 | Intermediate Pillar |
| 12 | 12° 34' 36.75941" N | 77° 52' 50.97101" E | 813041.590 | 1392059.682 | Intermediate Pillar |
| 13 | 12° 34' 37.09633" N | 77° 52' 50.91530" E | 813039.793 | 1392070.024 | Boundary Pillar     |
| 14 | 12° 34' 36.58504" N | 77° 52' 50.86435" E | 813038.426 | 1392054.283 | Boundary Pillar     |
| 15 | 12° 34' 34.96765" N | 77° 52' 51.03251" E | 813044.050 | 1392004.601 | Intermediate Pillar |
| 16 | 12° 34' 33.35025" N | 77° 52' 51.20063" E | 813049.673 | 1391954.918 | Intermediate Pillar |
| 17 | 12° 34' 32.87912" N | 77° 52' 51.24964" E | 813051.312 | 1391940.444 | Boundary Pillar     |
| 18 | 12° 34' 31.29651" N | 77° 52' 51.62862" E | 813063.294 | 1391891.901 | Intermediate Pillar |
| 19 | 12° 34' 29.71392" N | 77° 52' 52.00760" E | 813075.275 | 1391843.358 | Intermediate Pillar |
| 20 | 12° 34' 28.30614" N | 77° 52' 52.34474" E | 813085.934 | 1391800.176 | Boundary Pillar     |
| 21 | 12° 34' 27.70553" N | 77° 52' 52.87321" E | 813102.103 | 1391781.879 | Boundary Pillar     |
| 22 | 12° 34' 26.70730" N | 77° 52' 51.56683" E | 813062.975 | 1391750.750 | Intermediate Pillar |
| 23 | 12° 34' 25.70910" N | 77° 52' 50.26044" E | 813023.848 | 1391719.620 | Intermediate Pillar |
| 24 | 12° 34' 25.47134" N | 77° 52' 49.94914" E | 813014.525 | 1391712.203 | Boundary Pillar     |
| 25 | 12° 34' 26.13802" N | 77° 52' 49.13595" E | 812989.734 | 1391732.438 | Boundary Pillar     |
| 26 | 12° 34' 27.74785" N | 77° 52' 49.36698" E | 812996.169 | 1391782.022 | Intermediate Pillar |
| 27 | 12° 34' 29.35774" N | 77° 52' 49.59790" E | 813002.605 | 1391831.606 | Intermediate Pillar |
| 28 | 12° 34' 30.07896" N | 77° 52' 49.70147" E | 813005.488 | 1391853.819 | Boundary Pillar     |
| 29 | 12° 34' 30.78990" N | 77° 52' 48.21292" E | 812960.285 | 1391875.191 | Intermediate Pillar |
| 30 | 12° 34' 30.93775" N | 77° 52' 47.90331" E | 812950.883 | 1391879.636 | Boundary Pillar     |
| 31 | 12° 34' 32.47883" N | 77° 52' 48.43073" E | 812966.296 | 1391927.201 | Intermediate Pillar |
| 32 | 12° 34' 33.98442" N | 77° 52' 48.94601" E | 812981.355 | 1391973.673 | Boundary Pillar     |
| 33 | 12° 34' 35.59494" N | 77° 52' 49.17214" E | 812987.643 | 1392023.276 | Intermediate Pillar |
| 34 | 12° 34' 37.20540" N | 77° 52' 49.39835" E | 812993.930 | 1392072.879 | Intermediate Pillar |
| 35 | 12° 34' 38.81592" N | 77° 52' 49.62441" E | 813000.218 | 1392122.482 | Intermediate Pillar |
| 36 | 12° 34' 40.41361" N | 77° 52' 49.84876" E | 813006.456 | 1392171.688 | Boundary Pillar     |
| 37 | 12° 34' 39.43920" N | 77° 52' 51.14874" E | 813046.054 | 1392142.153 | Boundary Pillar     |

BOUNDARY PILLAR = 17 PILLAR  
INTERMEDIATE PILLAR = 20 PILLAR  
TOTAL = 37 PILLAR

Extent As Per Revenue FMB - 3.77.00 Hectares  
Extent As Per DGPS Survey - 3.76.85 Hectares

- NOTE:
- The True North Adopted both for surveyed plan and DGPS Coordinated.
  - The Given Measurements are in Meter.
  - The DGPS Survey for the area is taken up by synchronising nearest survey of India control point, (Near Collector Office - Krishnagiri District).
  - Base is at 34.48 Kilometers from GCP Control Point.

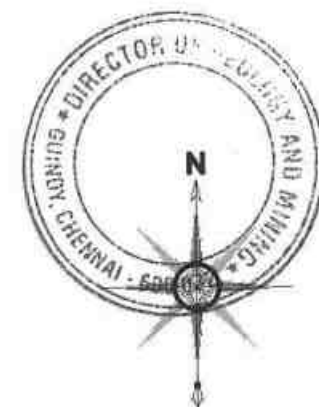


PLATE No-II

**APPLICANT:**  
M/s. ANANTRA GRANITES,  
S.No. 733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B,  
733/1, 733/3 & 733/5  
**EXTENT** : 3.77.0 Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

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- MINE LEASE AREA
- SAFETY DISTANCE
- BOUNDARY POINT
- INTERMEDIATE POINT
- REVENUE PILLAR & ROCK MARK
- APPROACH ROAD
- BS- BASE STATION
- WORKER'S SHED
- VARI PORAMBOKE

MINE LEASE PLAN  
SCALE 1:2000

Prepared By:  
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TO THE BEST OF MY KNOWLEDGE

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



PLATE No-III

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
**EXTENT** : 3.77.0Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

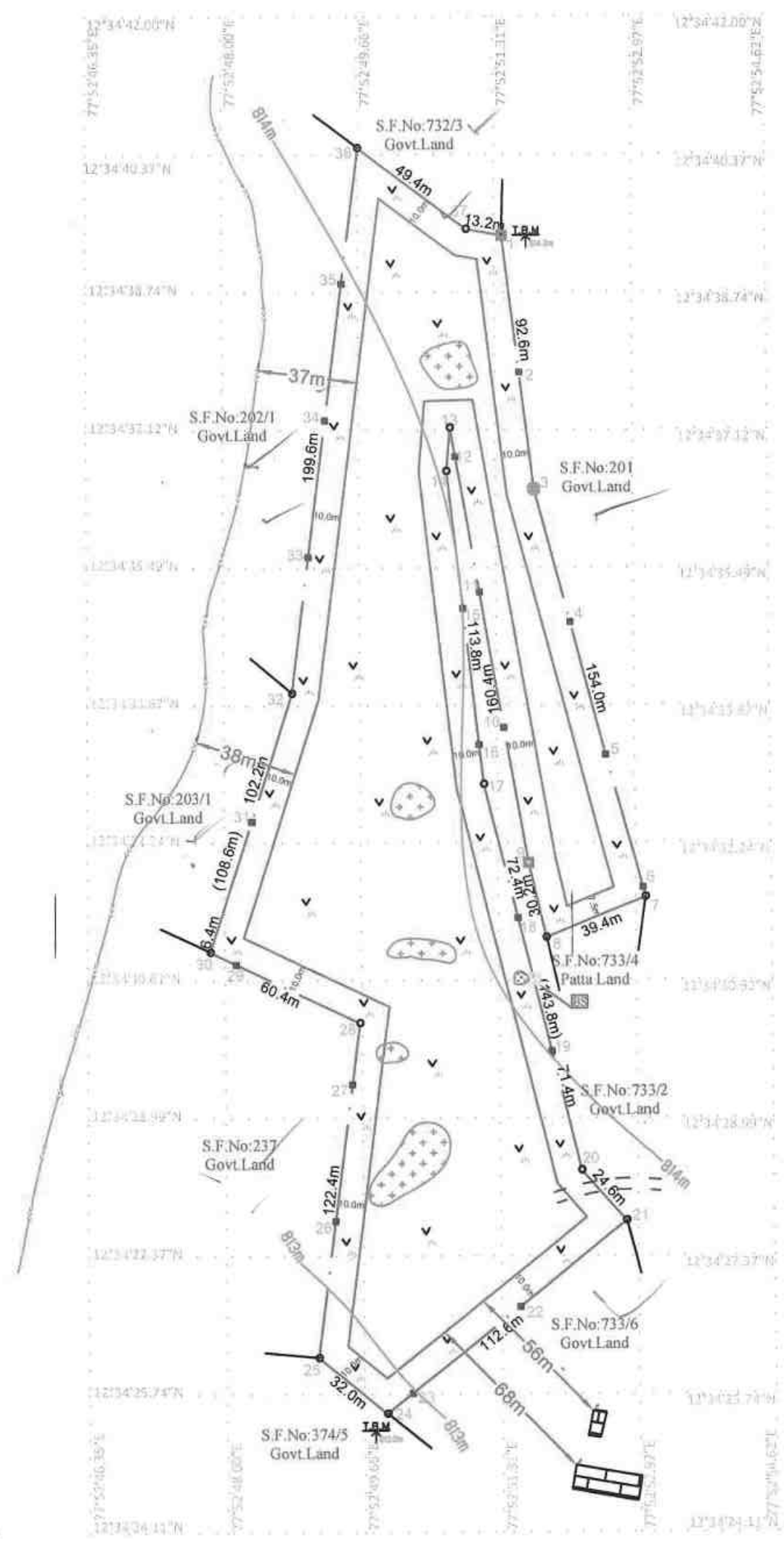
INDEX

|                                |  |
|--------------------------------|--|
| MINE LEASE AREA                |  |
| SAFETY DISTANCE                |  |
| BOUNDARY & INTERMEDIATED POINT |  |
| REVENUE ST., ROCK MARK & BS.   |  |
| APPROACH ROAD                  |  |
| TEMPORARY BENCH MARK           |  |
| CONTOUR LINES                  |  |
| SHRUBS & TOPSOIL               |  |
| OUT CROP                       |  |
| WORKER'S SHED                  |  |
| VARI PORAMBOKE                 |  |

SURFACE PLAN  
SCALE 1 : 2000

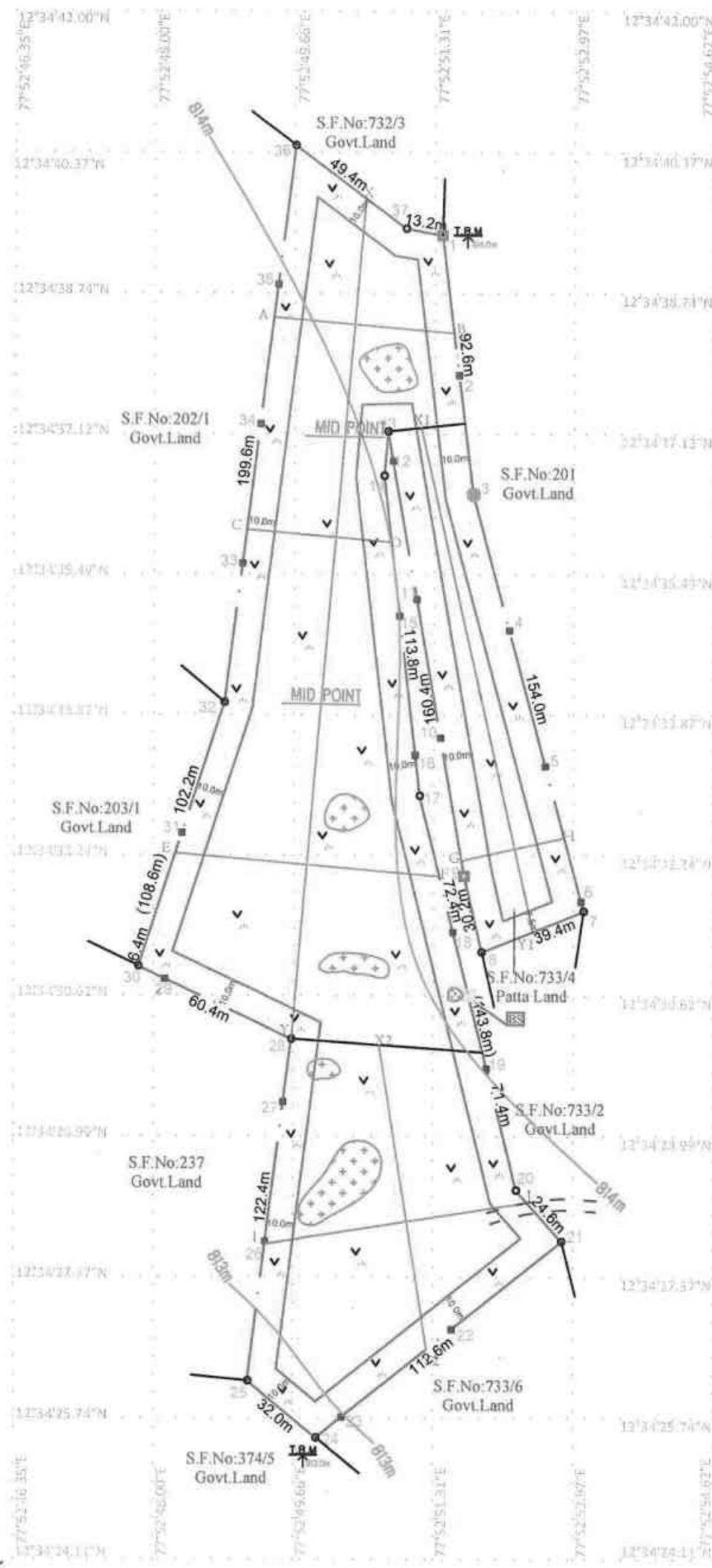
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Dr.S.KARUPPANNAN,M.Sc.,Ph.D.  
QUALIFIED PERSON



R. Asf.





**SECTION ALONG X2-Y2**

| RL     | QLB | Y2 |
|--------|-----|----|
| 814.0m |     |    |
| 809.0m |     |    |
| 804.0m |     |    |
| 799.0m |     |    |
| 794.0m |     |    |
| 789.0m |     |    |
| 784.0m |     |    |
| 779.0m |     |    |

**SECTION ALONG I-J**

| RL     | QLB | J |
|--------|-----|---|
| 814.0m |     |   |
| 809.0m |     |   |
| 804.0m |     |   |
| 799.0m |     |   |
| 794.0m |     |   |
| 789.0m |     |   |
| 784.0m |     |   |
| 779.0m |     |   |

|             |       |               |              |              | GEOLOGICAL RESOURCES  |              |                   |                     |                                         |                                      |                      |                |  |  |
|-------------|-------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-----------------------------------------|--------------------------------------|----------------------|----------------|--|--|
| Section     | Bench | Length in (m) | Width in (m) | Depth in (m) | ROM in m <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite in (MT) | Multi Colour Granite 40% Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT | Top Soil in MT |  |  |
| XY-AB       | I     | 84            | 64           | 2            | 10752                 | 2            | 21504             | ---                 | ---                                     | ---                                  | ---                  | ---            |  |  |
|             | II    | 84            | 64           | 3            | 16128                 | 2            | 32156             | ---                 | ---                                     | ---                                  | 32256                | ---            |  |  |
|             | III   | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ---                  | ---            |  |  |
|             | IV    | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ---                  | ---            |  |  |
|             | V     | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ---                  | ---            |  |  |
|             | VI    | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ---                  | ---            |  |  |
|             | VII   | 84            | 64           | 5            | 26880                 | 2.65         | 71232             | 71232               | 28492.8                                 | 42739.2                              | ---                  | ---            |  |  |
| TOTAL       |       |               |              |              | 188160                | ---          | 481152            | 427392              | 170957                                  | 256435                               | 32256                | 21504          |  |  |
| XY-CD       | I     | 95            | 52           | 2            | 9880                  | 2            | 19760             | ---                 | ---                                     | ---                                  | ---                  | ---            |  |  |
|             | II    | 95            | 52           | 3            | 14820                 | 2            | 29640             | ---                 | ---                                     | ---                                  | 29640                | ---            |  |  |
|             | III   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ---                  | ---            |  |  |
|             | IV    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ---                  | ---            |  |  |
|             | V     | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ---                  | ---            |  |  |
|             | VI    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ---                  | ---            |  |  |
|             | VII   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ---                  | ---            |  |  |
| TOTAL       |       |               |              |              | 172900                | ---          | 442130            | 392730              | 157092                                  | 235638                               | 29640                | 19760          |  |  |
| XY-EF       | I     | 119           | 94           | 2            | 22372                 | 2            | 44744             | ---                 | ---                                     | ---                                  | ---                  | ---            |  |  |
|             | II    | 119           | 94           | 3            | 33558                 | 2            | 67116             | ---                 | ---                                     | ---                                  | 67116                | ---            |  |  |
|             | III   | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ---                  | ---            |  |  |
|             | IV    | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ---                  | ---            |  |  |
|             | V     | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ---                  | ---            |  |  |
|             | VI    | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ---                  | ---            |  |  |
|             | VII   | 119           | 94           | 5            | 55930                 | 2.65         | 148215            | 148215              | 59286                                   | 88929                                | ---                  | ---            |  |  |
| TOTAL       |       |               |              |              | 391510                | ---          | 1001150           | 889290              | 355716                                  | 533574                               | 67116                | 44744          |  |  |
| XIYI-GI     | I     | 183           | 33           | 2            | 12078                 | 2            | 24156             | ---                 | ---                                     | ---                                  | ---                  | ---            |  |  |
|             | II    | 183           | 33           | 3            | 18117                 | 2            | 36234             | ---                 | ---                                     | ---                                  | 36234                | ---            |  |  |
|             | III   | 183           | 33           | 5            | 30195                 | 2.65         | 80017             | 80017               | 32006.8                                 | 48010.2                              | ---                  | ---            |  |  |
|             | IV    | 183           | 33           | 5            | 30195                 | 2.65         | 80017             | 80017               | 32006.8                                 | 48010.2                              | ---                  | ---            |  |  |
|             | V     | 183           | 33           | 5            | 30195                 | 2.65         | 80017             | 80017               | 32006.8                                 | 48010.2                              | ---                  | ---            |  |  |
|             | VI    | 183           | 33           | 5            | 30195                 | 2.65         | 80017             | 80017               | 32006.8                                 | 48010.2                              | ---                  | ---            |  |  |
|             | VII   | 183           | 33           | 5            | 30195                 | 2.65         | 80017             | 80017               | 32006.8                                 | 48010.2                              | ---                  | ---            |  |  |
| TOTAL       |       |               |              |              | 211365                | ---          | 540492            | 480102              | 192041                                  | 288061                               | 36234                | 24156          |  |  |
| X2Y2-II     | I     | 108           | 94           | 2            | 20304                 | 2            | 40608             | ---                 | ---                                     | ---                                  | ---                  | ---            |  |  |
|             | II    | 108           | 94           | 3            | 30456                 | 2            | 60912             | ---                 | ---                                     | ---                                  | 60912                | ---            |  |  |
|             | III   | 108           | 94           | 5            | 50760                 | 2.65         | 134514            | 134514              | 53805.6                                 | 80708.4                              | ---                  | ---            |  |  |
|             | IV    | 108           | 94           | 5            | 50760                 | 2.65         | 134514            | 134514              | 53805.6                                 | 80708.4                              | ---                  | ---            |  |  |
|             | V     | 108           | 94           | 5            | 50760                 | 2.65         | 134514            | 134514              | 53805.6                                 | 80708.4                              | ---                  | ---            |  |  |
|             | VI    | 108           | 94           | 5            | 50760                 | 2.65         | 134514            | 134514              | 53805.6                                 | 80708.4                              | ---                  | ---            |  |  |
|             | VII   | 108           | 94           | 5            | 50760                 | 2.65         | 134514            | 134514              | 53805.6                                 | 80708.4                              | ---                  | ---            |  |  |
| TOTAL       |       |               |              |              | 355320                | ---          | 908604            | 807084              | 322833                                  | 484250                               | 60912                | 40608          |  |  |
| GRAND TOTAL |       |               |              |              | 1319255               | ---          | 3373528           | 2996598             | 1198639                                 | 1797959                              | 226158               | 150772         |  |  |



PLATE No-IV

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
**EXTENT** : 3.77.0Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

- MINE LEASE AREA
- SAFETY DISTANCE
- BOUNDARY & INTERMEDIATED POINT
- REVENUE ST., ROCK MARK & BS.
- APPROACH ROAD
- TEMPORARY BENCH MARK
- CONTOUR LINES
- SHRUBS & TOPSOIL
- MULTI COLOUR GRANITE
- WEATHERED ROCK
- OUT CROP

**GEOLOGICAL PLAN & SECTIONS**

PLAN - SCALE, 1 : 2000  
SCALE SECTION - HOR 1: 1000  
VER 1 : 500

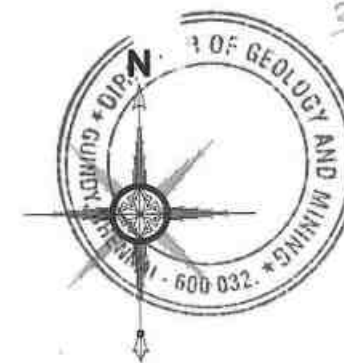
Prepared By:  
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BEEN CHECKED BY ME AND IS CORRECT  
TO THE BEST OF MY KNOWLEDGE

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

R. Ash.







# PLATE No-V

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
EXTENT : 3.77.0Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

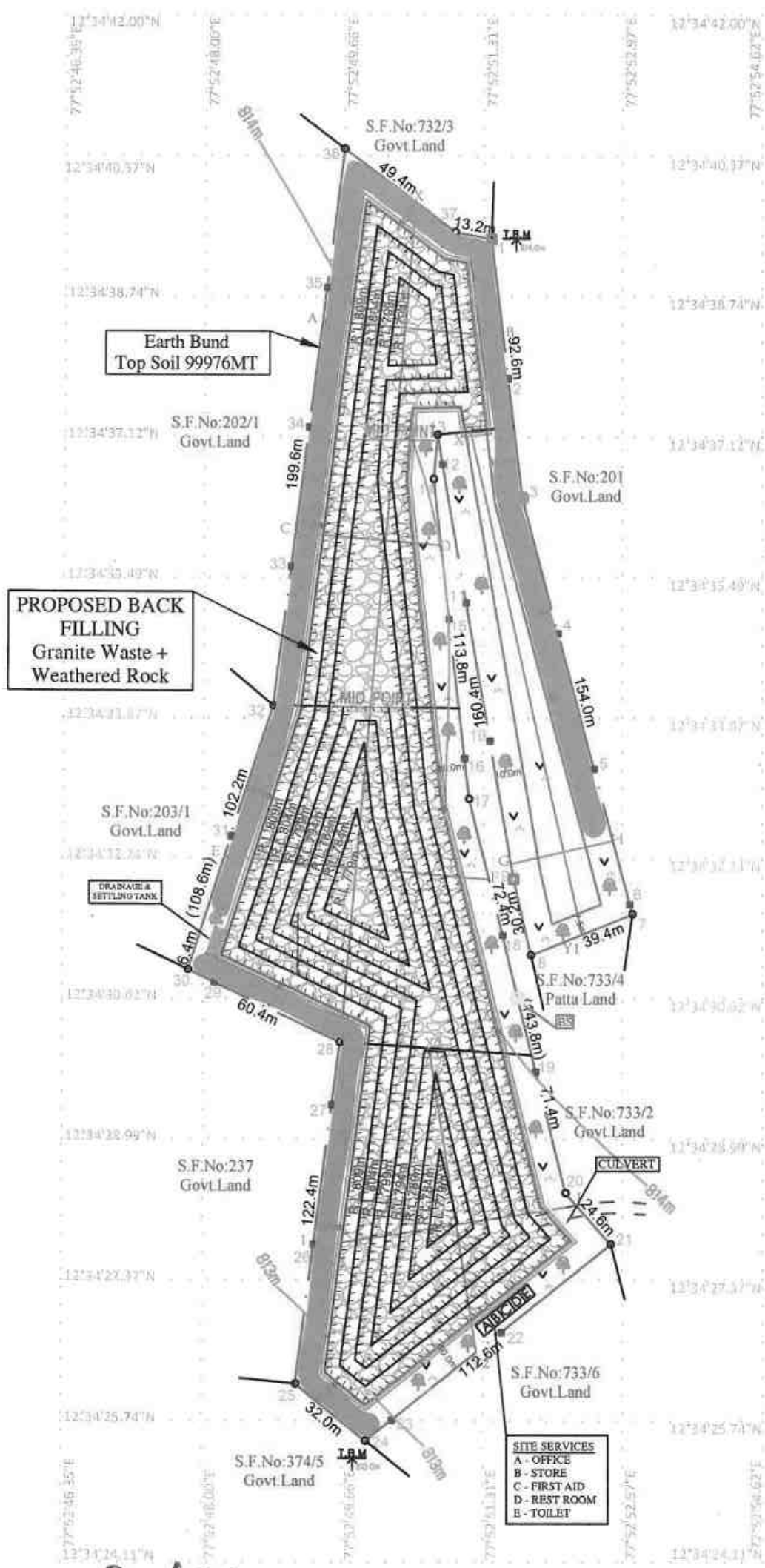
## INDEX

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| MINE LEASE AREA                |  |
| SAFETY DISTANCE                |  |
| BOUNDARY & INTERMEDIATED POINT |  |
| REVENUE ST., ROCK MARK & BS.   |  |
| APPROACH ROAD                  |  |
| TEMPORARY BENCH MARK           |  |
| CONTOUR LINES                  |  |
| SHRUBS & TOPSOIL               |  |
| MULTI COLOUR GRANITE           |  |
| PROPOSED DUMP                  |  |
| EARTH BUND                     |  |
| PROPOSED BENCH                 |  |
| GREEN BELT                     |  |

## CONCEPTUAL PLAN SCALE 1 : 2000

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



Proposed area to be Planted

| MINEABLE RESERVES |       |               |              |              |                       |              |                   |                     |                                         |                                      |                      |                |  |
|-------------------|-------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-----------------------------------------|--------------------------------------|----------------------|----------------|--|
| Section           | Bench | Length in (m) | Width in (m) | Depth in (m) | ROM in M <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite in (MT) | Multi Colour Granite 40% Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT | Top Soil in MT |  |
| XY-AB             | I     | 74            | 64           | 2            | 9472                  | 2            | 18944             | ...                 | ...                                     | ...                                  | ...                  | 18944          |  |
|                   | I     | 74            | 64           | 3            | 14208                 | 2            | 28416             | ...                 | ...                                     | ...                                  | 28416                | ...            |  |
|                   | II    | 69            | 64           | 5            | 22080                 | 2.65         | 58512             | 58512               | 23405                                   | 35107                                | ...                  | ...            |  |
|                   | III   | 64            | 64           | 5            | 20480                 | 2.65         | 54272             | 54272               | 21709                                   | 32563                                | ...                  | ...            |  |
|                   | IV    | 29            | 64           | 5            | 9280                  | 2.65         | 24592             | 24592               | 9836                                    | 14756                                | ...                  | ...            |  |
| TOTAL             |       |               |              |              | 75520                 | ...          | 184736            | 137376              | 54950                                   | 82426                                | 28416                | 18944          |  |
| XY-CD             | I     | 95            | 52           | 2            | 9880                  | 2            | 19760             | ...                 | ...                                     | ...                                  | ...                  | 19760          |  |
|                   | I     | 95            | 52           | 3            | 14820                 | 2            | 29640             | ...                 | ...                                     | ...                                  | 29640                | ...            |  |
|                   | II    | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ...                  | ...            |  |
|                   | III   | 95            | 52           | 5            | 24700                 | 2.65         | 65455             | 65455               | 26182                                   | 39273                                | ...                  | ...            |  |
| TOTAL             |       |               |              |              | 74100                 | ...          | 180310            | 130910              | 52364                                   | 78546                                | 29640                | 19760          |  |
| XY-EF             | I     | 109           | 74           | 2            | 16132                 | 2            | 32264             | ...                 | ...                                     | ...                                  | ...                  | 32264          |  |
|                   | I     | 109           | 74           | 3            | 24198                 | 2            | 48396             | ...                 | ...                                     | ...                                  | 48396                | ...            |  |
|                   | II    | 104           | 64           | 5            | 33280                 | 2.65         | 88192             | 88192               | 35277                                   | 52915                                | ...                  | ...            |  |
|                   | III   | 99            | 54           | 5            | 26730                 | 2.65         | 70835             | 70835               | 28334                                   | 42501                                | ...                  | ...            |  |
|                   | IV    | 94            | 44           | 5            | 20680                 | 2.65         | 54802             | 54802               | 21920                                   | 32882                                | ...                  | ...            |  |
|                   | V     | 84            | 34           | 5            | 14280                 | 2.65         | 37842             | 37842               | 15137                                   | 22705                                | ...                  | ...            |  |
|                   | VI    | 74            | 24           | 5            | 8880                  | 2.65         | 23532             | 23532               | 9413                                    | 14119                                | ...                  | ...            |  |
| TOTAL             |       |               |              |              | 148660                | ...          | 367735            | 287075              | 114830                                  | 172245                               | 48396                | 32264          |  |
| X2Y2-II           | I     | 98            | 74           | 2            | 14504                 | 2            | 29008             | ...                 | ...                                     | ...                                  | ...                  | 29008          |  |
|                   | I     | 98            | 74           | 3            | 21756                 | 2            | 43512             | ...                 | ...                                     | ...                                  | 43512                | ...            |  |
|                   | II    | 93            | 64           | 5            | 29760                 | 2.65         | 78864             | 78864               | 31546                                   | 47318                                | ...                  | ...            |  |
|                   | III   | 88            | 54           | 5            | 23760                 | 2.65         | 62964             | 62964               | 25185                                   | 37779                                | ...                  | ...            |  |
|                   | IV    | 83            | 44           | 5            | 18260                 | 2.65         | 48389             | 48389               | 19356                                   | 29033                                | ...                  | ...            |  |
|                   | V     | 78            | 34           | 5            | 13260                 | 2.65         | 35139             | 35139               | 14055                                   | 21084                                | ...                  | ...            |  |
|                   | VI    | 68            | 24           | 5            | 8160                  | 2.65         | 21624             | 21624               | 8650                                    | 12974                                | ...                  | ...            |  |
| TOTAL             |       |               |              |              | 133520                | ...          | 330259            | 257739              | 103096                                  | 154643                               | 43512                | 29008          |  |
| GRAND TOTAL       |       |               |              |              | 431800                | ...          | 1063040           | 813100              | 325240                                  | 487860                               | 149964               | 99976          |  |

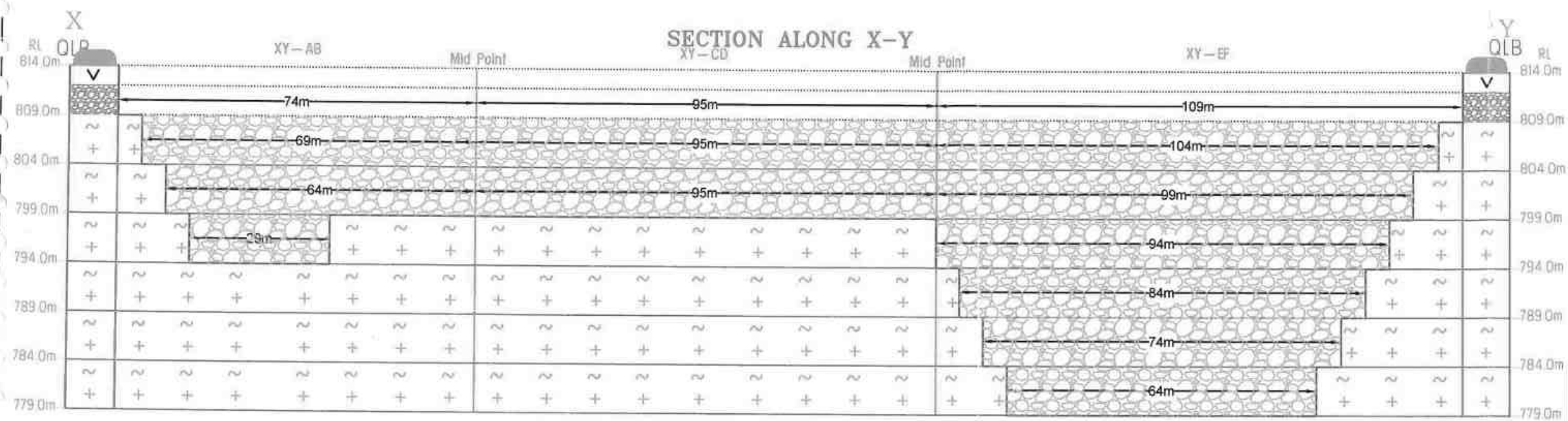


PLATE No-VA

**APPLICANT:**  
M/s. ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
**EXTENT** : 3.77.0Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

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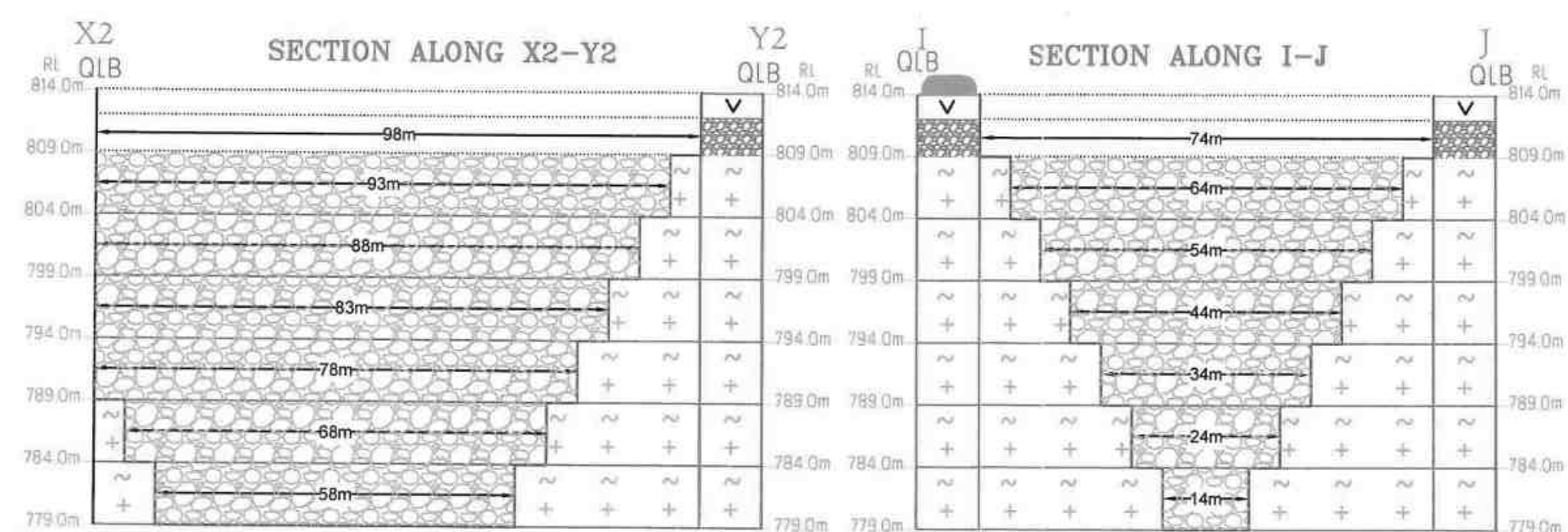
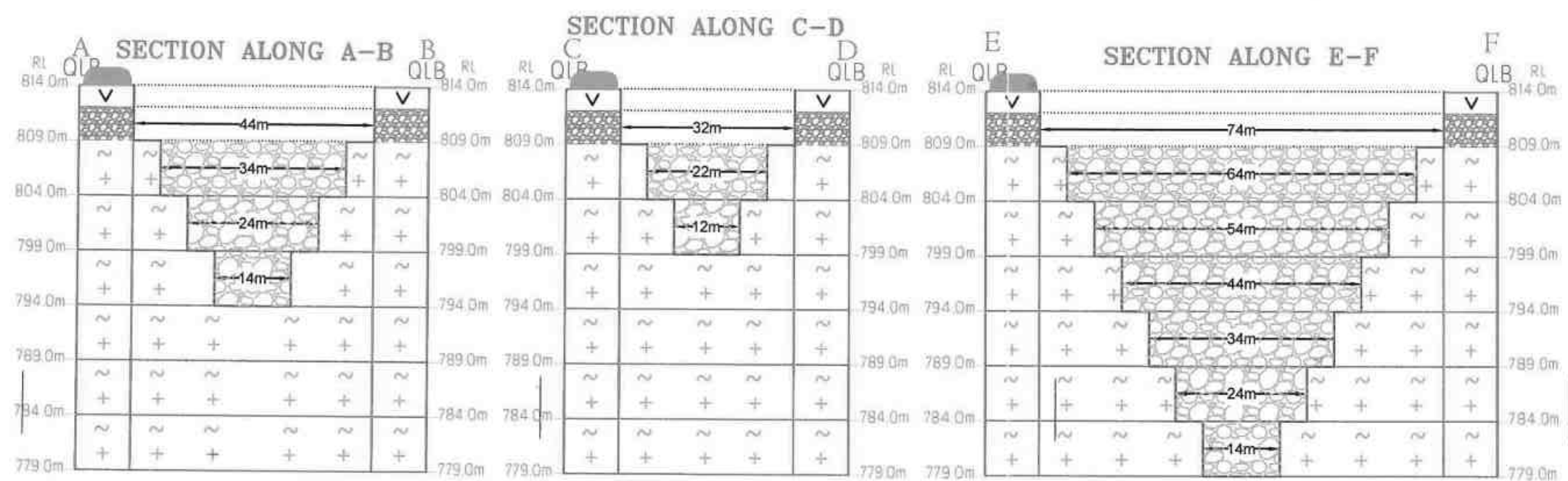
|                      |  |
|----------------------|--|
| MINE LEASE AREA      |  |
| SAFETY DISTANCE      |  |
| TOPSOIL              |  |
| WEATHERED ROCK       |  |
| MULTI COLOUR GRANITE |  |
| PROPOSED BENCH       |  |
| ULTIMATE BENCH       |  |
| EARTH BUND           |  |
| DUMP                 |  |

**CONCEPTUAL SECTIONS**

SCALE SECTION - HOR 1: 1000  
VER 1: 500

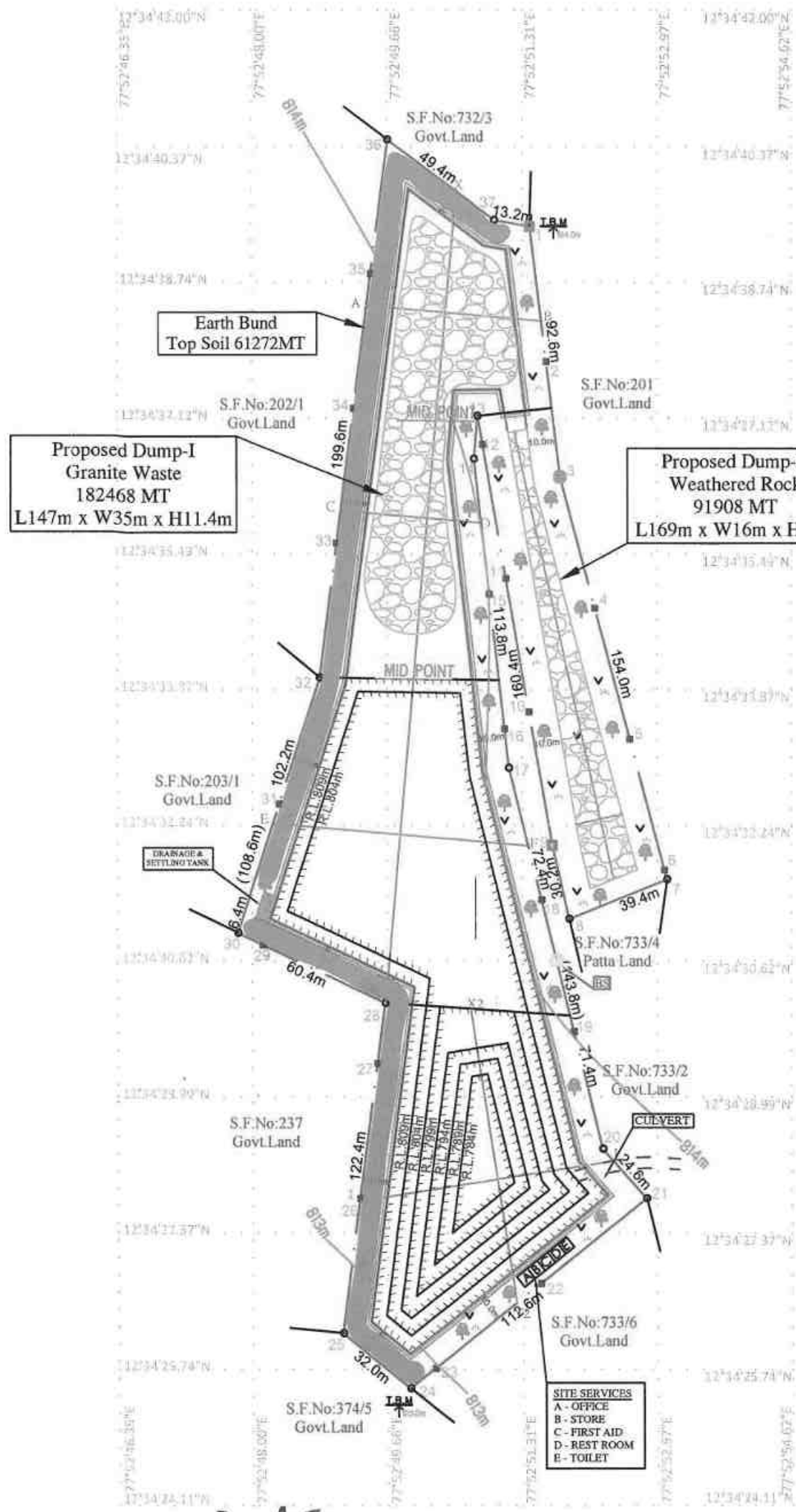
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Dr. S. KARUPPANNAN, M.Sc., Ph.D.  
QUALIFIED PERSON



R. A. S. I.





Proposed area to be Planted

| PRODUCTION RESERVES |       |               |              |              |                       |              |                   |                     |                                         |                                      |                      |
|---------------------|-------|---------------|--------------|--------------|-----------------------|--------------|-------------------|---------------------|-----------------------------------------|--------------------------------------|----------------------|
| Section             | Bench | Length in (m) | Width in (m) | Depth in (m) | ROM in M <sup>3</sup> | Bulk Density | Total ROM in (MT) | ROM Granite in (MT) | Multi Colour Granite 40% Recovery in MT | Multi Colour Granite Waste 60% in MT | Weathered Rock in MT |
| XY-EF               | I     | 109           | 74           | 2            | 16132                 | 2            | 32264             | .....               | .....                                   | .....                                | 32264                |
|                     | I     | 109           | 74           | 3            | 24198                 | 2            | 48396             | .....               | .....                                   | .....                                | 48396                |
|                     | II    | 99            | 64           | 5            | 31680                 | 2.65         | 83952             | 83952               | 33581                                   | 50371                                | .....                |
| TOTAL               |       |               |              |              | 72010                 | ....         | 164612            | 83952               | 33581                                   | 50371                                | 48396                |
| X2Y2-IJ             | I     | 98            | 74           | 2            | 14504                 | 2            | 29008             | .....               | .....                                   | .....                                | 29008                |
|                     | I     | 98            | 74           | 3            | 21756                 | 2            | 43512             | .....               | .....                                   | .....                                | 43512                |
|                     | II    | 93            | 64           | 5            | 29760                 | 2.65         | 78864             | 78864               | 31546                                   | 47318                                | .....                |
|                     | III   | 88            | 54           | 5            | 23760                 | 2.65         | 62964             | 62964               | 25186                                   | 37778                                | .....                |
|                     | IV    | 66            | 44           | 5            | 14520                 | 2.65         | 38478             | 38478               | 15391                                   | 23087                                | .....                |
|                     | V     | 56            | 34           | 5            | 9520                  | 2.65         | 25228             | 25228               | 10091                                   | 15137                                | .....                |
| TOTAL               |       |               |              |              | 119340                | ....         | 292682            | 220162              | 88065                                   | 132097                               | 43512                |
|                     |       |               |              |              | 191350                | ....         | 457294            | 304114              | 121646                                  | 182468                               | 91908                |



PLATE No-VI

APPLICANT:  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

LOCATION:  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
EXTENT : 3.77.0Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

INDEX

MINE LEASE AREA

SAFETY DISTANCE

BOUNDARY & INTERMEDIATED POINT

REVENUE ST., ROCK MARK & BS.

APPROACH ROAD

TEMPORARY BENCH MARK

CONTOUR LINES

SHRUBS & TOPSOIL

MULTI COLOUR GRANITE

PROPOSED DUMP

EARTH BUND

PROPOSED BENCH

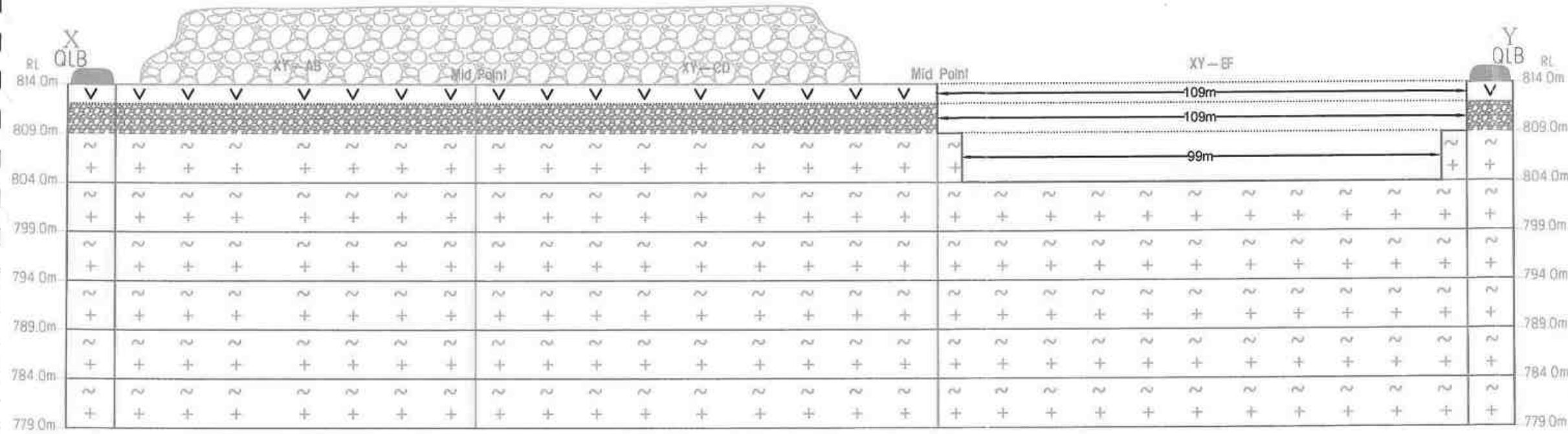
GREEN BELT

PROGRESSIVE QUARRY  
CLOSURE PLAN  
SCALE 1 : 2000

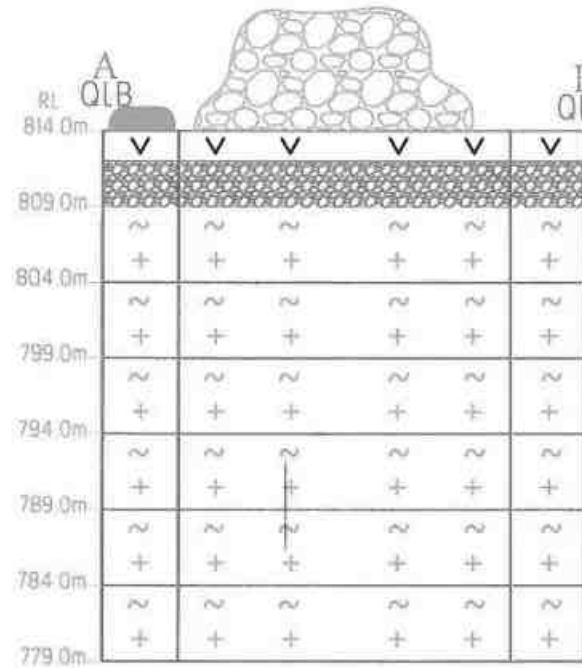
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QUALIFIED PERSON

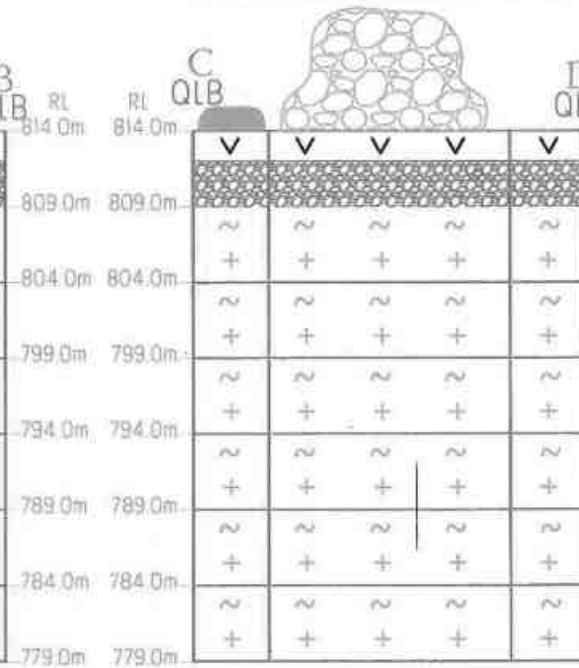
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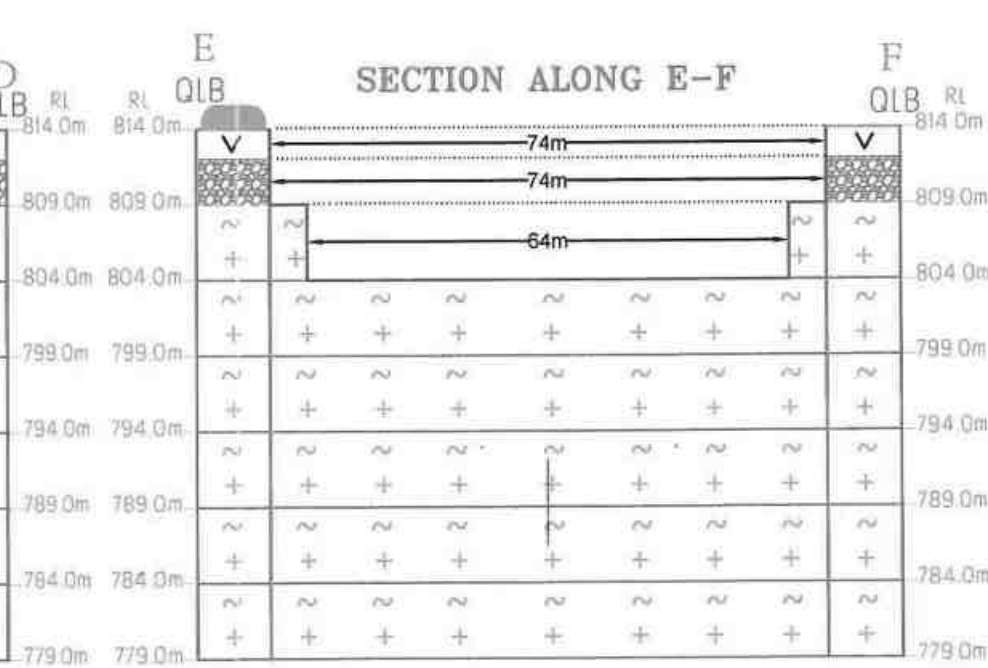
## SECTION ALONG A-B



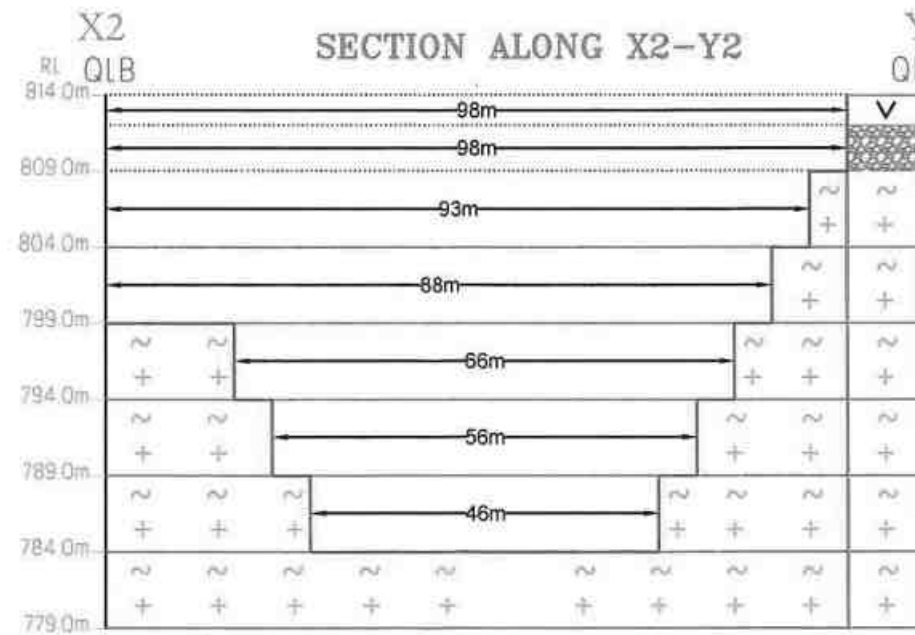
## SECTION ALONG C-D



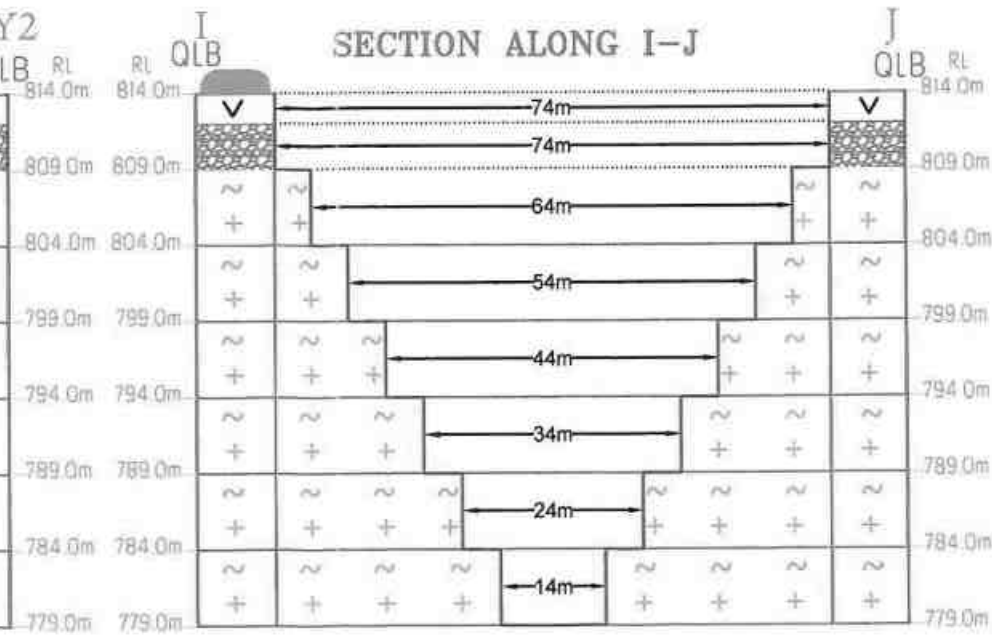
## SECTION ALONG E-F



## SECTION ALONG X2-Y2



## SECTION ALONG I-J



### PLATE No-VIA

#### APPLICANT:

M/s. ANANTRA GRANITES,  
S.No. 733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

#### LOCATION:

S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5

EXTENT : 3.77.0 Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

#### INDEX

MINE LEASE AREA

SAFETY DISTANCE

TOPSOIL

WEATHERED ROCK

MULTI COLOUR GRANITE

PROPOSED BENCH

EARTH BUND

DUMP

#### PROGRESSIVE QUARRY CLOSURE SECTIONS

SCALE SECTION - HOR 1: 1000  
VER 1: 500

#### Prepared By:

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QUALIFIED PERSON

P. A. E. J.

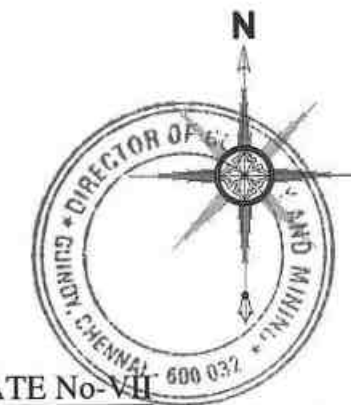


PLATE No-VII

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
**EXTENT** : 3.77.0Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

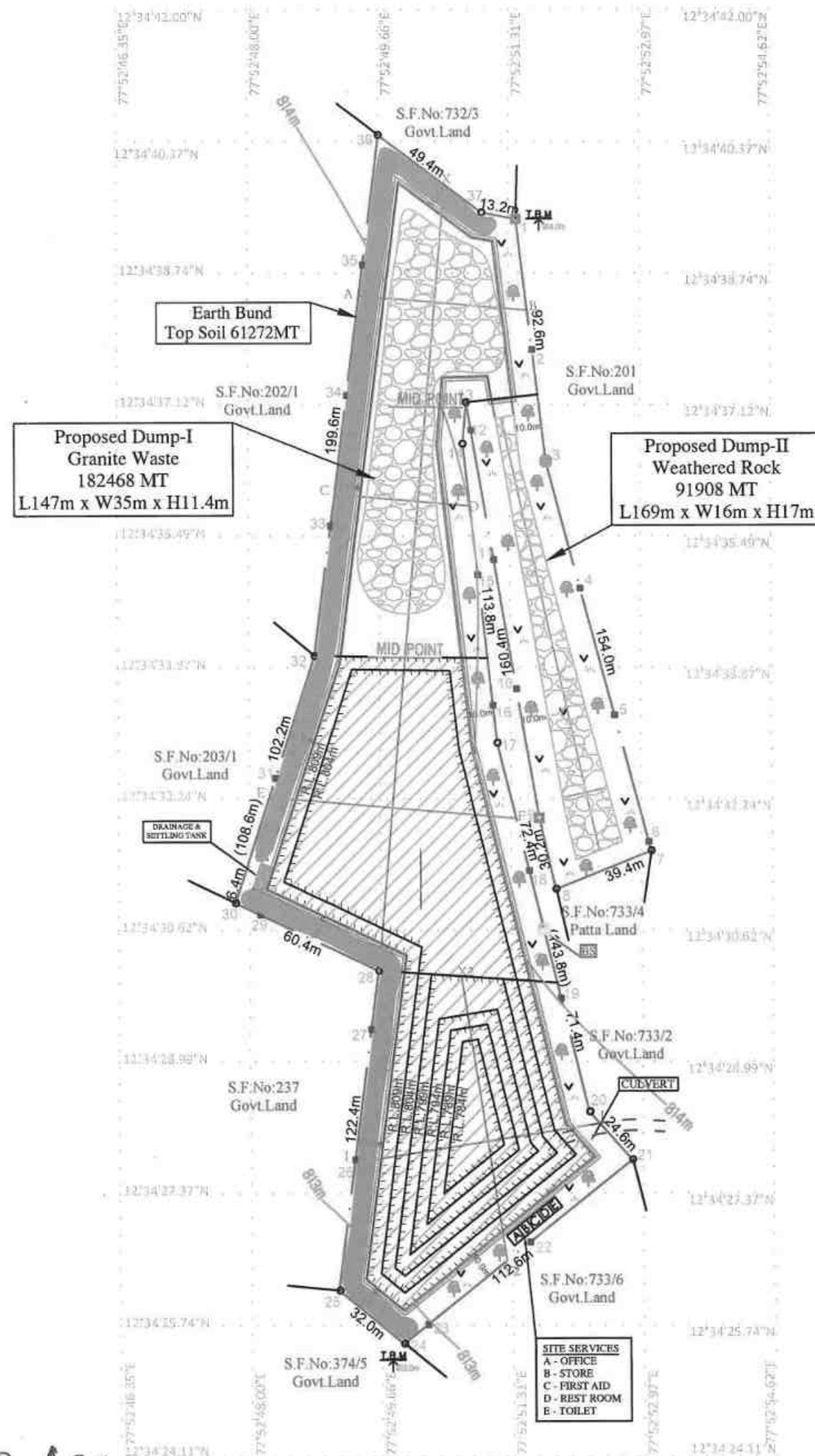
**INDEX**

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- REVENUE ST., ROCK MARK & BS.
- APPROACH ROAD
- TEMPORARY BENCH MARK
- CONTOUR LINES
- SHRUBS & TOPSOIL
- MULTI COLOUR GRANITE
- PROPOSED DUMP
- EARTH BUND
- PROPOSED BENCH
- GREEN BELT

**QUARRY LAYOUT &  
LAND USE PATTERN PLAN**  
SCALE 1 : 2000

Prepared By:  
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TO THE BEST OF MY KNOWLEDGE

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

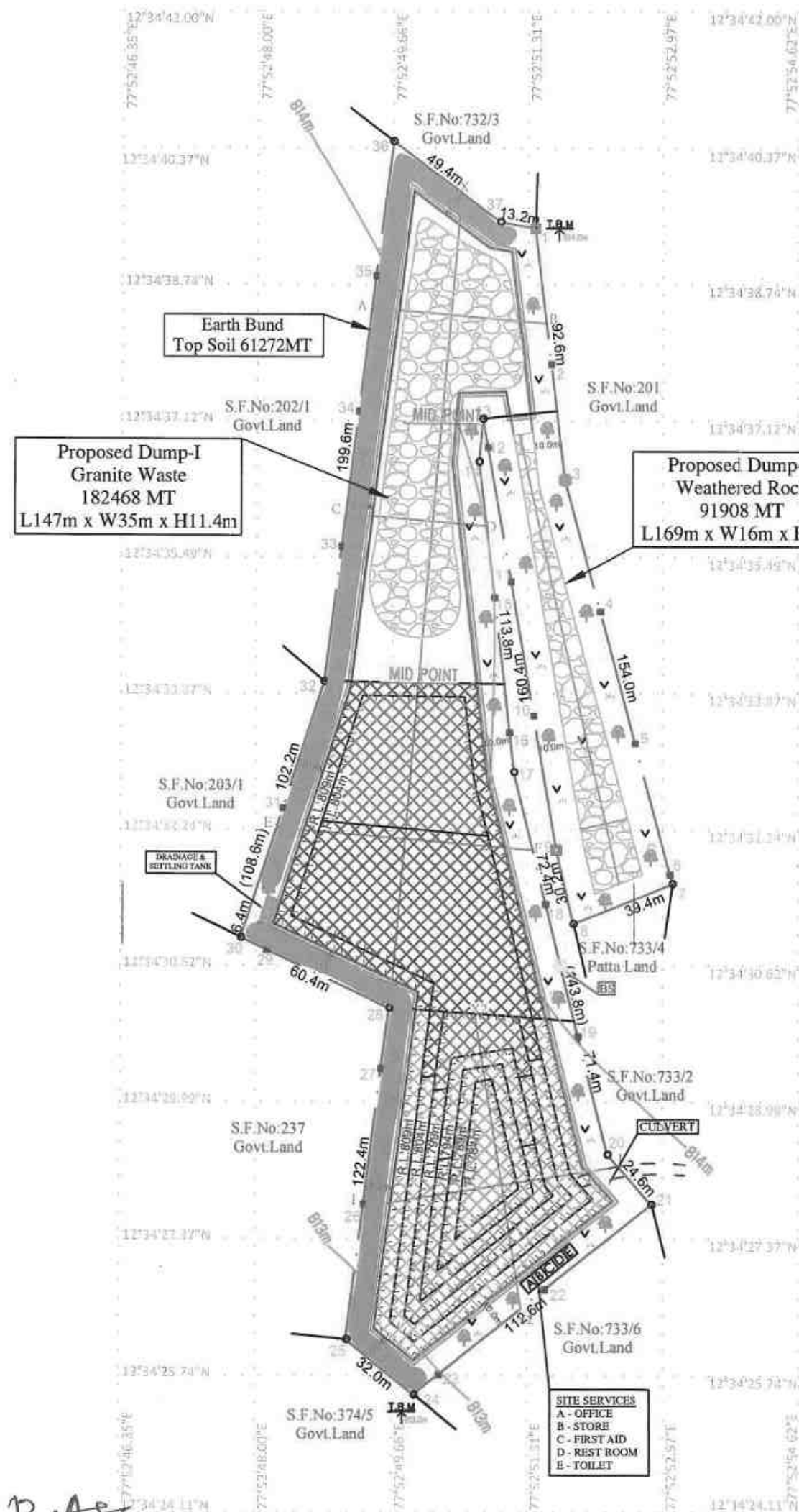


Proposed area to be Planted

**QUARRY LAYOUT LAND USE PATTERN**

| DESCRIPTION              | PRESENT AREA (Hect) | AREA IN USE DURING THE MINING PERIOD(Hect) | COLOR CODE |
|--------------------------|---------------------|--------------------------------------------|------------|
| AREA UNDER QUARRYING     | NIL                 | 1.49.5                                     |            |
| INFRASTRUCTURE           | NIL                 | 0.02.0                                     |            |
| ROADS                    | NIL                 | 0.05.0                                     |            |
| UN-UTILIZED AREA         | 3.77.0              | 0.12.0                                     |            |
| GREEN BELT               | NIL                 | 1.20.0                                     |            |
| WASTE DUMP               | NIL                 | 0.78.5                                     |            |
| DRAINAGE & SETTLING TANK | NIL                 | 0.10.0                                     |            |
| GRAND TOTAL              | 3.77.0              | 3.77.0                                     |            |





Proposed area to be Planted



| YEARWISE PRODUCTION RESERVES |         |       |                  |                 |                 |                          |                 |                      |                           |                                               |                                            |                         |                   |
|------------------------------|---------|-------|------------------|-----------------|-----------------|--------------------------|-----------------|----------------------|---------------------------|-----------------------------------------------|--------------------------------------------|-------------------------|-------------------|
| Year                         | Section | Bench | Length<br>in (m) | Width<br>in (m) | Depth in<br>(m) | ROM in<br>M <sup>3</sup> | Bulk<br>Density | Total ROM<br>in (MT) | ROM<br>Granite in<br>(MT) | Multi Colour<br>Granite 40%<br>Recovery in MT | Multi Colour<br>Granite Waste<br>60% in MT | Weathered<br>Rock in MT | Top Soil<br>in MT |
| I- Year                      | X2Y2-II | I     | 98               | 74              | 2               | 14504                    | 2               | 29008                | .....                     | .....                                         | .....                                      | .....                   | 29008             |
|                              |         | I     | 58               | 74              | 3               | 21756                    | 2               | 43512                | .....                     | .....                                         | .....                                      | 43512                   | .....             |
|                              |         | II    | 72               | 64              | 5               | 23040                    | 2.65            | 61056                | 61056                     | 24422                                         | 36634                                      | .....                   | .....             |
| TOTAL                        |         |       |                  |                 |                 | 59300                    | .....           | 133576               | 61056                     | 24422                                         | 36634                                      | 43512                   | 29008             |
| II - Year                    | X2Y2-II | II    | 21               | 64              | 5               | 6720                     | 2.65            | 17808                | 17808                     | 7123                                          | 10685                                      | .....                   | .....             |
|                              |         | I     | 109              | 74              | 2               | 16132                    | 2               | 32264                | .....                     | .....                                         | .....                                      | .....                   | 32264             |
|                              | XY-EF   | I     | 109              | 74              | 3               | 24198                    | 2               | 48396                | .....                     | .....                                         | .....                                      | 48396                   | .....             |
|                              |         | II    | 50               | 64              | 5               | 16000                    | 2.65            | 42400                | 42400                     | 16960                                         | 25440                                      | .....                   | .....             |
| TOTAL                        |         |       |                  |                 |                 | 63050                    | .....           | 140868               | 60208                     | 24083                                         | 36125                                      | 48396                   | 32264             |
| III - Year                   | XY-EF   | II    | 49               | 64              | 5               | 15680                    | 2.65            | 41552                | 41552                     | 16621                                         | 24931                                      | .....                   | .....             |
|                              |         | III   | 27               | 54              | 5               | 7290                     | 2.65            | 19319                | 19319                     | 7728                                          | 11591                                      | .....                   | .....             |
|                              | TOTAL   |       |                  |                 |                 |                          | 22970           | .....                | 60871                     | 60871                                         | 24349                                      | 36522                   | 0                 |
| IV - Year                    | X2Y2-II | III   | 61               | 54              | 5               | 16470                    | 2.65            | 43645                | 43645                     | 17458                                         | 26187                                      | .....                   | .....             |
|                              |         | IV    | 30               | 44              | 5               | 6620                     | 2.65            | 17490                | 17490                     | 6996                                          | 10494                                      | .....                   | .....             |
|                              |         | TOTAL |                  |                 |                 |                          |                 | 23090                | .....                     | 61135                                         | 61135                                      | 24454                   | 36681             |
| V - Year                     | X2Y2-II | IV    | 35               | 44              | 5               | 7920                     | 2.65            | 20988                | 20988                     | 8396                                          | 12592                                      | .....                   | .....             |
|                              |         | V     | 55               | 34              | 5               | 9520                     | 2.65            | 25228                | 25228                     | 10091                                         | 15137                                      | .....                   | .....             |
|                              |         | VI    | 45               | 24              | 5               | 5520                     | 2.65            | 14628                | 14628                     | 5851                                          | 8777                                       | .....                   | .....             |
|                              |         | TOTAL |                  |                 |                 |                          |                 | 22960                | .....                     | 60844                                         | 60844                                      | 24338                   | 36506             |
| GRAND TOTAL                  |         |       |                  |                 |                 | 191350                   | .....           | 457294               | 304114                    | 121646                                        | 182468                                     | 91908                   | 61272             |

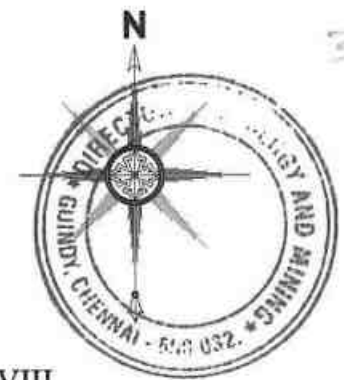


PLATE No-VIII

APPLICANT:

M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

LOCATION:

S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
EXTENT : 3.77.0Hects,  
VILLAGE : JAKKERI,  
TALUK : DENKANIKOTTAI,  
DISTRICT : KRISHNAGIRI.

INDEX

MINE LEASE AREA



SAFETY DISTANCE



BOUNDARY & INTERMEDIATED POINT



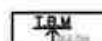
REVENUE ST., ROCK MARK & BS.



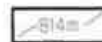
APPROACH ROAD



TEMPORARY BENCH MARK



CONTOUR LINES



SHRUBS & TOPSOIL



MULTI COLOUR GRANITE



PROPOSED DUMP



EARTH BUND



PROPOSED BENCH



GREEN BELT



YEARWISE DEVELOPMENT &  
PRODUCTION PLAN  
SCALE 1 : 2000

Prepared By:

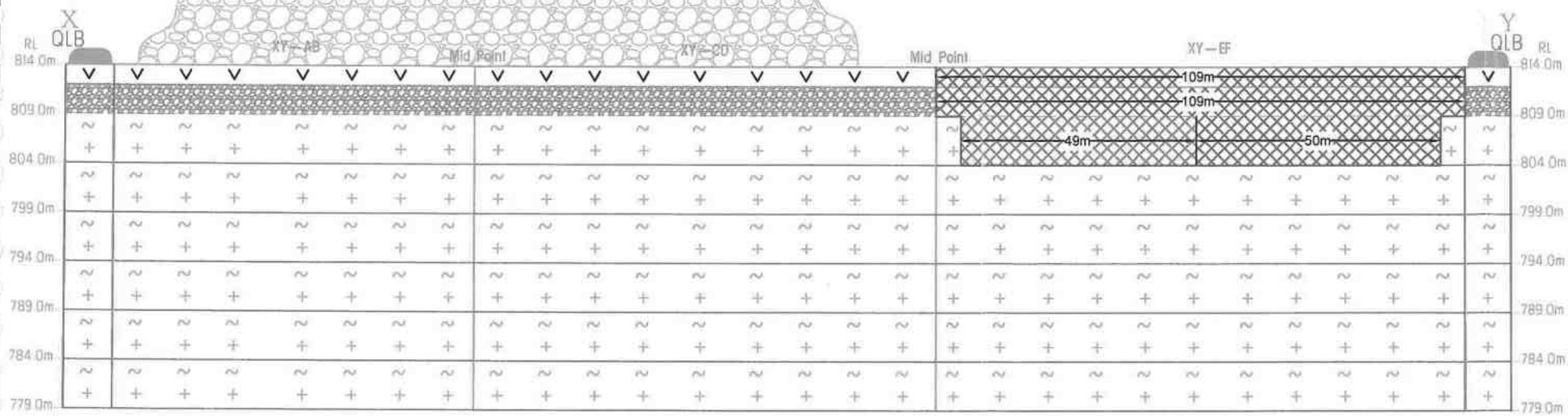
I DO HEREBY CERTIFY THAT THE PLATE HAS  
BEEN CHECKED BY ME AND IS CORRECT  
TO THE BEST OF MY KNOWLEDGE

*[Signature]*

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



# SECTION ALONG X-Y



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

## PLATE No-VIII

**APPLICANT:**  
M/s.ANANTRA GRANITES,  
S.No.733/5,  
JAKKERI VILLAGE,  
DENKANIKOTTAI TALUK,  
KRISHNAGIRI DISTRICT.

**LOCATION:**  
S.F.No. : 202/2, 203/2A, 203/2B, 733/1,  
733/3 & 733/5  
**EXTENT** : 3.77.0Hects,  
**VILLAGE** : JAKKERI,  
**TALUK** : DENKANIKOTTAI,  
**DISTRICT** : KRISHNAGIRI.

## INDEX

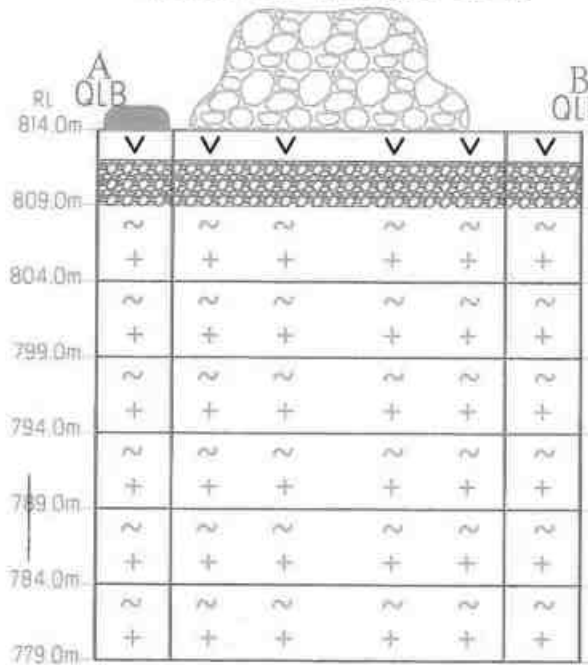
- MINE LEASE AREA
- SAFETY DISTANCE
- TOPSOIL
- WEATHERED ROCK
- MULTI COLOUR GRANITE
- PROPOSED BENCH
- EARTH BUND
- DUMP

**YEARWISE DEVELOPMENT &  
PRODUCTION SECTIONS**  
SCALE SECTION - HOR 1: 1000  
VER 1: 500

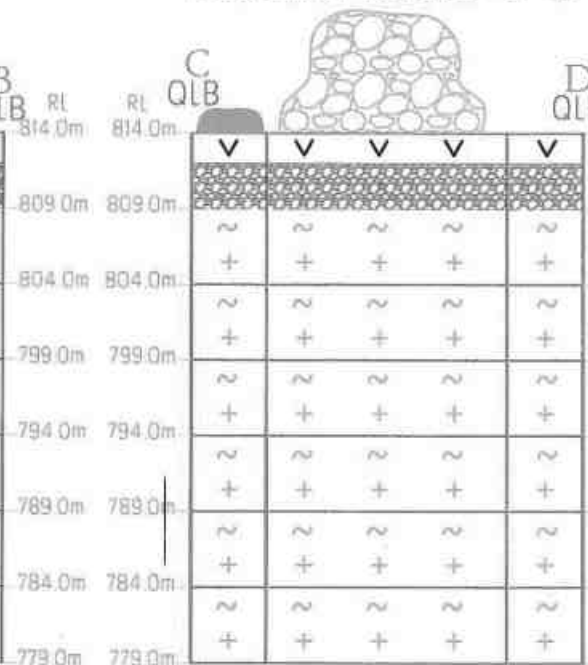
Prepared By:  
I DO HEREBY CERTIFY THAT THE PLATE HAS  
BEEN CHECKED BY ME AND IS CORRECT  
TO THE BEST OF MY KNOWLEDGE

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

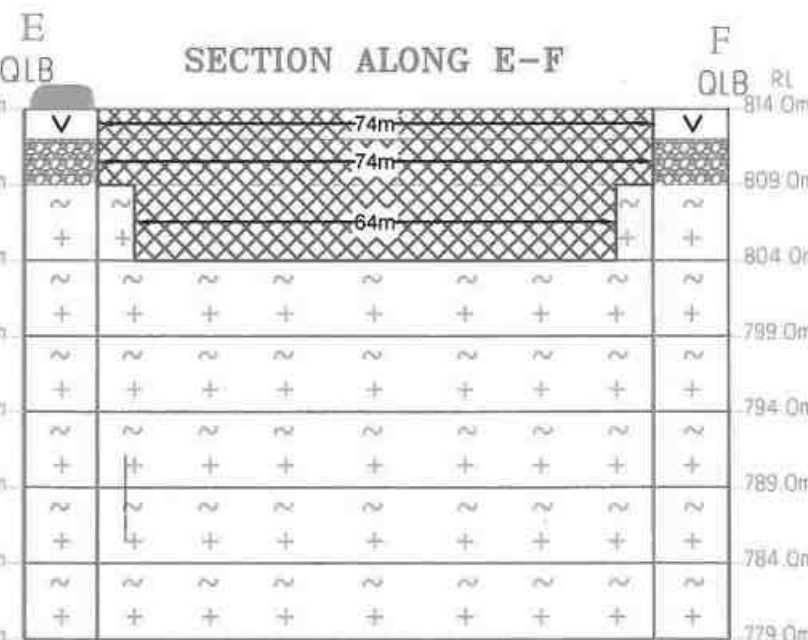
## SECTION ALONG A-B



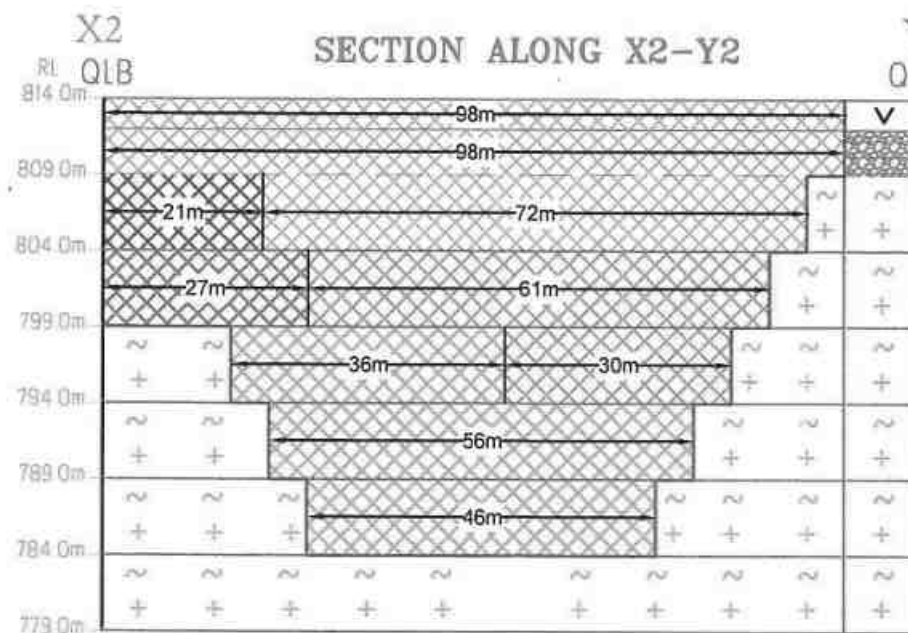
## SECTION ALONG C-D



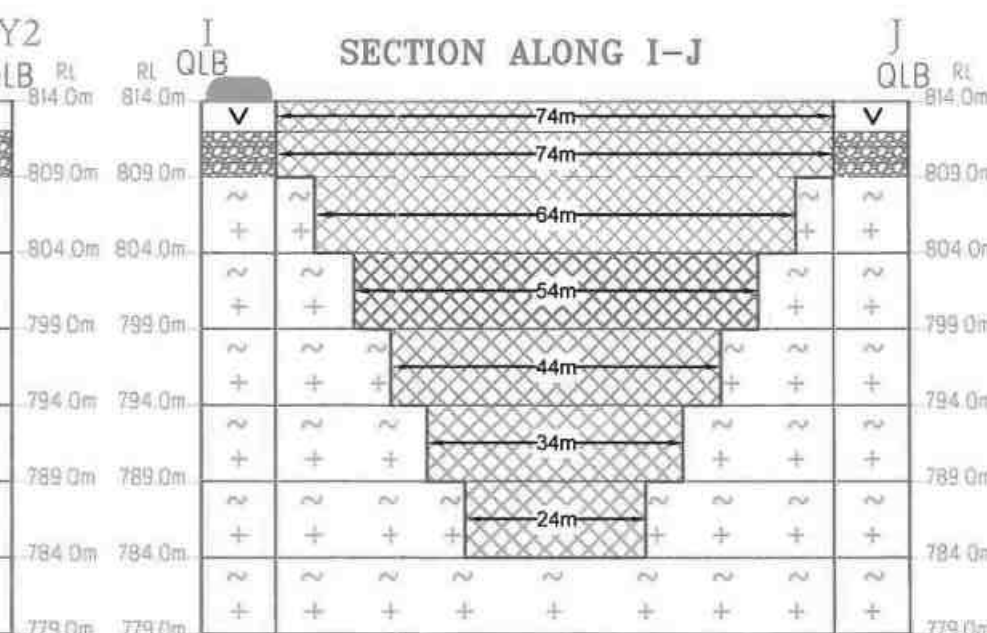
## SECTION ALONG E-F



## SECTION ALONG X2-Y2



## SECTION ALONG I-J



R. Asst.

கிருஷ்ணகிரி ஸ்டாம்ப்டம், திருக்காங்கோட்டை 21.04

தொடர்ச்சியாக ஸ்டாம்ப்டம், 65.00 ரூபாய் கிராம

400 ரூபாய் - 202/2 - ஸ்டாம்ப்டம் - 0.81.00 ரூபாய் தீர்வை 1.12,  
400 ரூபாய் - 203/2A - ஸ்டாம்ப்டம் - 0.44.00 ரூபாய் தீர்வை 0.61,  
400 ரூபாய் - 203/2B - ஸ்டாம்ப்டம் - 0.10.00 ரூபாய் தீர்வை 0.14,  
400 ரூபாய் - 733/1 - ஸ்டாம்ப்டம் - 0.37.00 ரூபாய் தீர்வை 0.52,  
400 ரூபாய் - 733/3 - ஸ்டாம்ப்டம் - 0.86.50 ரூபாய் தீர்வை 1.20,  
மற்றும் 400 ரூபாய் - 733/5 - ஸ்டாம்ப்டம் - 1.18.50 ரூபாய் தீர்வை 1.62

இதன் மொத்த அளவீடு ரூபாய் - 3.77.00 ரூபாய் ரெகிஸ்டர்

சுமார் 300 ரூபாய் அளவீடு Anantha Gramam. கிராமத்தை சார்ந்த சிலர்

300 ரூபாய் அளவீடு கிராம ரெகிஸ்டர் மற்றும் குடியிருப்பு பகுதிகள்

வசூலிப்பது, உதாரணமாக தலைவர், குடியிருப்பவர், புராதனச் சிவனார்

குடியிருப்பவர், புதைகுழிகள் குடியிருப்பவர் என்பதை புலத்தூக்கி

-400 ரூபாய் ஸ்டாம்ப்டம் ரூபாய் தீர்வை ரெகிஸ்டர்.

R. ASH

ப. சுவாமிநாதன்  
Village Administrative Officer,  
65 JAKKERI (Village).  
SENKANIKOTTAI (Tk), Krishnagiri Dt



## National Accreditation Board for Education and Training

### Certificate of Accreditation

#### Geo Technical Mining Solutions, Dharmapuri

5/1485-3, Salem Main Road, Elakkiyampatty, Dharmapuri, Tamil Nadu

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors.

| S. No | Sector Description                                             | Sector (as per) |           | Cat. |
|-------|----------------------------------------------------------------|-----------------|-----------|------|
|       |                                                                | NABET           | MoEFCC    |      |
| 1.    | Mining of minerals - including opencast and underground mining | 1               | 1 (a) (i) | A    |

**Note:** Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated January 24, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/24/3142 dated Feb 19, 2024. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions, Dharmapuri following due process of assessment.

Issue Date  
Feb 19, 2024

Valid up to  
Dec 31, 2026



Mr. Ajay Kumar Jha  
Sr. Director, NABET

Certificate No.  
NABET/EIA/23-26/RA 0319

Prof (Dr) Varinder S Kanwar  
(CEO NABET)

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.