


**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
&
ENVIRONMENT MANAGEMENT PLAN**

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

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

Total Extent of Cluster – 17.09.5 Ha

**TMT. V.PUNITHA MULTI COLOUR
GRANITE QUARRY**

PROJECT PROPONENT	PROPOSED PROJECT	PRODUCTION DETAIL
Tmt. V. PUNITHA W/o. P. Velmani residing at No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District, Tamil Nadu.	Extent: 2.86.5 ha S.F. No: 482 Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State.	Mineable ROM – 2,23,055m ³ Multi Colour Granite – 1,11,527.5m ³ @ 50% Recovery Peak Production – 6,088m ³ of ROM Depth – 28m bgl
ToR obtained vide Letter No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024		
Environmental Consultant GEO EXPLORATION AND MINING SOLUTIONS Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, Tamil Nadu, India Accredited for sector 1 Cat ‘A’, sector 31 & 38 Cat ‘B’ Certificate No : NABET/EIA/2225/RA 0276 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com		Laboratory GLOBAL LAB AND CONSULTANCY SERVICES Approved by ISO:9001:2015, NABL, FSSAI, Experts in QHSE S.F No:92/3A2, Geetha Nagar, Alagapuram Pudur, Salem-636016. 
<u>Baseline Monitoring Period</u> October 2023 - December 2023 JANUARY 2024		

UNDERTAKING

I Tmt. V. Punitha given undertaking that this EIA & EMP report prepared for our Multi Colour Granite quarry situated in SF.No 482 over an extent of **2.86.5 Ha** in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide Lr.No. **SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024.**

I hereby assured that the Data's submitted and information given by me is true and correct to the best of my knowledge.

Signature of the Project Proponent



Tmt. V. Punitha

Place: Namakkal

Dated:

DECLARATION

I Dr. M. Ifthikhar Ahmed– EIA Co Ordinator declare that the Draft EIA & EMP report for the Multi Colour Granite quarry in SF.No 482 over an extent of 2.86.5 Ha in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

The Data's provided in the EIA report are true and correct to the best of my knowledge.

Signature of the EIA Co Ordinator



Dr. M. Ifthikhar Ahmed

EIA Coordinator

M/s. Geo Exploration and Mining Solutions

Place: Salem

Dated:

For the easy representation the Proposed quarries and Existing quarries are designated as below –

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	ToR Status
P-1	Tmt. V. Punitha	482 in Nadanthai Village Paramathivelur Taluk,	2.86.5 Ha	SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024
Total Extent			2.86.5 Ha	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Lease Period
E-1	M/s.M.M.Exports	483/2A Nadanthai Village, Paramathivelur Taluk,	2.75.5Ha	05.01.2017 to 04.01.2037
E-2	M/s.M.M.Exports	492/2 Nadanthai Village, Paramathivelur Taluk,	2.73.0Ha	05.01.2017 to 04.01.2037
E-3	Tmt.L.Selvi	494/1,494/2 Nadanthai Village, Paramathivelur Taluk,	4.40.5Ha	25.02.2016 to 24.02.2036
E-4	Thiru. P. Velmani	456 &25/1 Nadanthai IrukkurVillage, Paramathivelur Taluk,	4.34.0Ha	02.12.2015 to 01.12.2035
TOTAL			14.23.0 Ha	
ABANDONED/EXPIRED QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Lease Period
A-1	Thiru.J.A.Richard	493/1A(P), 515/2(P) Nadanthai Village, Paramathivelur Taluk,	1.76.0	10 years Lease Period
A-2	Gem Granites	483/2 Nadanthai Village, Paramathivelur Taluk,	4.05.0	10 years Lease Period
TOTAL			5.81.0 Ha	
TOTAL CLUSTER EXTENT			17.09.5Ha	

Note: -

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

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI,- (ii)(5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

TERMS OF REFERENCE (ToR) COMPLIANCE

Tmt. V. Punitha,

“ToR issued vide Letter No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024

SPECIFIC CONDITIONS						
1	The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.	Noted and agreed				
2	The PP shall prepare a conceptual working plan accommodating the remedial actions such as inclusion of haul road accessibility keeping the benches intact, based on the studies carried out to assess the slope stability of the working benches to be constructed and existing quarry wall. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and slope stability action plan during the time of appraisal for obtaining the EC.	Noted and agreed				
3	The PP shall undertake Hydrogeology study considering nearby existing wells, Aquifers, Ground water & surface water levels etc within the radius of 1km.	Enclosed Hydrogeology Report in Annexure				
Annexure I						
1	<p>In the case of existing/operating mines, a letter obtained from the shall be submitted and it shall include the following</p> <ul style="list-style-type: none"> (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 	<p>Original Pit Dimension: 113m (L) x63m (W) x 18m (D)</p> <p>EC Approved Quantity 30,025m³</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">EC Permitted Depth</th> <th style="text-align: center;">Mined out depth</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">18m</td> <td style="text-align: center;">18m</td> </tr> </tbody> </table> <p>No illegal mining has been carried out</p> <p>No penalties levied by the Department of Geology and Mining</p>	EC Permitted Depth	Mined out depth	18m	18m
EC Permitted Depth	Mined out depth					
18m	18m					
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Certificate regarding the location of habitations within 300m radius from the periphery of the site has been attached in the Annexure and				
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants,	Details are discussed in the Chapter No.3, Page No.87				

	whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc. are located within 1 km of the proposed quarry.	Hydrological report is attached in the Annexure
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	Discussed in the Chapter No.3
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	The Nearest Reserve Forest is Saruvumalaikaradu – 17km E
7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, MRM/Bangalore, Division of Geotechnical Engineering, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	Slope Stability Study will be submitted in the Final EIA/EMP report
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC. when the depth of the working is extended beyond 30 m below ground level.	The ultimate depth of the quarry is 28m and it is not exceeding 30m.
9	The Proponent shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent Person as per the MMR 1961 such as blaster, mining mate, mine foreman II/I Class mines manager directly employed on fulltime basis only by the proponent.	Affidavit will be submitted in the Final EIA/EMP report
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	There is no Primary blasting is proposed. Only Secondary blasting is practiced for splitting the Blocks.
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	There is no other quarry is operated by the proponent

12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01 .2016. then the proponent shall furnish the following details from AD/DD, mines,	The letter from the Department of Geology and Mining has been obtained and attached in the Annexure						
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The last period of operation is 2022-23 and the last permit letter will be submitted in the Final EIA/EMP report						
14	Quantity of minerals mined out <ul style="list-style-type: none"> ☒ Highest production achieved in any one year ☒ Detail of approved depth or Mining ☒ Actual depth of the mining achieved earlier. ☒ Name of the person already mined in that leases area ☒ If EC and CTO already obtained, the copy of the same shall be submitted. ☒ Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 	The quarry lease was previously granted in favour of Tmt.V. Punitha over an extent of 2.86.5 Hectares of Patta land in S.F.No. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District vide Rc. No. 5162/MM5/2016 dated 10.07.2017 for the period of five years from 24.01.2018 to 02.01.2023 for quarrying of Multi Colour Granite <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Highest Production</td> <td>4270.497 m³</td> </tr> <tr> <td>Depth of Mining</td> <td>17m</td> </tr> <tr> <td>Actual depth achieved</td> <td>17m</td> </tr> </table>	Highest Production	4270.497 m ³	Depth of Mining	17m	Actual depth achieved	17m
Highest Production	4270.497 m ³							
Depth of Mining	17m							
Actual depth achieved	17m							
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 2, Figure No.2.1, 2.2. Geomorphology of the area is given in Chapter No 2, Figure No.2.8 Land use pattern of the project area is tabulated in the Chapter No.2. Table no 2.3 Land use pattern of the Study area is tabulated in the Chapter No.3, Table no 3.2						
16	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Drone video for this cluster will be taken and it will be submitted in the Final EIA/EMP report						
17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	The Barbed Wire fencing has been erected all around the boundary. The Photographs will be submitted in the Final EIA/EMP report						
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	Details of Geological Resources and Proposed reserves are discussed under Chapter No. 2.						
19	The Project Proponent shall provide the organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Discussed about Organization chart in Chapter 6						
20	The project proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1km (radius) along with the collected water	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3.						

	level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation are this regard may be provided.	
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & Flora/fauna including traffic/vehicular movement study.	Baseline Data were collected for One Season (Post Monsoon) Oct 2023 to Dec 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil, health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Cumulative impact study has been carried out covering proposed and existing quarries in the cluster and results related to air pollution, water pollution, & health impacts have been given in chapter No. 7, Pg. No 116-123, Based on the results, environmental management plan has been prepared and given in Chapter No. 10. Pg. No 135
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Discussed in Chapter No.3
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass pre operational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3.
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The lower part of the mine pit will be utilized as rain water harvesting structure (Temporary) and the water will be used for the water sprinkling on haul roads and Greenbelt development purpose. Rainwater harvesting structure will be constructed near the mine office.
28	Impact on local transport infrastructure due to the Project should be indicated.	Traffic density survey was carried out to analyse the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is

		no significant impact due to the proposed transportation from the project area. Details have been provided in Chapter No.2
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	There are no trees present in the target mining area and few trees present in the safety barrier. It is proposed to plant 1450 trees along boundary and nearby village roads. There are few trees in buffer zone of 300 m from the proposed lease area and it shall not be cut down or have any impact due to the mining activities and project proponent ensures to carrying out activities like watering for preserving the green cover around 300 m from proposed project site
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Mine closure plan is detailed in Chapter:4.
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted and agreed
32	The purpose of green belt around the project is to capture the fugitive emissions. Carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of Small medium/tall trees alternating with shrubs should be planted in a mixed manner.	Noted & agreed. It is proposed to plant 750 Nos of trees in the 7.5m safety barrier and approach roads
33	Taller/one year old Saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted as per the advice of local forest authorities /botanist / Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	It is an Existing Lease. Around 1450 trees are proposed to plant
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster management Plan details in Chapter-7
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.	A Risk Assessment and management Plan Chapter- 7
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health impacts chapter- 10

37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Detailed discussed in the chapter 10
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Socio Economic study has been carried out the details are given in the Chapter No.3
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Detailed discussed in the chapter 8.
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Noted and agreed
42	The Proponent shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating on abide the EMP for the entire life of mine.	Detail of EMP is explained in chapter- 10. Page No. 135. Proponent ensures to abide the EMP for the life of the mine.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted and agreed

ANNEXURE B

Annexure -B Cluster Management Committee

1	Cluster Management Committee, which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Cluster Management Committee has been constituted initially with 3 quarries (MoU has been signed).
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	The information will be shared to the cluster management committee during the monthly meeting
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the	All the information has been discussed in Chapter No.2

	cluster, the usage of haul roads by the individual quarry in the form of route map and network.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	The risk management plan and disaster management plan will be followed as per this EIA report.
6	The Cluster Management Committee shall from Environmental Policy to practice sustainable mining in 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.	Environmental policy is described in the EIA report Chapter No. 6 and the same will be followed.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	A proper action plan regarding the restoration will be followed by the committee
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The risk management plan and disaster management plan will be followed as per the EIA report.
10	The committee shall furnish an action plan to achieve sustainable development goals with inference to water, sanitation & safety.	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The fire safety and evacuation plan will be carried out by as per the respective quarry mines managers
Impact study of mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as precise area communication order issued from reputed search institutions on the following. a) Soil health and soil biological, physical land chemical features. b) Climate change leading to droughts, floods etc. c) Pollution leading to release of greenhouse gases (GHG), rise in temperature and Livelihood of the local people. d) Possibilities of water contamination and impact on aquatic ecosystem health. e) Agriculture, forestry and traditional practices. f) Hydrothermal/Geothermal effect due to destruction in the environment. g) Bio-geochemical processes and its foot prints including environmental streams. h) Sediment geochemistry in the surface streams.	Details of Soil health is given in Chapter No 3 and biodiversity is given in Chapter No 3. The project will not cause any significant changes in the climate Climatic changes and GHG are described in Chapter No 4. Details of water contamination and impact on aquatic ecosystem is given in Chapter No 4. Hydrothermal/ Geothermal effects due to destruction in the environment, Bio geochemical process and sediment geo chemistry given in the Chapter No 7.
Agriculture and Agro-Biodiversity		
13	Impact on surrounding agricultural fields around the proposed mining Area.	As the proposed lease area is dominantly surrounded by mining land, barren land, and fallow land, the impact on the surrounding agricultural fields if present will be low. With proper mitigation measures, the project will be carried out to reduce the impact further to the level of negligence.

14	Impact on soil flora & Vegetation around the project site.	The vegetation details have been provided in chapter III. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
15	Details of type of vegetation 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.	The vegetation details have been provided in chapter III. 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
16	The EIA should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural ecosystem.	Details are discussed in Chapter No.3
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The Eco System of the area will be retained during the mining operation by the way of planting trees in the boundary barrier and un utilized areas. After completion of mining operation, the quarried-out pit will be facilitated to collect the rainwater to pit act as temporary reservoir
18	The project proponent shall study and furnish the impact of project on adjoining Patta lands, Horticulture, Agriculture and livestock.	The project area is bounded by dry barren land on all the sides.
Forests		
19	The project proponent shall detail study on Impact of mining on Reserve forests free ranging wildlife.	There is no Reserve Forest within 1km radius from the project area. The mining operation will not cause any significant impact to the Reserve Forest and Wild life Sanctuaries.
20	The Environmental Impact assessment should study impact on forests, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	There is no forest/wildlife within 10km radius, chapter- 3 details of Ecology and Biodiversity, and 4 endemic vulnerable and endangered indigenous flora and fauna.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for production.	There are no trees inside the lease area
22	The Environmental Impact Assessment should study impact on protected areas, RF, National Park, Corridors and wildlife pathways, near project site.	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
Water Environment		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	Detailed discussed in the chapter 3.
24	Erosion Control Measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter 4.

25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, waterbodies/Rivers and any ecological fragile areas.	In the EIA report Chapter No. IV enumerate the anticipated impact due to the project and mitigation measures
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the waterbody and Reservoir.	Detailed under Chapter 3.
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment by the activities.	Details are given in the Chapter No 4.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Detailed discussed in the chapter 4
29	The terms of Reference should specifically study impact on soil health, Soil Erosion, the soil physical, chemical components and microbial components.	The Topsoil will be removed and preserved in the boundary barrier and will be used for greenbelt development. Details of impact on soil environment is detailed in Chapter No.4.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The nearest water bodies from the project area are an Odai located 230m – NE
Energy		
31	The measure taken control Noise, Air, water, dust control and steps adopted to efficiently utilize the energy shall be furnished.	Details in Chapter 3 environmental monitoring details.
Climate changes		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest to measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Carbon emission due to this project and mitigation measures is discussed in the Chapter No 7.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and soil and below soil carbon stock.	The project will not cause significant impact on climatic change. Description about the project and climatic changes is described in Chapter No.4.
Mine Closure Plan		
34	Detailed mine closure plan covering the entire mine lease period as per precise area communication order issued.	Details in Chapter 2 mine closure plan
EMP		
35	Detailed environment management plan along with adaptation, mitigation and remedial strategies covering the entire mine lease period as per precise area communication order issued.	Details in EMP in chapter 10
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	Detailed Environment Management Plan for the project to mitigate the anticipated impacts described under Chapter 4 is discussed under Chapter 10.
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	A Risk Assessment and management Plan Chapter- 7
Disaster management plan		

38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Disaster management Plan details in Chapter-7
Others		
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations. Schools, Archaeological sited, structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.,	Details in chapter-2 with attached annexure
40	As per the MoEF &CC office memorandum F.No.22-65/2017-IA.III dated:30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Noted and agreed
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastics & Microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Details of plastic management is in chapter 7

STANDARD TERMS OF REFERENCE		
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. The projects are not a violation category. This proposal falls under B1 Category (Cluster situation)
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	Document is enclosed along with Approved Mining Plan as Annexure Volume 1 for the respective projects.
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.	Noted & agreed.
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).	Satellite imagery of the project area along with boundary co-ordinates is given in the Chapter No 1 Figure No .1.1 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Land use pattern of the project area is tabulated in the Chapter No.2. Table No.2.3 Land use pattern of the Study area is tabulated in the Chapter No.3 Table No 3.2.
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological	Map showing –

	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.	Geology map of the project area covering 10km radius - Figure No. 2.8, Geomorphology of the area is given in Chapter No 2 Figure No 2.9.
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 applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1.
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 Mechanized method. The height and width of the bench will be maintained as 5m with 90 ⁰ 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.	Noted & agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is for the Life of the Mine / lease period.
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3.
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	Not Applicable. No Dumps is proposed outside the lease area.
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,	Not Applicable. There is no Forest Land involved in the proposed project area. The proposed project area is a Patta land. Approved Mining Plan is enclosed as Annexure Volume 1.

	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 brake 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.	Not Applicable. The proposed project area does not involve any Forest Land.
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest within the Study Area Sarumalai R.F -17km-E
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.	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
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	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area. Vellode Bird Sanctuary -35km-W
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.	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Detailed in Chapter No. 3.
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'.

20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable. The project doesn't attract The C. R. Z. Notification, 2018.
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.
22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline Data were collected for One Season (Oct 2023 - Dec 2023 (Post Monsoon Season) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
23	Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view 12 Model. Details in Chapter No. 4.
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.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.

25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13,
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.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4.
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 at 68-64m below ground level. In these projects, ultimate depth is 28m Maximum from the general ground profile. It is inferred the quarrying activities in the Cumulative EIA project (Quarries) will not intersect the Ground water table.
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.	Highest elevation of the project area is 182m AMSL Ultimate depth of the mine is 28m AMSL Water level in the area is 68m BGL to 64m BGL
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.	Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4, Table No.4.12
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.	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2.
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	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2.

	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.	Discussed in chapter No 2.
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.	Details in Chapter 10.
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 impact and details of the medical examination to the workers given in the Details in Chapter 10.
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.	Details in Chapter No. 4
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.	Details of Socio Economic is given in the Chapter No 3.
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.	Environment Management Plan Chapter 10.
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.	Public hearing points and commitment of the project proponent will be updated in the final EIA & EMP Report.
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is given in the Chapter No 2, Table No 2.15.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Detailed under Chapter 7
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.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
44	Besides the above, the below mentioned general points are also to be followed: -	
A	Executive Summary of the EIA/EMP Report	Encloses as separate volume
B	All documents to be properly referenced with index and continuous page numbering.	All the documents are 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 are given properly.
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	Copy of Baseline monitoring reports are enclosed with this draft as annexure
E	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Questionnaire of the project will be submitted in final EIA report after complying the public hearing points.
G	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are 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	There are no changes in Form-I, Mining plan and Pre-feasibility report for all the projects.
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.	Not applicable.
J	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Surface Plan – Figure No. 2.3 Working Plan – Figure No 2.13

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CHAPTER – 1: INTRODUCTION

1.0 Preamble

The project proponent Tmt.V. Punitha applied for Multi Colour Granite quarry over an extent of 2.86.5 Ha in S.F. No 482, Nadanthai Village, Paramathivelur Taluk, Namakkal District. As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries - 2 proposal and 5 Existing quarry in the 500m Radius forming Cluster Category - Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Hence proponent applied for the Terms of Reference and the ToR obtained vide Letter No Lr. No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024.

The Baseline Monitoring study has been carried out during the period of **October - December 2023** and this EIA and EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

1.1 Purpose of the Report

The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, Mining Project are classified under two categories i.e., A (> 100 Ha) and B (\leq 100 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI. Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B- 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

Particulars of Approval of Mining Plan and Date of Commencement of Mining Operation

The mining plan was prepared in respect of Multi colour granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter No.5162/MM5/2016 dated 10.07.2017 (Annexure No. VIII). As per direction issued in the precise area communication letter the lessee has obtained Prior Environmental Clearance from the District Level Environment Impact Assessment Authority, Namakkal District, **Tamil Nadu vide letter No. DEIAA-NMK-TN/F.No.259/Mines/02/EC.No.2/2017 dated: 24.11.2017.**

The quarry lease was granted vide G.O.(3D) No.27, Industries (MMB.2) Department Dated: 29.11.2017 for a period of twenty years (Refer Annexure No. I). The quarry lease deed has executed on **03.01.2018** and the

lease period is valid up to **02.01.2038**(Annexure No. IX). The quarry operation has commenced on 24.01.2018. The mining plan period is valid upto 02.01.2023.

Now, the first scheme of Quarrying has prepared and submitted for the period of 2023-24 to 2027-28 (Five years).

First Scheme of Quarrying Plan: The Mining Plan for Multicolour Granite quarry mining lease cluster over an extent of 17.09.5 ha (The details of previous approved Mining Plan and Scheme of Mining) is given in below table.

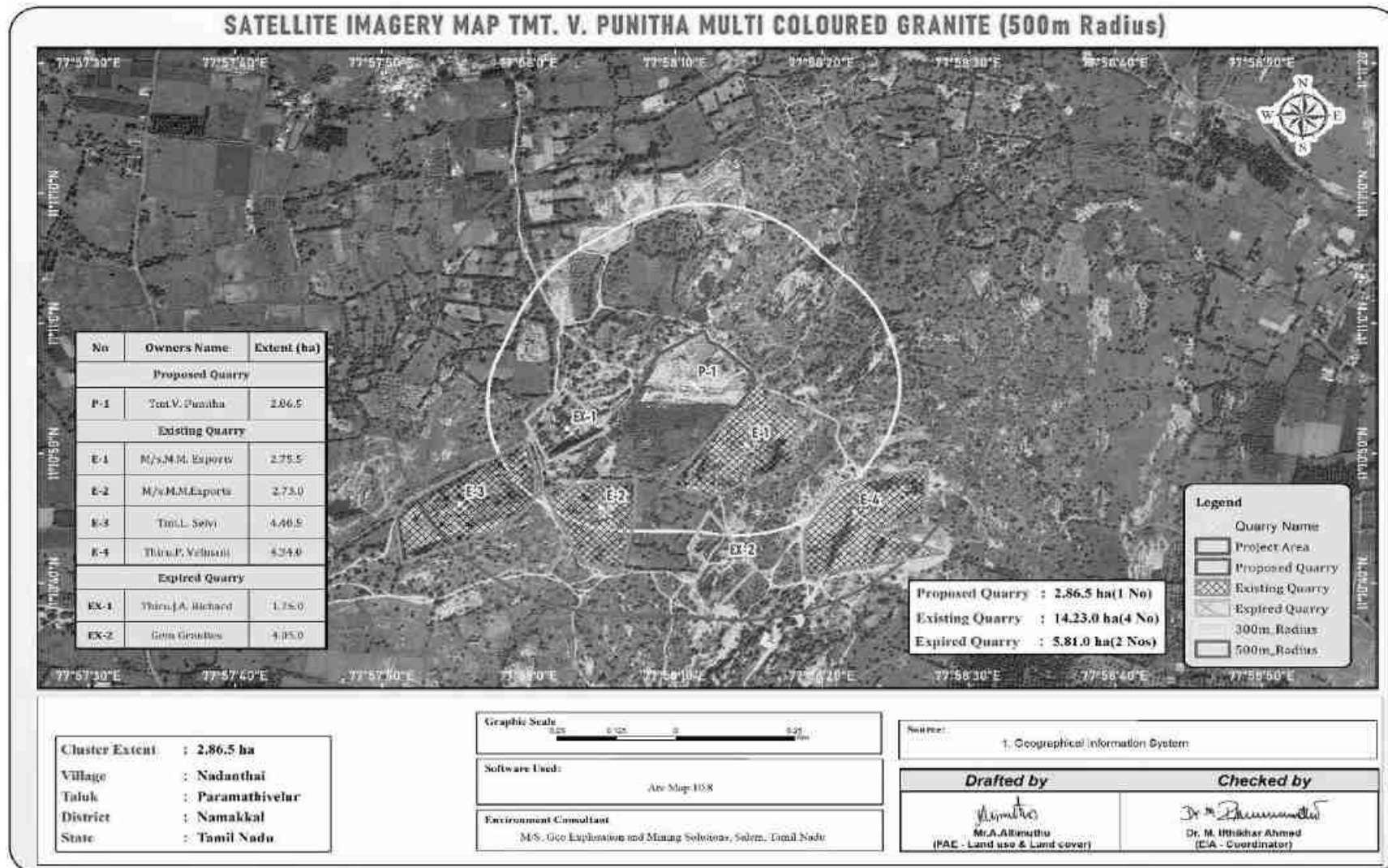
1.1 Detail of lease particulars

S.No	Mining Plan/Scheme of Mining	Period		Approval letter No. & Date
		From	To	
1.	Mining Plan	24.01.2018 -	02.01.2023	Commissioner, Department of Geology & Mining, Guindy, Chennai Rc. No. 5162/MM5/2016 dated 10.07.2017
2.	The First Scheme Mining Plan	2023-2028		Commissioner, Department of Geology & Mining, Guindy, Chennai Rc.No.4016/MM-4/2022 Dated: 29.08.2022

The proposed project is categorized under category “B1” Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

“Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”

Figure1.0: Satellite Imagery of the Cluster Quarries



1.2 Identification of Project and Project Proponent

1.2.1 Identification of Project –

Table 1.2: Salient Features of the proposed project

PROPOSAL	
Name of the Project	Multi Colour Granite Quarry project belongs to Tmt. V. Punitha
S.F. No.	482
Extent	2.86.5 Ha
Land Type	Own patta Land
Village Taluk and District	Nadanthai Village, Paramathivelur Taluk, Namakkal District

Source: Approved Mining plan

1.2.2 Identification of Project Proponent

Table 1.3: Details of Project Proponent

PROPOSAL	
Name of the Project proponent	Tmt. V. Punitha
Address	W/o. P. Velmani Residing at No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District
Mobile	+91 98434 70959
Email	dharsanaastones@gmail.com
Status	Proprietor

Source: Scheme of mining Plan

1.3 Brief Description of the Project

1.3.1 Nature and Size of the Project

The quarrying operation is proposed to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Hydraulic Excavator, Eco-friendly Diamond Wire Saw Cutting and minor amount of blasting only for removal of overburden and weathered portions.

On the basis of available reserves the life of the mine is computed and approved as 20 Years.

Proposed production for the Scheme of Mining Plan Period (5 years) is described below–

Proposed Project

Mineable ROM	=	2,23,055 m ³
Total Mineable Recoverable Reserves of Granite @ 50%	=	1,11,527.5m ³
Average Production per year @ 50%	=	29,983m ³ /5 Years = 5,997 m ³
Estimated Life of the quarry	=	19 Years

Table 1.4: Resources and Reserves of Project

Description	ROM in m ³	Granite recovery @50 % in m ³	Granite Waste/Rejects @50% recovery	Weathered Rock m ³	Top Soil in m ³
Geological Resources	6,80,130	3,40,065	3,40,065	24,290	48,580
Mineable Reserves	2,23,055	1,11,527.5	1,11,527.5	10,933	24,998
Year wise Production for Five years	59,965	29,983	29,983	728	1,984

Source: Approved Scheme of mining Plan

Table 1.5: Salient features of the proposed project

Name of the Quarry	Tmt. V. Punitha Multi Colour Granite Quarry							
Previous Environment Clearance details	DEIAA-NMK-TN/F.No.259/Mines/02/EC.No. 2 / 2017 dated: 24.11.2017.							
CCR Letter	CCR Letter No: E.P/12.1/2022-23/SEIAA/155/TN/1200							
Lease period	20 years							
Mining Lease area	2.86.5 Ha							
Type of Land	Proponent own patta Land							
Land use classification	It is patta land, jointly registered in the name of the applicant (Tmt. V. Punitha, W/o. Velmani) and Thiru. P. Velmani, vide patta no. 5543 (Refer Annexure IV to VI). The lessee has obtained consent from joint pattadhar for quarrying operations (Refer Annexure VII).							
Location	S.F.No. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District.							
Mining Plan Period (2018-2023)	5 Years							
First Scheme Mining Plan Period (2023-2028)	5 Years							
Estimated Life of the Mine	20years							
Lease Period	Mining license applied for period of twenty years only. (03.01.2018 to 02.01.2038) First Scheme of Mining plan period for the five years (2023-24 to 2027-28) Estimated life of the quarry is 19 years							
Proposed Depth	28m (2m topsoil + 1m Weathered rock + 25m Multi Colour granite)							
Existing Pit Details (As per AD Letter Roc.No 165/Mines/2022 dated 07.10.2022)	Existi				Topsoi	Weather		
	Pit	Pit	Total	l	ed			
	No.	R.L.	Area(Thickn	Thickne	Granite		
		(m)	m ²)	ess (m)	ss (m)	(m)		
	Pit-1	180	176	330	4	2	1	1
	Pit-2	180	175	155	5	2	1	2
	Pit-3	180	170	1120	10	2	1	7
	Pit-4	180	167	2430	13	2	1	10
	Pit-5	180	163	435	17	2	1	14
Ultimate Depth	156m(L) x 142m (W) x 28m (D)							
Toposheet No	58-E/16							
Latitude between	11°10'53.4595"Nto 11°10'59.4554"N							
Longitude between	77°58'07.0660"E to 77°58'15.4169"E							
Topography	The area is exhibits slightly undulated terrain Altitude – 182m to 179m above from MSL Slope - towards east							
Water table	68m-64m							
Water requirements	2.1KLD							
Proposed manpower deployment	33							
Operational Cost	Rs. 3,39,87,000/-							
EMP Cost	Rs. 3,80,000/-							
Total Project Cost	Rs. 3,43,67,000/-							
CER Cost	Rs. 5,00,000/-							
R.F area	Sarvumalaikaradu 16.85km-W							
Wildlife sanctuaries	Vellode Bird Sanctuary-35km-W							
Nearest Habitation	420m-NW							

1.3.2 Location of the Project

- The area is located in *S.F.Nos. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu.*
- The area is mentioned in GSI Topo sheet No. **58-E/16**
- The Latitude between of **11°10'53.4595"Nto 11°10'59.4554"N**
- The Longitude between of **77°58'07.0660"E to 77°58'15.4169"E** on WGS 1984 datum.

Figure 1.1: Key Map Showing the Location of the Project Site

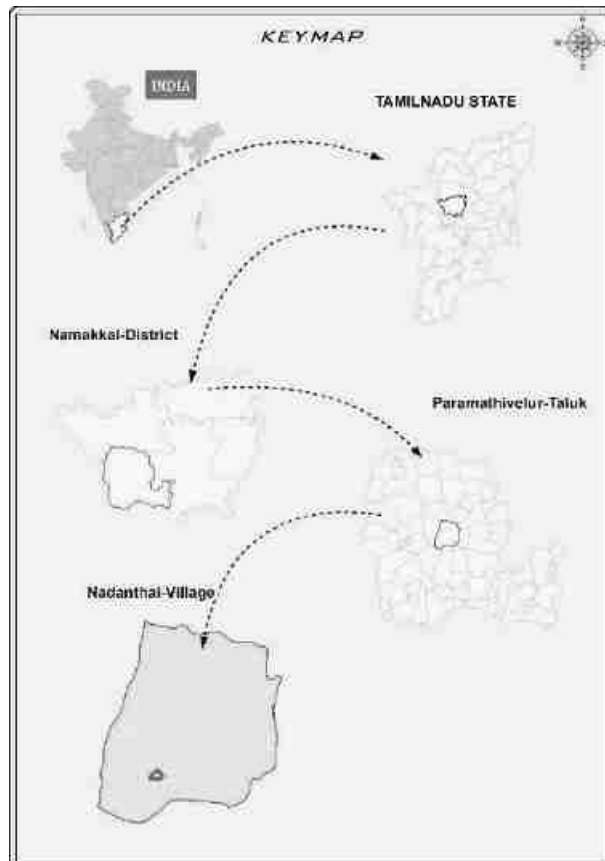


Figure 1.2: Toposheet Map of the Study Area 10 Km Radius

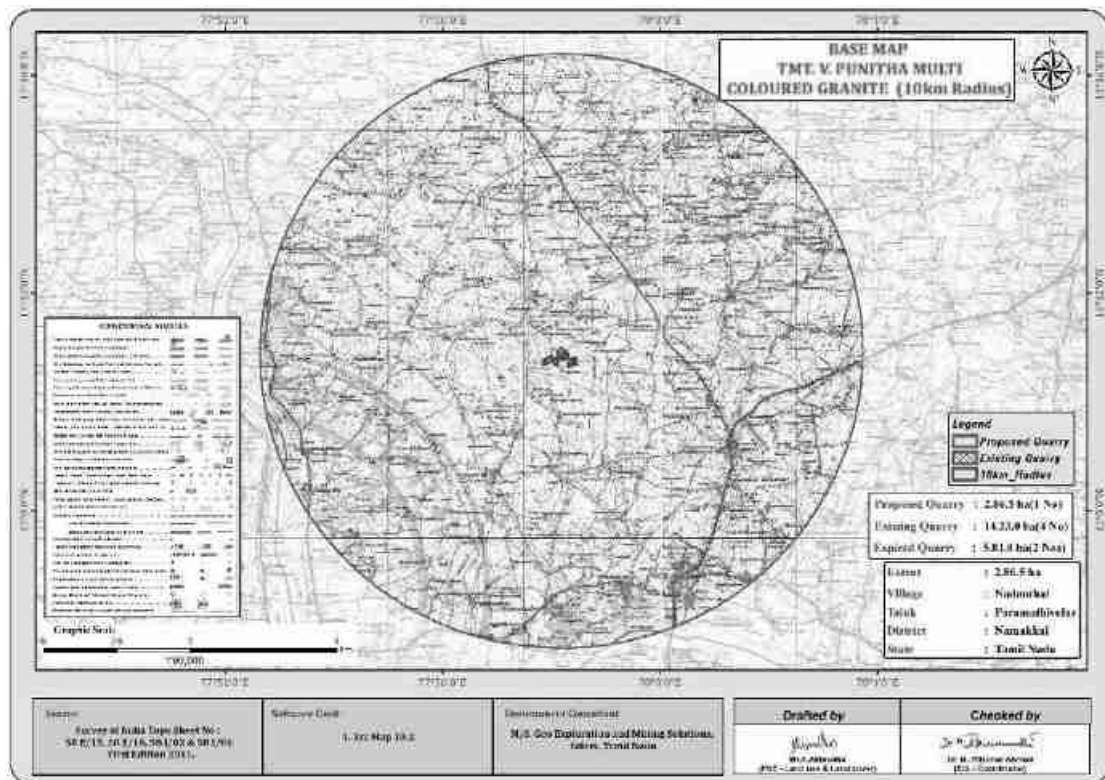
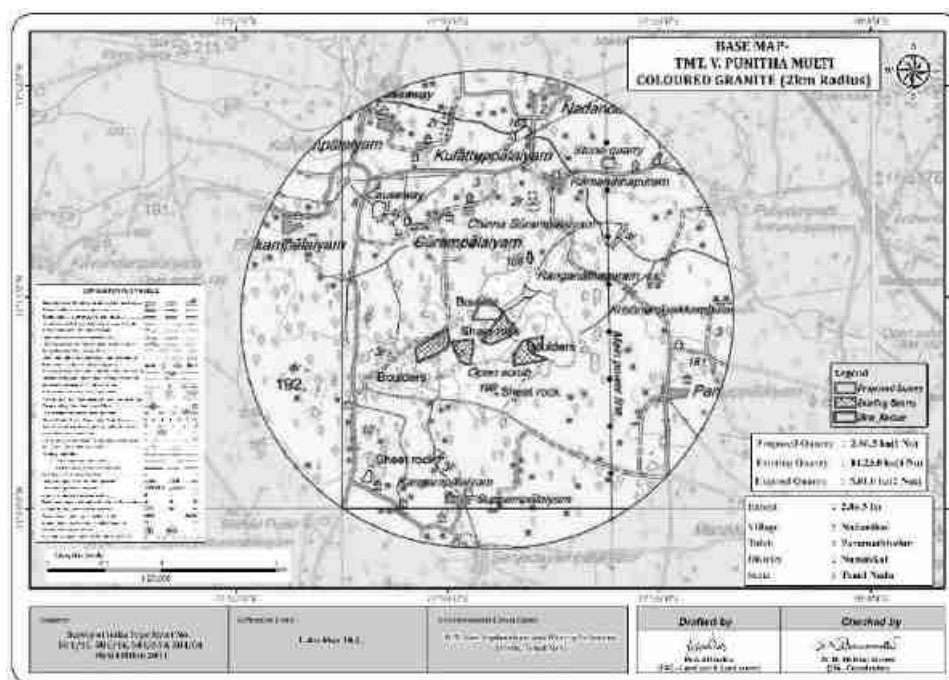


Figure 1.3: Toposheet Map of the Study Area 2 Km Radius

1.4 Environmental Clearance

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below: -

1. Screening,
2. Scoping
3. Public consultation &
4. Appraisal

SCREENING –

- The proponent applied for Granite Quarry Lease, Dated: 29.06.2016.
- The precise area communication has been granted as per Govt. letter No. G.O. (3D) No.27 Industries (MMB.2) Department dated: 29.11.2017 for a period of 20 years.
- The mining plan was prepared in respect of Multi colour granite quarry and the same was approved by the Assistant Director, Department of Geology and Mining, Namakkal District, vide letter No.457/Mines/2016 dated 13.07.2017
- The Scheme of quarrying was approved by the Commissioner of Geology and Mining, Guindy, Chennai Vide Rc.No. 4016/MM4/2022 dated 29.08.22.
- Proponent applied for ToR to get Environmental Clearance vide online Proposal No. SIA/TN/MIN/430138/2023 Dated: 21.05.2023.

SCOPING –

- The proposal was placed in 407th SEAC meeting held on 07.09.2023 and 430th SEAC meeting the committee recommended for issue of ToR.
- The proposal was considered in 687th SEIAA meeting held on 09.01.2024 and issued ToR vide Lr.No SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024.

PUBLIC CONSULTATION –

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

APPRAISAL –

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.

The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010
- EIA Notification, 14th September, 2006
- ToR vide **Lr.No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024.**
- Approved Mining Plan of this project
- In addition, other relevant standards for individual activities such as Sampling and Testing of
- Environmental attributes have been followed.

1.5 Post Environment Clearance Monitoring

The proposed project proponent shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.6 Generic Structure of EIA Document

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC.

1.7 Scope of the Study

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during **the Post Monsoon season for October 2023 to December 2023** for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

Table 1.5: Environment Attributes

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂	Continuous 24-hourly samples twice a week for three months at 7 locations (1 Core & 6 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 4 ground water and 2 surface water locations once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was
5	Noise levels	Noise levels in dB(A)	6 locations – data monitored once for 24 hours during EIA study

6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk analysis done for the risk associated with mining.

Source: Onsite Monitoring Data/Sampling by Laboratories

The data has been collected as per the requirement of the ToR issued by SEIAA – TN.

1.7.1 Regulatory Compliance & Applicable Laws/Regulations

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance
- The Mining Plan of Granite quarry has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR vide **Lr.No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024.**

2. PROJECT DESCRIPTION

2.0 General

Proposed Quarry in Nadanthai Village, Paramathivelur Taluk, Namakkal District and Tamil Nadu State falls under Cluster Situation as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 17.09.5 ha consisting of five quarries. As the extent of cluster is more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No. 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

2.1 Description of the Project

The project is located in S.F. Nos 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District and Tamil Nadu State. The precise area communication has been granted as per Govt. letter No. G. .O.(3D) No.27, Industries (MMB.2) Department Dated: 29.11.2017, the Scheme of Mining has been prepared and got approved by Commissionerate of Geology and Mining, Guindy, Chennai, vide Rc. No. 4016/MM4/2020, dated: 29.08.2022.

Previously the lease is operated by the same proponent for the five years (24.01.2018– 02.01.2023) for the SF.No. 482 of an extent of 2.86.5 ha in Nadanthai Village, Paramathivelur Taluk and Namakkal District vide Proceeding's letter No. 457/Mines/2016, Dated: 02.03.2017 and obtained EC in DEIAA vide Letter No. DEIAA-NMK-TN/F.No.259/Mines/02/EC.No.2/2017 dated: 24.11.2017. The quarry lease deed has executed on 03.01.2018 and the lease period is valid upto 02.01.2038.

Multi Colour Granite quarry operation will be carried out by opencast mechanized method involving Eco-friendly Diamond Wire Saw Cutting, Heavy earth moving machineries like Excavators Trucks for Granite exploitation. Shot hole drilling with controlled blasting using slurry explosives for removal of overburden and Weathered portions during initial stage of quarry operation.

2.2 Location of the Project

- The area is located in ***S.F.Nos. 482 of Nadanthai Village, Paramathivelur Taluk, Krishnagiri District, Tamilnadu.***
- The entire quarry lease area falls in the Patta land, the area is situated Slightly undulated terrain.
- The Altitude of the area is ranges from **182-179m above from MSL**
- The area is mentioned in GSI Topo sheet No. **58-E/16**
- The Latitude between of **11°10'53.4595"N to 11°10'59.4554"N**
- The Longitude between of **77°58'07.0660"E to 77°58'15.4169"E** on WGS 1984 datum.

Table 2.1: Site connectivity to the project area

Nearest Roadway	NH-44 - Salem – Paramathivelur Road – 7.0km-SE SH-86- Tiruchengode – Paramathi Road – 3.0km-NE
Nearest Village	Surampalayam Village – 765m-NW
Nearest Town	Paramathi – 6.0 km - SE
Nearest Railway Station	Namakkal Railway Station – 23.0 Km - NE
Nearest Airport	Tiruchy Airport – 89.0 km – South East
Seaport	Cuddalore port - 201 km North East

Source: PFR, Survey of India Toposheet

Table 2.2: Boundary Co-Ordinates of Proposed Project

S.NO.	LATITUDE	LONGITUDE
1	11°10'53.7894"N	77°58'07.0660"E
2	11°10'56.7055"N	77°58'08.3505"E
3	11°10'57.5652"N	77°58'08.8550"E
4	11°10'58.0006"N	77°58'09.4920"E
5	11°10'59.4554"N	77°58'11.9414"E
6	11°10'58.5810"N	77°58'12.3403"E
7	11°10'58.3086"N	77°58'12.9592"E
8	11°10'56.2813"N	77°58'15.1443"E
9	11°10'55.2889"N	77°58'15.4169"E
10	11°10'53.4595"N	77°58'14.1465"E
11	11°10'53.7462"N	77°58'13.1104"E
Datum WGS-84		

Figure 2.1: Photographs of the project Area



Figure 2.1A: Fencing Photographs of the project Area



Figure 2.2: Google Image Showing Project Area

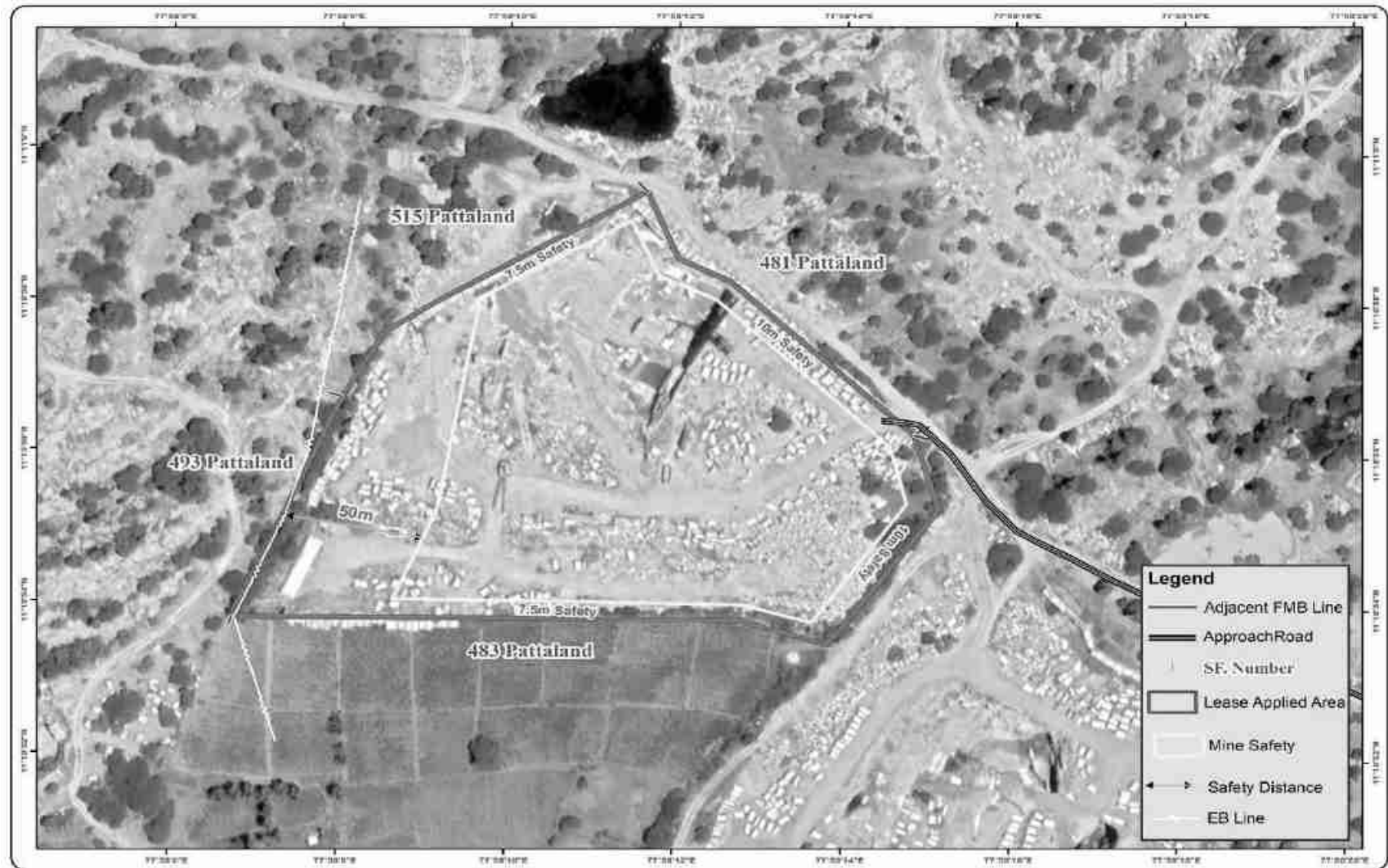


Figure 2.3: Quarry Lease Plan & Surface Plan

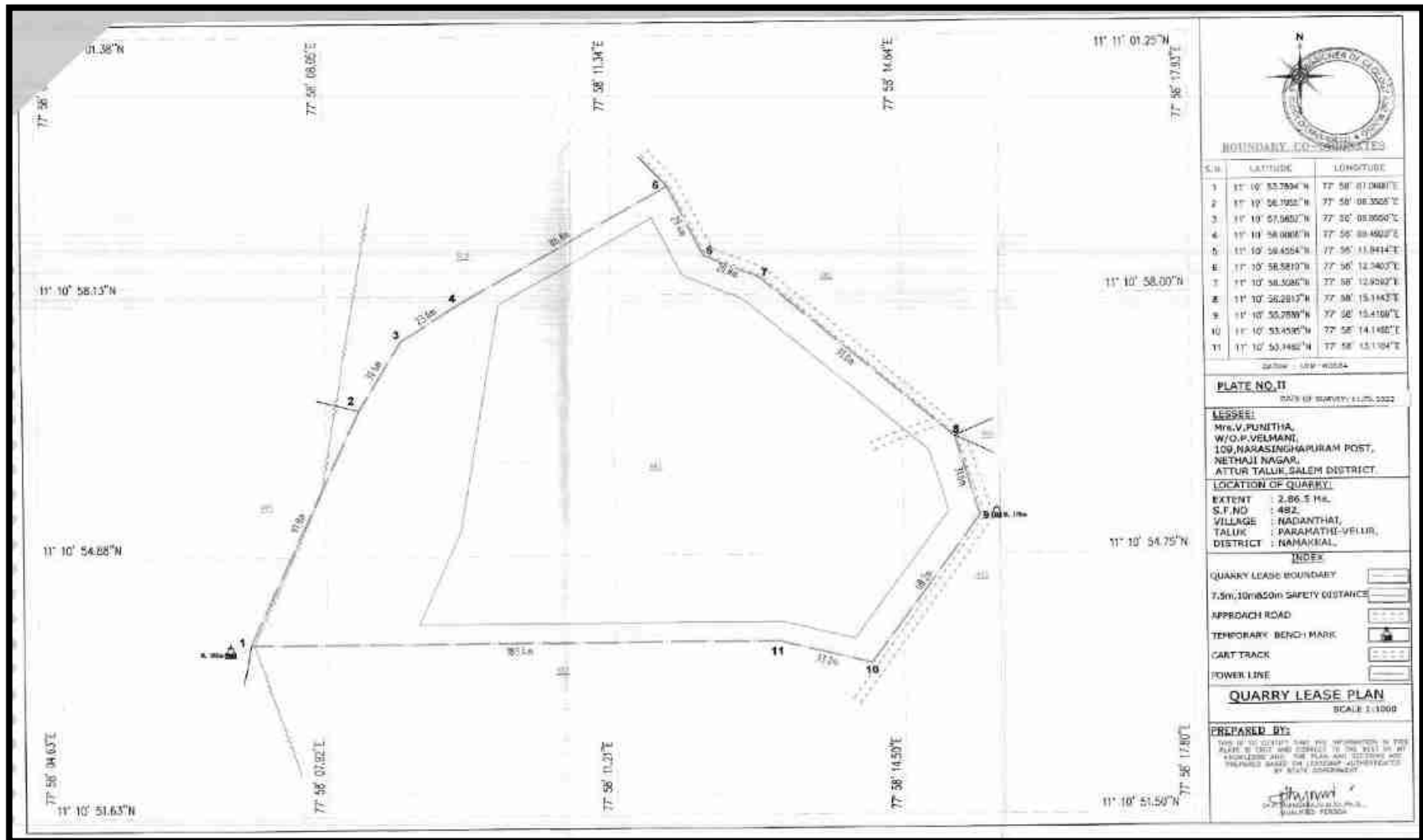


Figure 2.4: Image Showing Surface Features Around 10 Km Radius

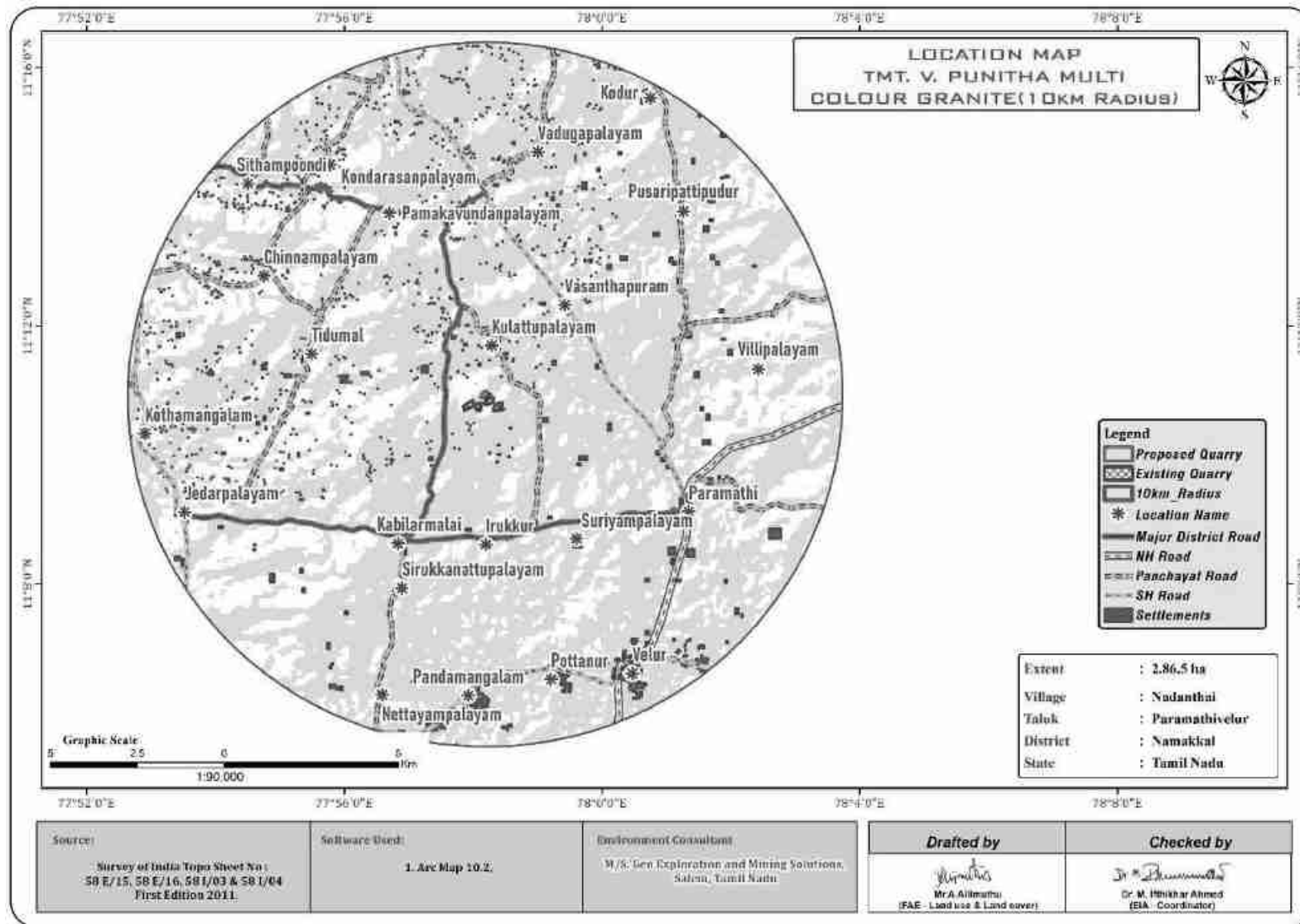


Figure 2.5: Image Showing Surface Features Around 5km Radius

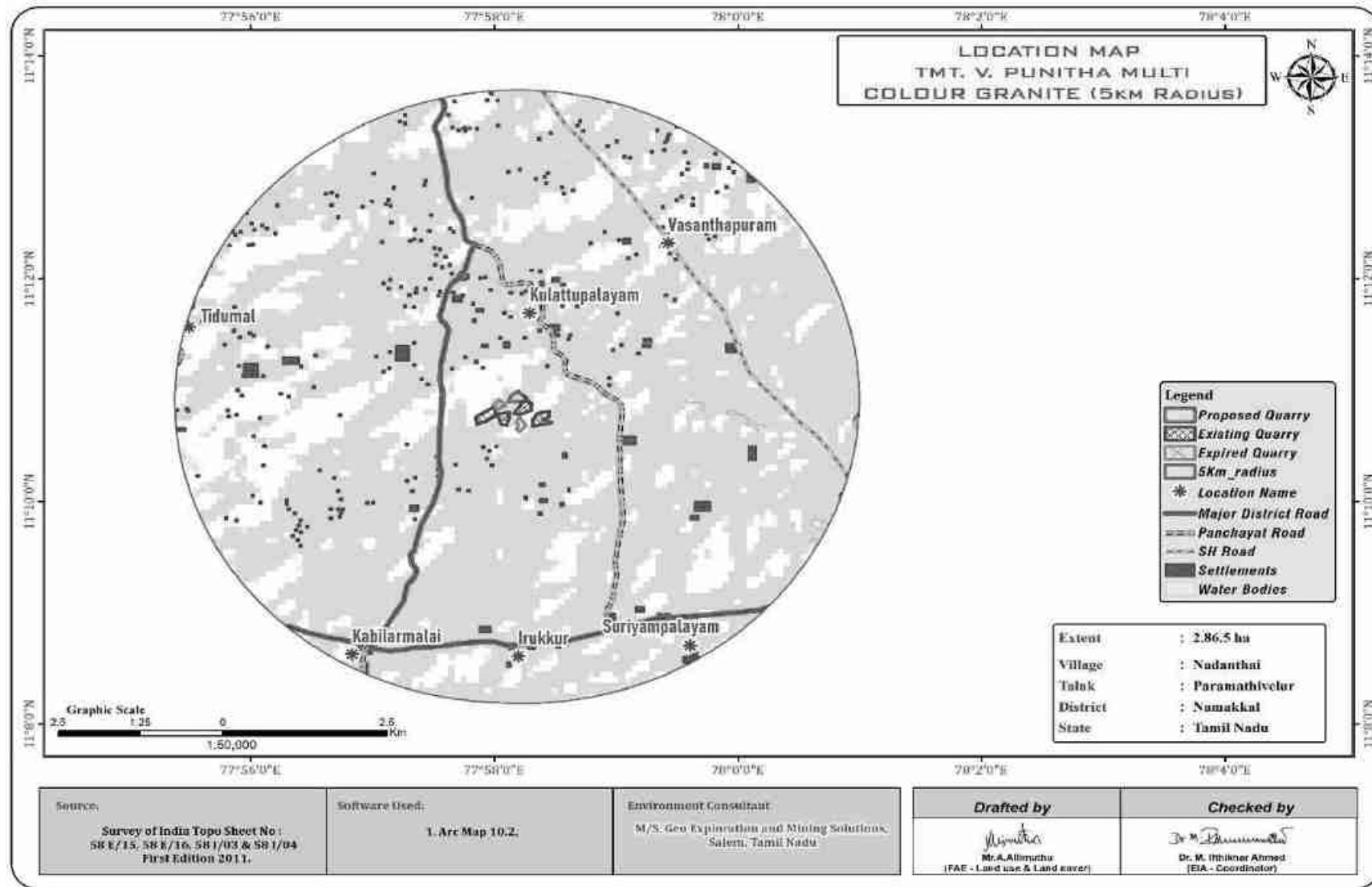
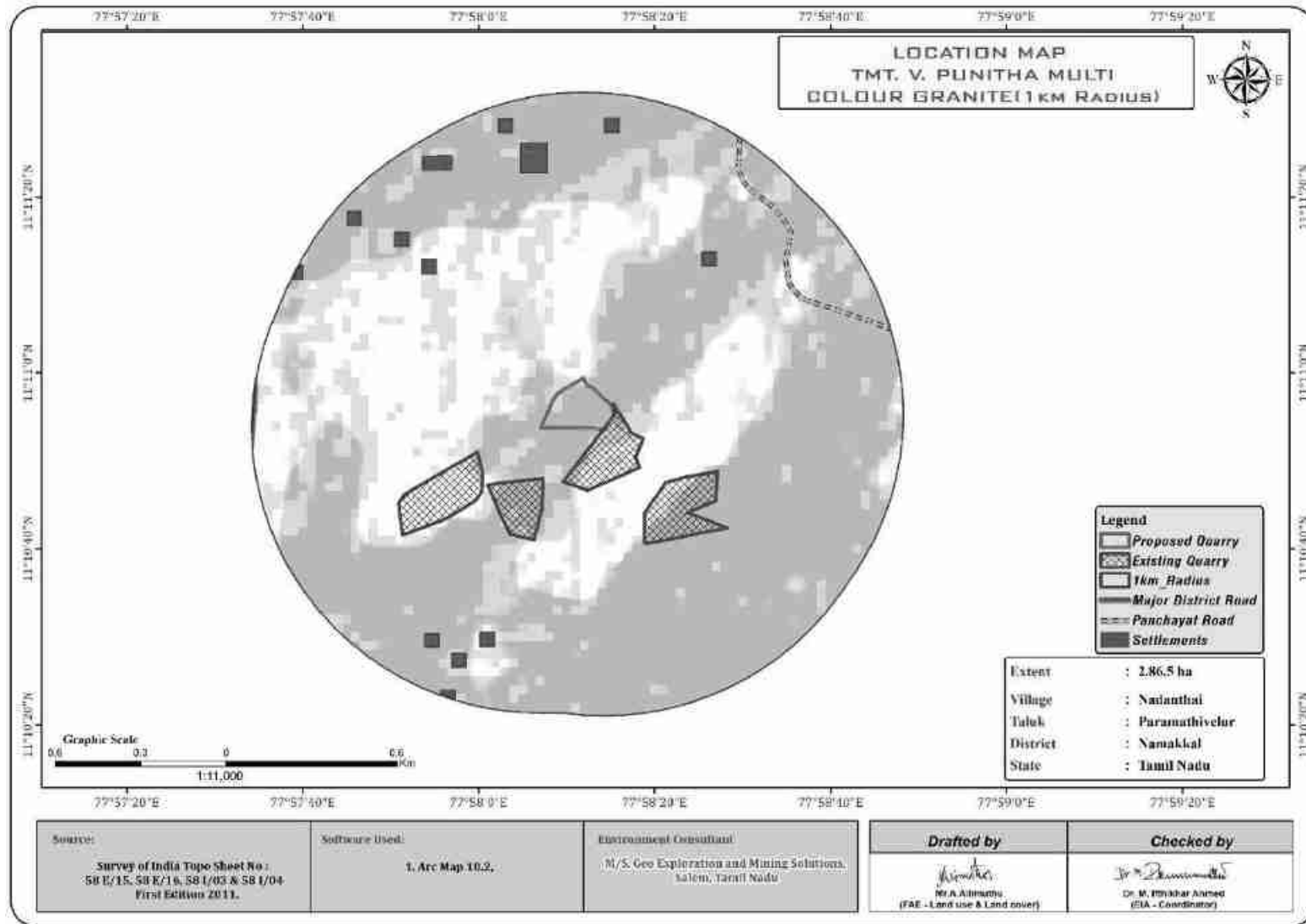


Figure 2.6: Image Showing Surface Features Around 1 Km Radius



2.2.1 Project Area

- The Topography of the Proposed Project area is slightly undulated terrain, with Granite outcrops, which is site specific, Non – Captive use, opencast Mechanized quarry.
- There is No beneficiation or processing proposed inside the project area.
- Elevation is 182m-179m above from MSL, showing gentle gradient towards East.
- There is no forest land involved in the proposed project area and the area is devoid of major vegetation.

Table 2.3: Land use pattern of the proposed project

<i>Description</i>	<i>Present Area (Ha.)</i>	<i>Area required during this Scheme period(Ha)</i>	<i>Area at the end of life of quarry (Ha)</i>
Area under Quarry	0.44.6	0.39.2	1.89.4
Waste dump	0.74.0	Nil	Backfilling
Infrastructure	Nil*	Nil*	Nil*
Roads	0.02.0	0.01.0	0.03.0
Green Belt	Nil	0.19.5	0.67.5
Stocking Blocks	1.65.9	1.06.2	0.26.6
Total	2.86.5	1.65.9	2.86.5

Source: Approved Scheme of Mining plan

2.2.2 Size or Magnitude of Operation

Table 2.4: Operational Details

Description	Details in m³
Geological Resources ROM	6,80,130
Granite Recovery (50 % in m ³)	3,40,065
Granite Waste (50 % in m ³)	3,40,065
Weathered rock(m ³)	24,290
Top Soil in m ³	48,580
Mineable Reserves ROM	2,23,055
Granite Recovery (50 % in m ³)	1,11,527.5
Granite Waste (50 % in m ³)	1,11,527.5
Weathered rock (m ³)	10,933
Top Soil in m ³	24,998
Proposed Production for five years plan period ROM	59,965
Granite Recovery (50% in m ³)	29,983
Granite Waste (50 % in m ³)	29,983
Weathered rock(m ³)	728
Top Soil in m ³	1984
Number of Working Days	300
Production of ROM per day in five-year plan period	40
Production of Granite per day	20
Total Waste per day (Granite waste + Weathered Rock)	20

Source: Approved first Scheme of Mining Plan

2.3 Geology

2.3.1 Regional Geology

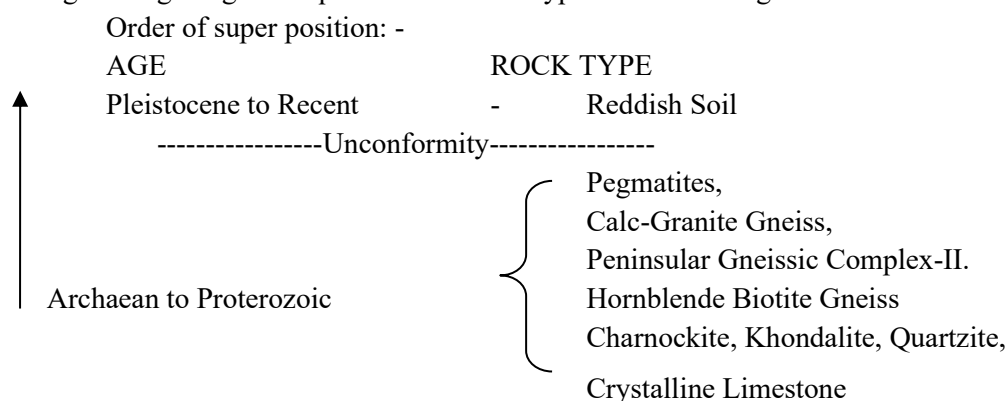
The Multi-colour Granite is medium to coarse grained with quartz, Plagioclase and Orthoclase feldspar is major constituents and Garnet, Biotite and other mafic minerals are accessories. The petrological settings of the area are simple and not a complicated phenomenon. There are no major minerals observed in the vicinity of the proposed quarry. A brief description of the regional Geology is discussed below.

This area forms a part of peninsular gneiss the most wide spread group of rocks in many parts of Tamil Nadu. The southern domain of Tamil Nadu is characterized by the khondalite group of rocks (with subordinate amounts of Charnockite) and marked by the absence of BMQ and dolerite dyke systems. The most common varieties of granite are pink, grey and Coloured ones. In the granites feldspar forms about 50%, quartz a little less and the rest accounted for by amphiboles and pyroxenes. This type occurs in the form of large massive bodies (Batholiths, laccoliths) spreading over hundreds of square kilometers exhibiting variation in colour and texture. Other types occur as lenses and bands within the gneisses and other metamorphic rocks. In these cases, the molten magma of granite has been emplaced into the earlier rocks as narrow, small bodies and partly interacting.

Anorthosites, syenites, porphyries and like that generally considered along with the Coloured granites. In these rocks quartz is nearly absent when hornblende or biotite abundant, the rock may be dark green or almost black.

STRUCTURAL SETTINGS OF NAMAKKAL:

The general geological sequence of the rock types in the investigated area is: -



2.3.3. Geology of the lease applied area

The rock formation is popularly known as “Quartzo Feldspathic Gneiss” (Leptynite) essentially made up of a supra crustal assemblages of quartz, Plagioclase and Orthoclase feldspar is major constituents and Garnet, Biotite and other mafic minerals are accessories, closely inter banded with Granite gneiss, occurring within a vast area of Hornblend biotite gneiss. Hornblend biotite gneiss is the country rock and the Multi colour granite (Leptynite) is intruded between the batholithic formation of country rock with trending of N80°W – S80°E and dipping towards SW80°.

The Multi-colour granite mostly concealed under reddish soil having an average thickness of 1m to 2m and the weathered rock formation may be present about a thickness of 3.0m approximately below the soil cover and followed by fresh granite mass. The rock type is leucocratic, euhedral, medium to coarse grained, equigranular and well-developed gneissic banding of alternate layers of dark and light mineral is the speciality of this area which denotes the indicative of flow pattern of the rock mass in N80°W- S80°E (i.e., the cutting direction of the Coloured granite). The Multi-colour Granite is observed on the surface level is pale pink in colour and in

deep seated condition it may pale grey in colour. Some slender pegmatite veins are intruded in a crisscross fashion which is likely to be reduced at deeper levels. Minor strike and dip joints observed at the surface level which is likely to decrease or absent in deep seated condition. Taking in to consideration of the above geological factors, over burden, inter burden wastage during quarrying, other flaw and flower patches etc, the average recovery percentage has been computed as 60% from the ROM.

It is inferred that the minor strike and dip joints are present on the surface layers which may not have a good recovery, these and strike and dip joints may reduce in deep seated conditions, taking into consideration of these above factors, the average recovery percentage has been computed as 60% upto 25m depth. This mining plan is discussed based on 60 % recovery factor. If there is any considerable increase or decrease in the recovery and any other factor a modified mining plan will be prepared and will be submitted to relevant authorities for subsequent clearance and approval.

The Physical attitude of the Multi-colour Granite deposit of this area is given below:-

Strike Direction	-	East - West
Dip amount and direction	-	Vertical.

Geological survey of India has carried out detailed mapping in Namakkal District, besides the Functional Area Experts (FAE) in Geology and Hydrogeology carried out detailed Geological studies in the area. The Granite outcrops are clearly visible in some places within the study area

2.3.4 Hydrogeology

Namakkal district is underlined by Archaean crystalline formations with Recent alluvial deposits of limited areal extent and thickness along the courses of major rivers. The occurrence and movement of ground water are controlled by various factors such as physiography, climate, geology and structural features. Weathered, and fractured crystalline rocks constitute the important aquifer systems in the district. Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones at deeper levels. The thickness of weathered zones in the district ranges from less than a meter to more than 15 m (Source Central Ground Water Board – Namakkal).

Figure 2.7: Regional Geology Map

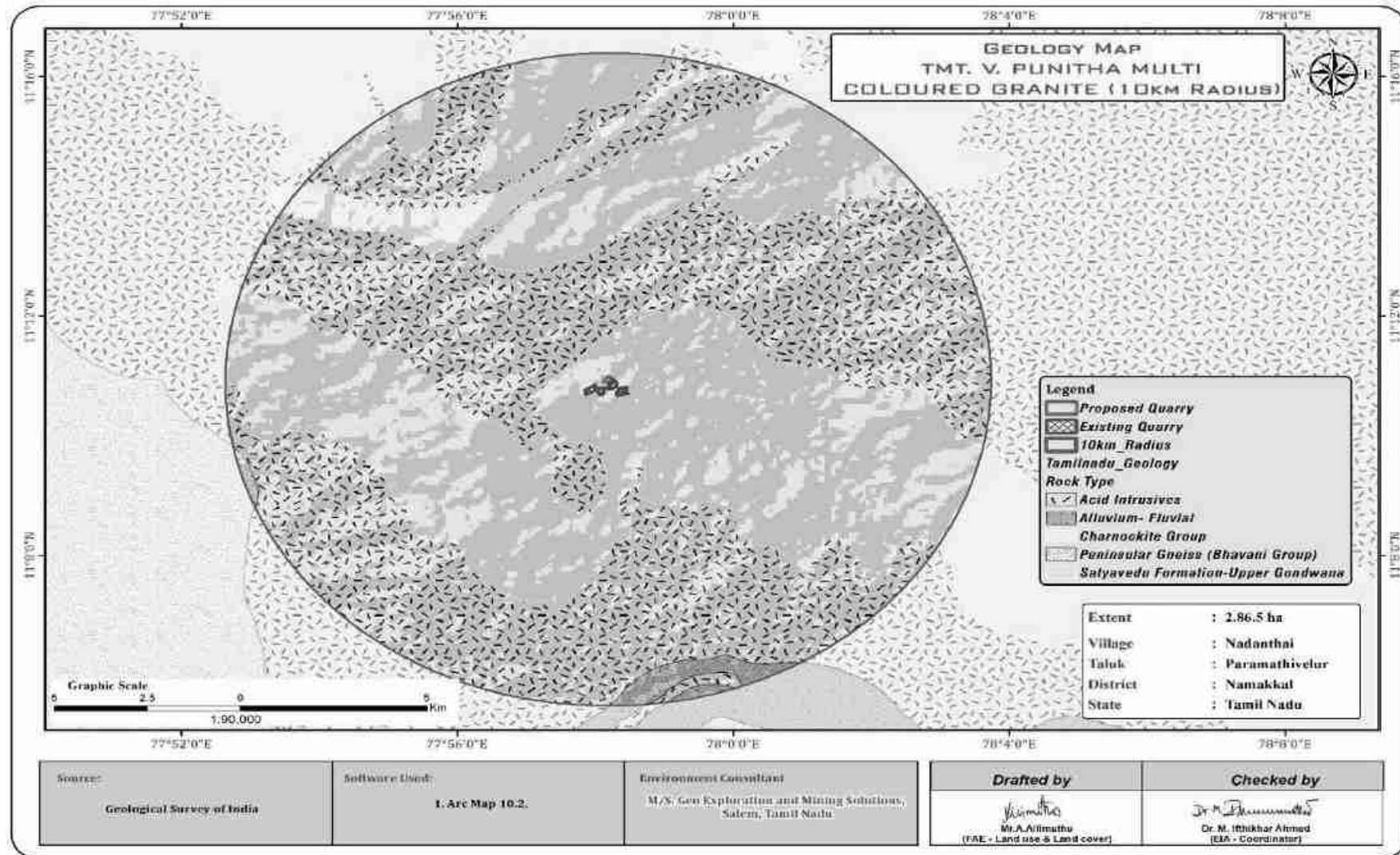


Figure 2.8: Geomorphology Map of The Study Area

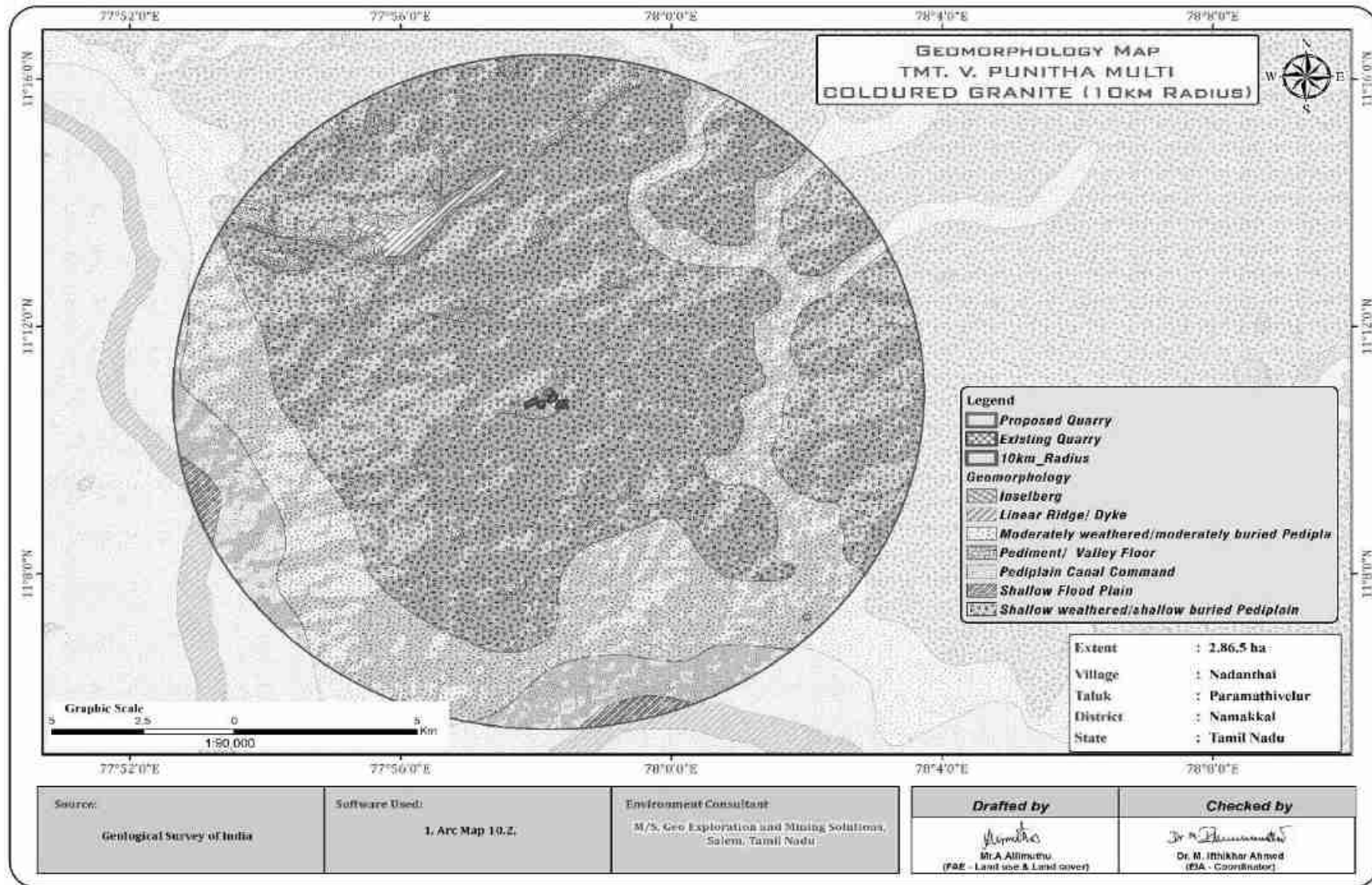
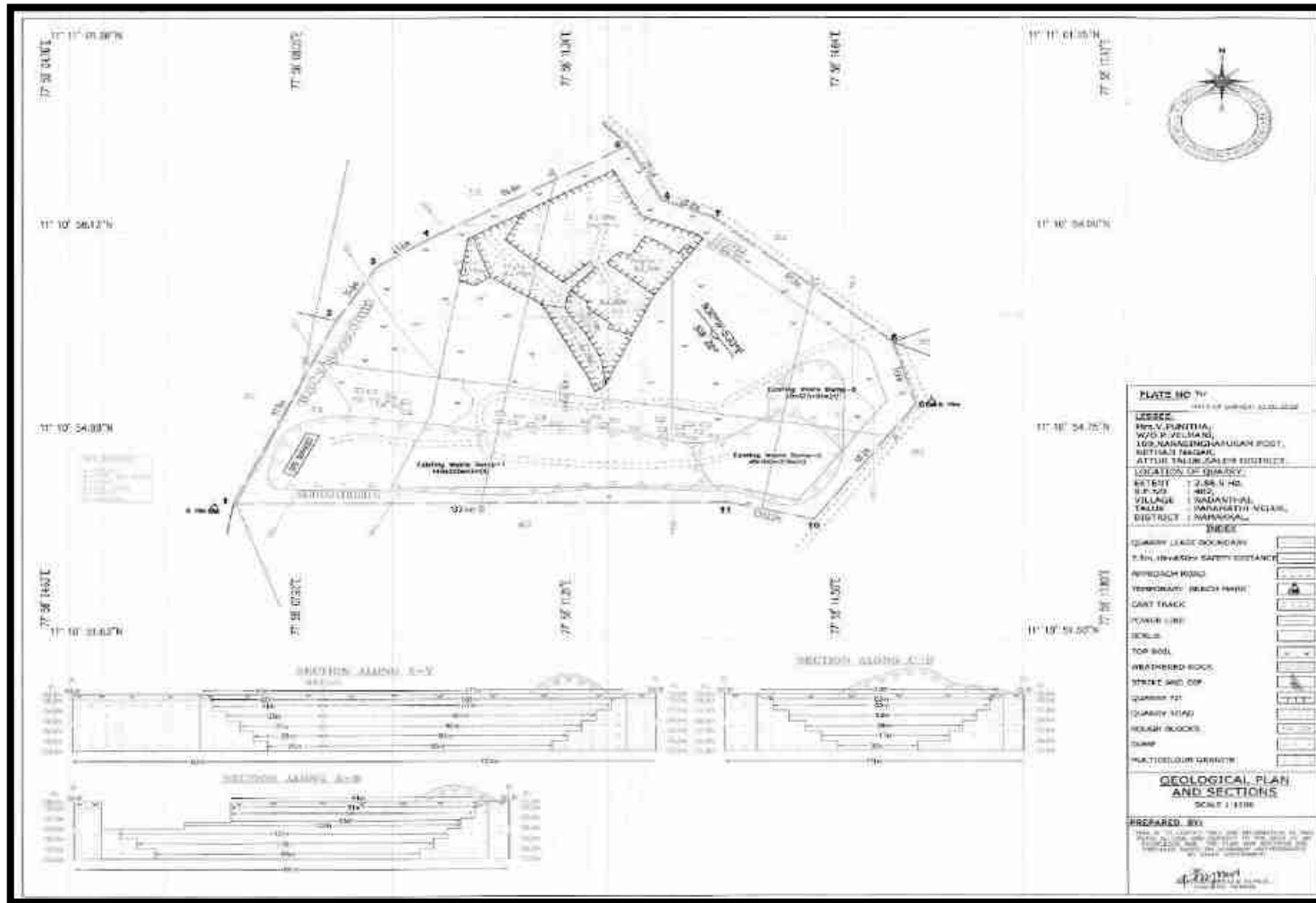
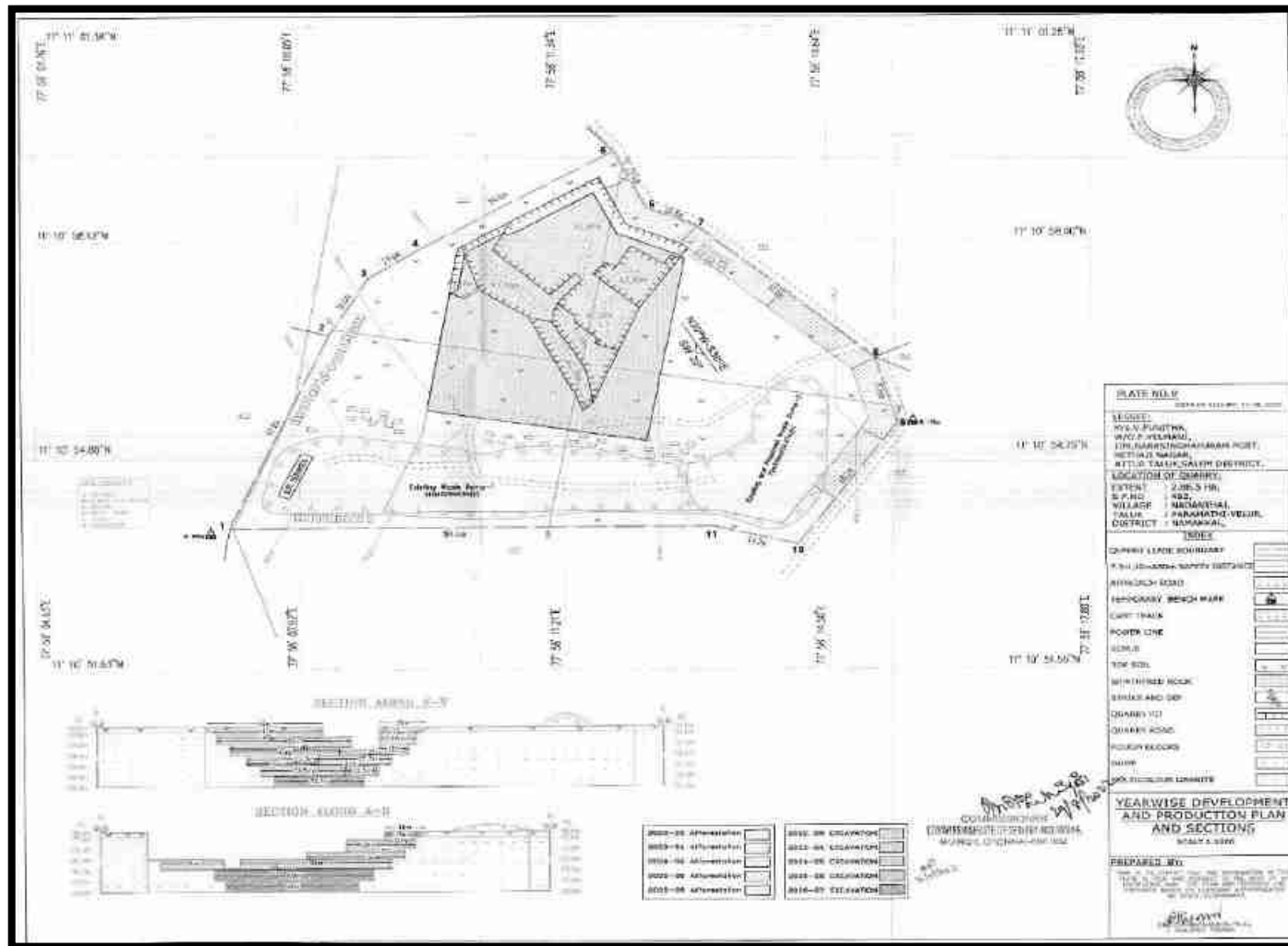


Figure 2.9: Geological Plan and Section



Source: Approved Scheme of Mining plan

Figure 2.10: Year-Wise Development Production Plan and Section



Source: Approved Scheme of Mining plan

2.4 Resources and Reserves

Multi Colour Granite is occurring beneath the surface, Granite outcrops are visible in some places within the project area.

Table 2.5 Resources, Reserves

Description	ROM in m ³	Granite recovery @50 % in m ³	Granite Waste/Rejects @50% recovery	Weathered Rock m ³	Top Soil in m ³
Geological Resources	6,80,130	3,40,065	3,40,065	24,290	48,580
Mineable Reserves	2,23,055	1,11,527.5	1,11,527.5	10,933	24,998
Year wise Production for Five years	59,965	29,983	29,983	728	1,984

Source: Approved first Scheme of Mining plan

Table 2.6 Year Wise Production Plan

Year	ROM in m ³	Granite Recovery @ 50 % in m ³	Granite Waste @ 50 % in m ³	Weathered Rock m ³	Top Soil in m ³
I	12052	6026	6026	728	1984
II	12062	6031	6031	-	-
III	11814	5907	5907	-	-
IV	11862	5931	5931	-	-
V	12175	6088	6088	-	-
Total	59,965	29,983	29,983	728	1,984

Source: Approved first Scheme of Mining plan

Stacking of Granite Rejects and Disposal of Waste

The quantum of excavation is estimated to be 62,677 m³ (ROM 59,965 m³+ Top soil 1,984 m³ + Weathered rock 728 m³) up to depth of 28m during the entire lease period.

The generation of total waste is estimated about 30,711 m³ (Granite waste + weathered Rock) and Marketable granite blocks as 59,965 m³ during the entire life of quarry. The excavated waste (29,983 m³) is proposed to dump on the Southeastern side with maximum dimension of (L)72m x(W) 40m x (H)20.95m during the first five years.

Conceptual Mining Plan/ Final Mine Closure Plan

Conceptual mining plan is prepared with an object of long-term systematic development of benches, lay outs, selection of permanent ultimate pit limit, depth of quarrying and ultimate pit, selection of sites for construction of infrastructure etc. The ultimate pit size is designed based on certain practical parameters such as economical depth of quarrying, safety zones, permissible area etc.,

Table 2.7 Ultimate Pit Dimension

Length in m	Width in m	Depth in m
156	142	28

Source: Approved First Scheme of Mining plan

2.5 Method of Mining

- The method of mining is Opencast mechanized method
- Eco-friendly dimensional wire saw cutting for liberation and splitting up of blocks from parent sheet rocks
- Splitting of rock body of considerable volume from the parent rock formation by carefully avoiding visibly seen defects such as patches veins, etc., is done by adopting the method of “Diamond wire cutting” along the horizontal as well as two vertical sides on the front face of the formation.
- Jackhammer drilling with 32mm dia, this huge portion is further split into several blocks of required dimensions, only slurry explosives are used for secondary fragmentation and handling of waste.
- Hydraulic Excavator coupled with tippers is deployed for the formation of benches and loading
- There is no mineral processing or ore beneficiation proposed
- Proposed bench height is 5m and 5m width with 60° slope
- The waste material generated during quarrying activity includes rock fragments of different sizes, and waste chips during dressing of the blocks. The waste materials are taken in tippers and proposed to be dumped in the respective approved places ear-marked for the purpose and the same will be utilized for backfilling in the northern side of the lease area during conceptual stage.

2.5.1 Drilling

Drilling will be carried out as per parameters given below: -

Spacing - 1m, Burden - 0.8m, Depth of hole - 1.5m

2.5.2 Blasting

Blasting will be done as per details below: -

Controlled blasting parameter: -

Spacing – 1m

Burden – 0.8 m

Depth of hole – 1.5 m

Charge per hole – 125 gms

Powder factor – 7.0 tonnes/kg

Dia of hole – 32 mm

Details of blasting design and parameters are discussed in approved Scheme of mining plan.

2.5.3 Extent of Mechanization

Table 2.8: Machinery Details Proposed

Drilling Equipment's					
Type	No of Unit	Dia of Hole mm	Size capacity	Make	Motive Power
Jack Hammer	4	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	1	-	140cfm/400psi	Atlas Copco	Diesel drive
Diamond Wire Saw	2	-	20m ³ /day	Optima	Diesel Generator
Diesel Generator	1	-	125kva	Powerica	Diesel
Wagon Drill	1	30-35	20hp	VKTORY	Diesel drive
Loading Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Crawler Crane	1	855	Tata P & H	Diesel Drive	
Excavator	2	300	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	2	10 tonnes	Tata	Diesel Drive	

2.6 General Features

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities will be constructed as per the Mine Rule after the grant of quarry lease.

2.6.2 Drainage Pattern

There are no streams, canals or water bodies crossing within the project area, hence there is no requirement of stream or canals diversion.

2.6.3 Traffic Density

The traffic survey conducted based on the transportation route of material, the Granite will be transported mainly through,

TS-1- Rangampalayam Panchayat Road- 1.0km-SE

TS-2- Paramathi-Jedarpalayam District Road- 4km SouthEast

Traffic density measurement 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.

Figure. 2.11: Mineral Transportation Route Map

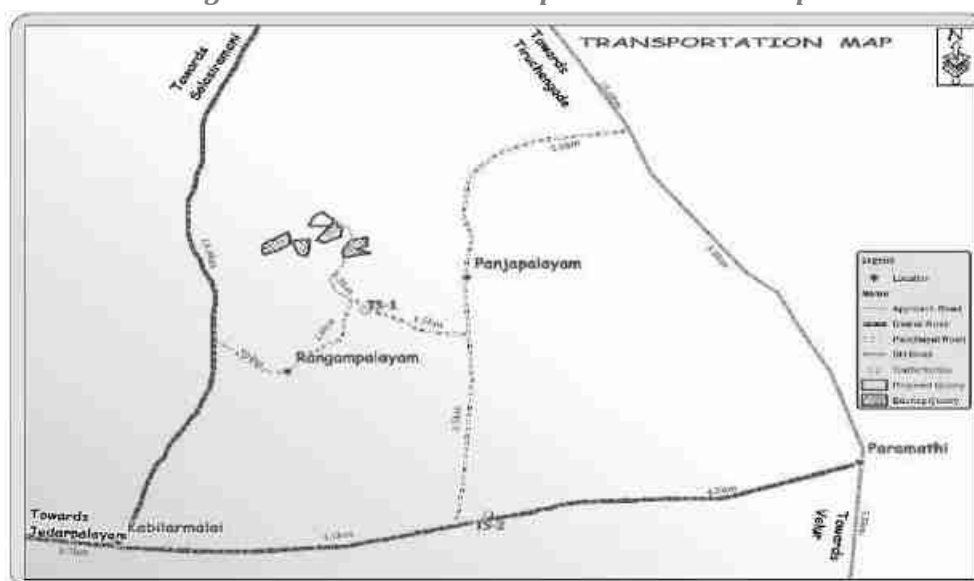


Table.2.9: Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Rangampalayam Panchayat Road	1.0km SE	Panchayat road (Single Lane)
TS2	Paramathi-Jedarpalayam District Road	4.0km-SE	District Road (Two Lane)

Source: On-site monitoring by GEMS FAE & TM

Table 2.10: Existing Traffic Volume

Station Code	HMV		LMV		2/3 Wheelers		Total PCU
	Number	PCU	Number	PCU	Number	PCU	
TS1	60	180	82	164	101	34	378
TS2	90	270	140	280	200	100	650

Source: On-site monitoring by GEMS FAE & TM

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

Table 2.11: Granite Hourly Transportation Requirement

Transportation of Granite per day			
Capacity of Trucks	No of trips per day	Volume in PCU	PCU considering 8 Hours
20Ts	1	3	3

Source: Data analysed from Approved Mining plan

Table 2.12: Summary of Traffic Volume

Route	Existing Traffic Volume in PCU	Incremental Traffic Due to the project in PCU	Total Traffic Volume in PCU	Hourly Capacity in PCU as per IRC - 1960
Rangampalayam Panchayat Road	378	3	381	1200
Paramathi-Jedarpalayam - District Road	650	3	653	1500

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

Due to this project the existing traffic volume will not exceed

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.

2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in this project

2.7 Project Requirement

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

Table 2.13 Water Requirement for the Project

Purpose	Quantity	Source
Domestic & Drinking purpose	0.6KLD	From Existing, bore wells and drinking water will be sourced from Approved Water vendors.
Dust Suppression	0.8KLD	From Existing bore wells from nearby area
Green Belt	0.7KLD	From Existing bore wells from nearby area
Total	2.1KLD	

Source: Prefeasibility report

* Drinking water will be sourced from Approved Water Vendors

2.7.2 Power and Other Infrastructure Requirement

The project does not require power supply for the mining operations. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., will be constructed within the project area before commencing the quarry operation. No workshops are proposed inside the project area hence there will not be any process effluent generation from the proposed lease area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment plant.

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations.

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations.

One Hydraulic Excavator will excavate and loading into the tippers about 20m³/Hour

Hydraulic Excavator will consume about 16 Ltrs per hour

Per hour Excavator will consume = 16 liters / hour

Per hour Excavator will excavate = 10m³

For 59,965m³ (for this Scheme period) = 59,965/10

Diesel consume 5997working hours = 5997hours x 16 liters

= 95,952liters of HSD for five years scheme period

The HSD (High Speed Diesel) will be obtained from nearby fuel station near the vicinity of the project site and will be transported in Fuel Barrel specified for transport of HSD (High Speed Diesel).

Source: *Prefeasibility Report*

2.8 Employment Requirement:

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community.

Table 2.14: Employment Potential

S.No	Description	Numbers
Skilled Labour		
1	Mines Manager	1
2	Mines Foreman	1
3	Machinery Operators	5
Workers		
4	Skilled labour & Drivers	6
5	Semi-skilled	12
6	Unskilled	8
Total		33

Source: Approved Scheme of Mining Plan

2.9 Project Implementation Schedule

The mining operation will commence after the grant of Environmental Clearance. CTO 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.

Table 2.15 Expected time Schedule

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

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

3. DESCRIPTION OF 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 environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering October 2023 - December 2023 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries by **Global Lab and Consultancy Services**, – An accredited by ISO/IEC 17025:2017 (NABL) Laboratory,

for the below attributes –

- Land
- Water
- Air
- Noise
- Biological
- Socio-economic status

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz core zone and buffer zone where core zone is considered as cluster quarries area and buffer zone taken as 10km radius from the periphery of the Cluster quarries. Both Core zone and Buffer zone is taken as the study area.

Study Period

The baseline study was conducted during the Post monsoon season i.e., October 2023 - December 2023.

Study Methodology

- The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO).
- Soil samples were collected and analysed for relevant physio-chemical characteristics, exchangeable Cations, nutrients & micro nutrients etc., in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
- Ground water samples were collected during the study period from the existing bore wells, while surface water was collected from ponds in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed mines.
- An onsite meteorological station was setup in project area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
- In order to assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, NO_x with gaseous attachments & Fine Dust Samplers (FDS) for PM_{2.5} and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
- The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.

- Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

Table 3.1: Monitoring Attributes and Frequency of Monitoring

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio - Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data & Secondary Data from IMD Station
*Ambient Air Quality	PM10 PM2.5 SO2 NOX Fugitive Dust	24 hourly twice a week (October – December 2020)	7 (1 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (1 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrant & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by Global Lab and Consultancy Service, in association with GEMS

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

3.1 Land Environment

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 LAND USE/ LAND COVER

To study the land use pattern of the core as well as a buffer zone, land use/land cover details have been identified/ maps have been prepared in accordance with the **Standard ToR point no. 4 & 10 Stating:**

Point No. 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).

Point No. 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.

Current vintage data of Indian Remote Sensing Satellite ResourceSat-2A L4FMX (False Color Composite) has been used for Land Use / Land Cover study. Satellite image has been procured from National Remote Sensing Centre, Hyderabad.

3.1.2 OBJECTIVE

The objectives of the LULC study are as follow:

- ☞ To develop the Land use & Land cover map using land coordinates of the quarry area (Core Zone) and 10 km radius from the quarry site (Buffer area).
- ☞ To Identify and mark the important Land use and Land cover features using the primary and secondary data collected.
- ☞ To evaluate the impacts on existing land use/cover features of the buffer area by the Proposed Project activities.
- ☞ To identify the mitigative measures for the sustainable use of land and to protect the buffer zone from the adverse impacts.

Technical specification of Satellite imagery Data Used:

Current vintage data of Indian Remote Sensing Satellite RESOURCESAT1 (LISS-III) digital FCC (False Color Composite) has been used for preparation of Land use/ Land cover thematic map of study area. Satellite image has been procured from National Remote Sensing Centre, Hyderabad. Survey of India Toposheet as a reference map on 1:50,000 scale has been used for preparation of base layer data like road, rail network; village for geo-referencing of satellite image.

Satellite Image	- Resourcesat1-LISSIII, 23.5m Resolution
Satellite Data Source	- NRSC, Hyderabad
Satellite Vintage	- 14st July 2020, Swath 141km wide.
SOI Toposheet No	- 58 E/16
Software Used	- ArcGIS 10.8

The satellite image (FCC colour 3,2,1) of the buffer zone is given in 3.1

The spatial resolution and the spectral bands in which the sensor collects the remotely sensed data are two important parameters for any land use survey. Resourcesat1-LISSIII, 23m Resolution of 23.5m and a 141 km wide swath of the earth in 23.5m resolution covering wide areas the data is collected in 4 visible bands namely band number and Resolution.

TABLE 3.2: Resourcesat1-LISSIII SENSOR characteristics

Band Number	Description	Wavelength	Resolution
Band 1	Green	0.52-0.59 μm	23.5 meters
Band 2	Red	0.62-0.68 μm	23.5meters
Band 3	NIR	0.77-0.86 μm	23.5meters
Band 4	SWIR	1.55-1.70 μm	70meters

Source: NRSC, Hyderabad

3.1.3 METHODOLOGY

The land use / land cover map is prepared by adopting the interpretation techniques of the Satellite image in combination with collateral data such as Survey of India topographical maps. Image classification is done by using visual interpretation techniques and digital classification using any of the image processing software. The various activities for preparation of LULC include pre-processing, rectification, image enhancements and classifying the satellite data for assessing the change in land use land cover due to proposed developmental activities.

- ☞ Preliminary/primary data collection of the study area
- ☞ Satellite data procurement from NRSC
- ☞ Secondary data collection from authorized bodies
- ☞ Survey of India Toposheet (SOI)
- ☞ Mine Layout
- ☞ Cadastral / Khasra map
- ☞ GPS Coordinates of Lease Boundary
- ☞ Processing of satellite data using ArcGIS 10.8 and preparing the Land Use & Land cover maps (e.g. Mine area, Existing Quarries, Settlements, Agriculture land, Non agriculture land, water bodies, etc.) by Digital Image Processing (DIP) technique.
- ☞ Geo-Referencing of the Survey of India Toposheet
- ☞ Geo-Referencing of satellite Imagery with the help of Geo-Referenced Toposheets
- ☞ Enhancement of the Satellite Imagery
- ☞ Base Map layer creation (Roads, Railway, Village Names, and other Secondary data, etc.)
- ☞ Data analysis and Classification using Digital interpretation techniques.
- ☞ Ground truth studies or field Verification.
- ☞ Error fixing / Reclassification
- ☞ Final Map Generation.

The land use/Land cover Map of the buffer zone is given in 3.4(b).

Land Use Pattern of the Buffer Zone (Study area)

Details of the same are given in Table - 3.3 and the map is shown in Figure - 3.2

Table: 3.3 Land Use / Land Cover Details of Study Area

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	RURAL	884.03	2.75
2	URBAN	445.73	1.39
3	MINING	100.33	0.31
AGRICULTURAL LAND			
4	CROP LAND	26852.90	83.48
5	PLANTATION	1910.33	5.94
BARREN/WASTE LANDS			
6	SCRUB LAND	1339.04	4.16
WETLANDS/ WATER BODIES			
7	WATER BODIES/LAKE	633.17	1.97
TOTAL		32165.54	100.00

Source: Bhuvan, NRSC.

Figure 3.1: Chart showing Landuse/Landcover analysis using LISS III Data

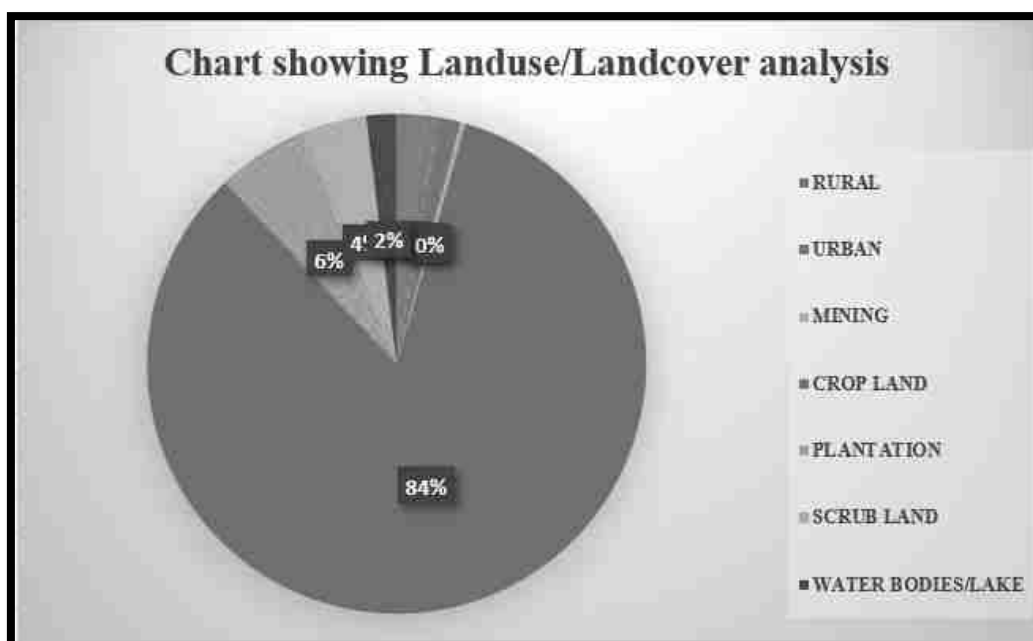


Figure 3.2: Map Showing False Color Composite (3,2,1) Satellite Imagery of The Study Area

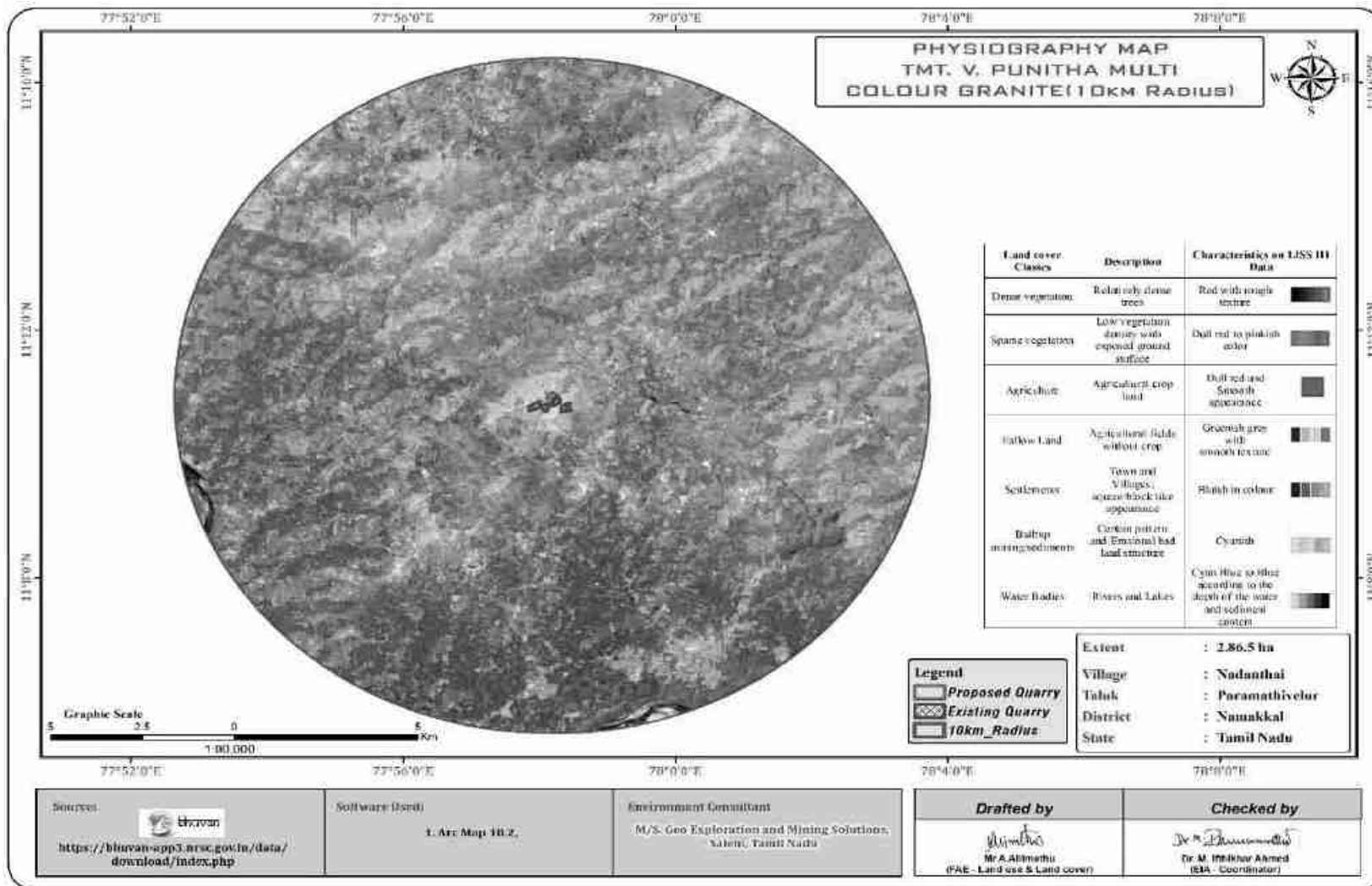
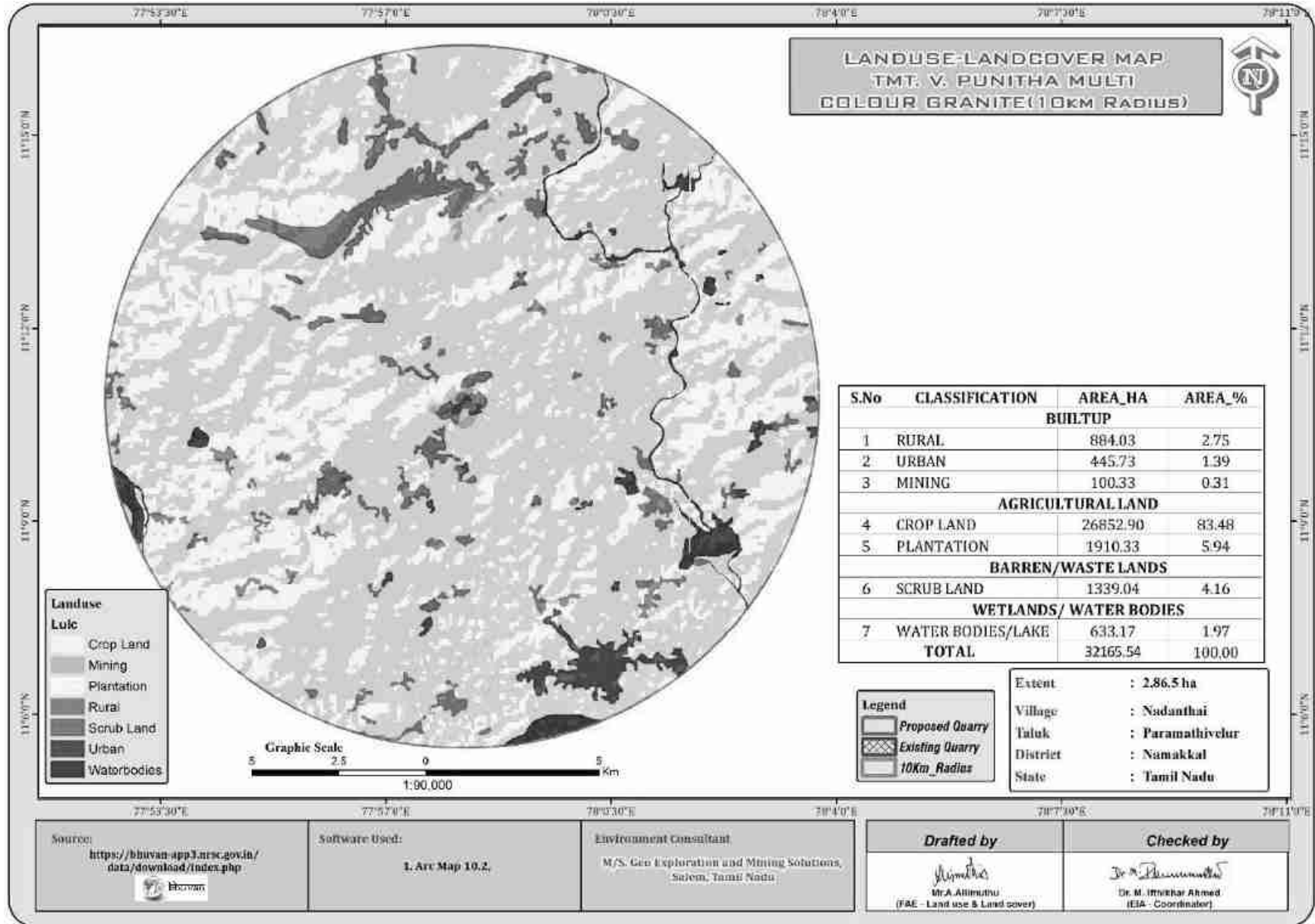


Figure 3.3: Land Use Land Cover Map 10km Radius



3.1.4 Interpretation

- ∞ The 10 km radius study area mainly comprises of Crop land & Plantation land accounting of 83.48% & 5.94% of the total study area.
- ∞ Water Bodies such as ponds/ lakes comprises of 1.97% of the core and buffer area.
- ∞ The Scrub land accounts of 4.16%. As per the primary survey, it was observed the scrub land is mainly occupied by the stony waste and left-over domestic waste generated by the nearby areas.
- ∞ 0.31% of the total study area is occupied by the mine industries of captive mines. The area occupied by Mainly Multi Colour granite of the total buffer area. As also observed within the primary survey, the 10 km buffer area is also occupied by the medium scaled granite and marble and small Brick kiln industries also located in the study area.
- ∞ 4.14% of the area is covered under the human Settlement. The nearest village within the 3 km radius from the project site boundary is observed to be villages like Nadanthai, Surampalayam, Rangampalayam etc.

3.1.4.1 Cropping Pattern of the Buffer Zone

The productivity of Agriculture in the Southern and Northern part of the Tamil Nadu is comparatively like the Namakkal district has more favourable conditions for the agriculture. The Namakkal District has a Geographical area of 3,36,719 Hectares. Of which the net cultivated area is 1,41,537 Hectares. Out of which about 60939 Ha are irrigated and about 80,598 Ha are rainfed. The Mettur East Bank Canal covers an area of 4,585 Ha in Pallipalayam Block. The normal annual rainfall is 716.54 mm. Multi various crops are grown in this District and Agriculture is the main occupation for most of the people in the District and Major horticulture crops cultivated in this district are fruits crops like mango, banana, pine apple and jack, vegetables like tomato, onion, and tapioca, spices like pepper and turmeric and plantation crops like coffee, areca nut and betel vine.

3.1.4.2 Interpretation and Conclusion

- ∞ The total mining area within the study area is 100.33 ha i.e., 0.31 %. The cluster area of 17.09.5 ha contributes about 0.17 % of the total mining area within the study area. This percentage of Mining Activities shall not have any significant impact on the environment.
- ∞ The project site falls under the Multi Colour granite quarry region. Therefore, the area is appropriate for developing Road development and building etc., it shows that the region has good prospects in the future. Due to proposed Multicolour granite quarry in this region, economic condition of locals is expected to be improved directly & indirectly. Hence project will prove to be the best economic proposal for the coming times.

3.1.5 TOPOGRAPHY

The lease applied area is exhibits slightly undulated terrain. The area has gentle sloping towards East side from Namakkal district. The altitude of the area is 182-179 m above Mean Sea level. proposed quarry area.

3.1.6 DIGITAL ELEVATION MODEL

Digital Elevation Model (DEM) has been prepared for the project at Nadanthai Village, Paramathivelur Taluk, Namakkal District for a 10 km radius of study area.

Data Used

- ☞ DEM Data : SRTM (DEM) -1ArcSecond-90m Resolution
- ☞ Data Source : <https://urs.earthdata.nasa.gov/>
- ☞ Software Used : Arc GIS 10.8

Interpretation & Conclusion

It is very clear from the DEM that the elevation varies from 109 m to 471m in the whole study area, thus having an elevation difference of 362 m. The areas in the Southern, and Southern eastern portion have higher elevation which is covered by undulated land while the It is also called as folded plain are generally used for agricultural purpose with built-up land. The contour over the DEM shows that the project site is 170-180m in the elevation range of 10 m interval present on the hilly land in the study area.

Figure 3.4: Digital elevation model of the study area with contour map

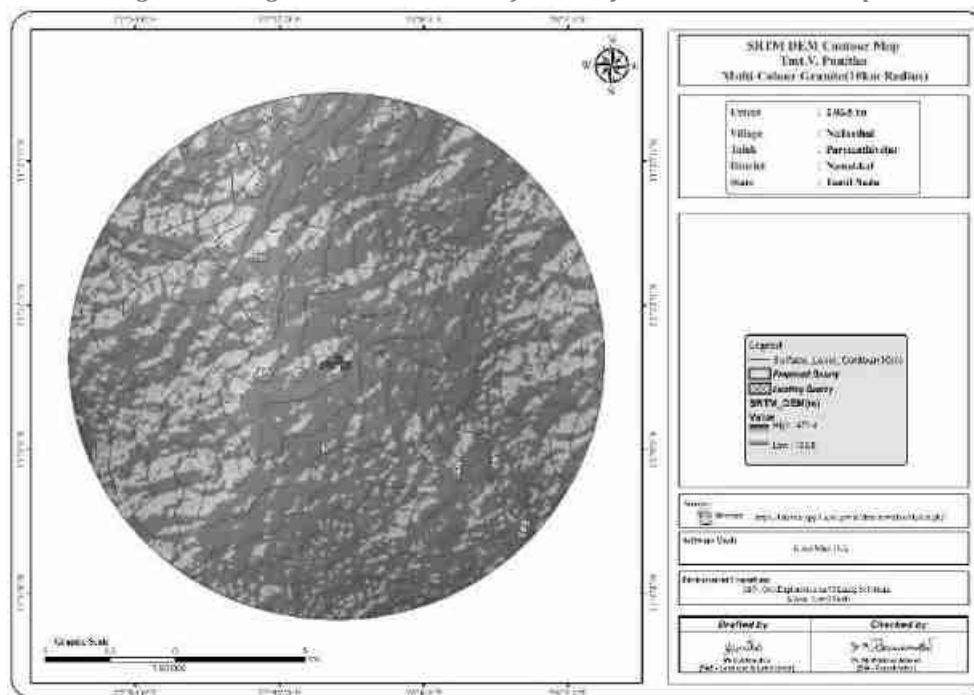
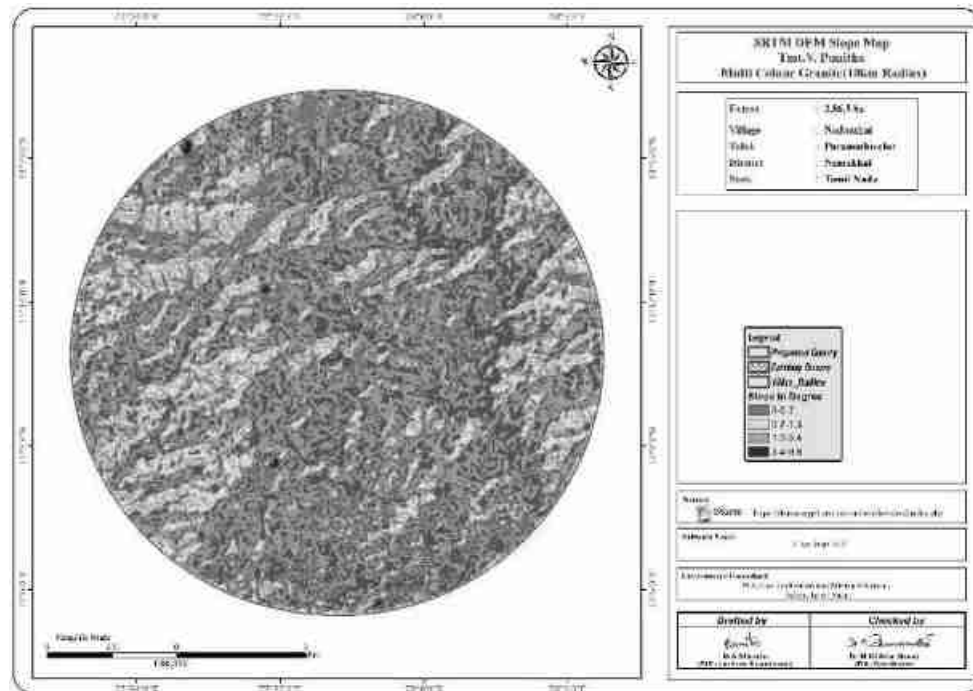


Figure 3.5: Slope map around 10km radius

3.1.2 Topography

The project area exhibits slightly undulated terrain with gentle gradient towards East side, maximum elevation of the area is 182m above Mean Sea level there are no hilly regions in and around the area.

3.1.3 Drainage Pattern of the Area

There are developed surface drainage channels in the study area. The drainage pattern of the area is dendritic it is inferred the rock-hard rock terrain.

The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The area is mostly dry in all seasons except rainy seasons.

During rainy season the surface runoff flows in NE to SW direction. The drainage pattern of the study area is given in Fig. 3.5. The quarrying activity will not hinder the natural flow of rainwater.

3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone II (Least active), low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

3.1.5 Environmental Features in the Study Area

There are no other Wildlife Sanctuaries, National Park and Archaeological monuments within cluster area. No Protected and Reserved Forest area is involved in the cluster area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the cluster area i.e., 10km radius, are given in the below Table 3.3.

Table 3.4: Details of Environment Sensitivity around the Cluster

No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	Vellode Bird Sanctuary	35km - West
2	Reserve Forest	Saruvumalaikaradu R.F	16.85km - W
3	Lake Reservoir	Kuttai	230 NE
		Thirumanimutharu	5.2km East
		Tank-7km West	7km West
		Idumbankulam	7.5km SE
		Cauvery River	9.3km SW
4	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	Sathiyamangalam Tiger Reserve	71.0km-NW
5	Critically Polluted Areas	None	Nil within 10 km Radius
6	Mangroves	None	Nil within 10 km Radius
7	Mountains/Hills	None	Nil within 10 km Radius
8	Notified Archaeological Sites	None	Nil within 10 km Radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km Radius
10	Defence Installation	None	Nil within 10 km Radius

Source: Survey of India Toposheet

3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.4 and Figure 3.3.

Table 3.5: Soil Sampling Locations

S. No	Location Code	Monitoring Locations	Distance (km) and Direction	Coordinates
1	S-1	Core Zone	Project Area	11°10'55.41"N 77°58'14.98"E
2	S-2	Surampalayam	800m NW	11°11'16.41"N 77°57'49.84"E
3	S-3	Kabilarmalai	5km SW	11° 8'33.75"N 77°56'46.16"
4	S-4	Mel Sattambur	5.7km NE	11°13'55.38"N 77°59'13.38"E
5	S-5	Paramathi	6km SE	11° 9'10.56"N 78° 1'1.20"E
6	S-6	Thidumal	5.2km NW	11°11'42.65"N 77°55'20.98"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

Figure 3.6: Collection of Soil Sample**The objective of the soil sampling is -**

- To determine the baseline soil characteristics of the study area;
- To determine the impact of proposed activity on soil characteristics and;
- To determine the impact on soil more importantly agriculture production point of view

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Six (6) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.5.

Table 3.6: Methodology of Sampling Collection

Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory.

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”.

Figure 3.7: Soil Sampling Locations Around 10 Km Radius

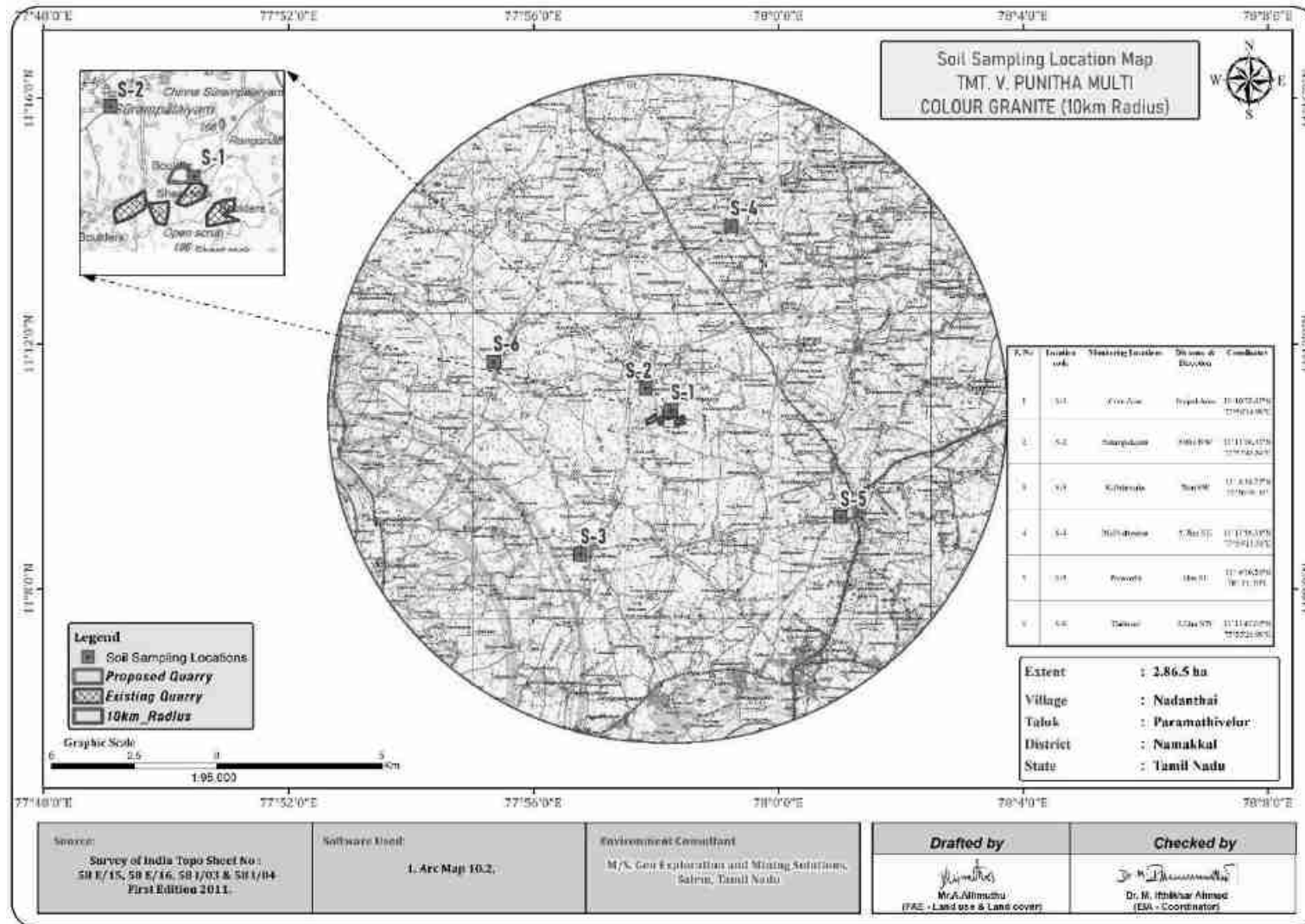


Figure 3.8: Soil Map

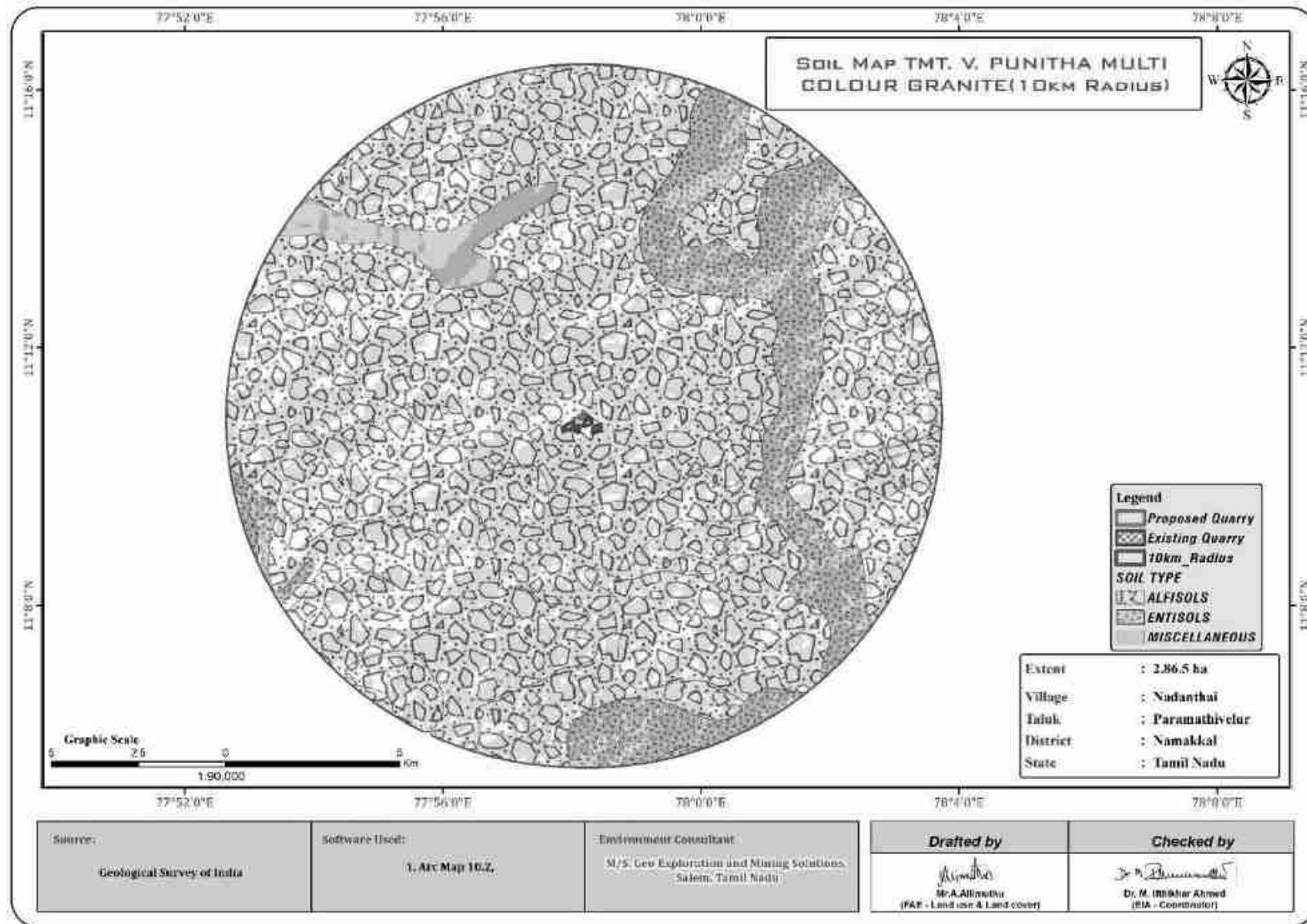


Table 3.7: Soil Quality of the Study Area

S.No	Test Parameters	Unit	S1	S2	S3	S4	S5	S6
1	Organic Matter	%	1.47	2.06	2.19	1.47	2.10	2.50
2	pH	-	5.01	6.02	6.11	5.92	5.04	6.22
3	Specific Electrical Conductivity	µS/cm	210	230	290	220	190	310
4	Available Phosphorous	mg/kg	18.6	19.4	17.3	17.3	17.2	17.1
5	Available Potassium	meq/l	1.02	1.19	1.51	1.41	1.13	1.07
6	Exchangeable Calcium (as Ca)	meq/100g	2.0	2.2	3.0	1.6	1.4	3.2
7	Exchangeable Magnesium (as Mg)	meq/100g	1.2	1.4	1.8	0.8	0.6	1.8
8	Sulphate as SO ₄	mg/100g	9.1	13.3	13.9	15.5	15.1	17.0
9	Cation Exchange Capacity	meq/100g	18.2	20.1	22.4	20.9	18.4	22.46
10	Bulk Density	g/cc	1.01	1.06	1.21	1.05	0.90	1.19
11	Sand	%	46.46	40.22	32.21	31.11	32.35	32.24
12	Slit	%	44.51	46.63	47.25	45.78	44.10	47.55
13	Clay	%	15.03	13.15	20.54	23.11	23.55	20.21
14	Water Holding Capacity	%	31.0	35.0	40.8	39.0	37.2	41.0
15	Available Nitrogen as N	Kg/ha	137.9	200.0	213.2	163.0	137.9	238.3
16	Chloride	meq/l	8.1	9.2	10.1	9.3	8.7	10.6
17	Permeability	%	34	37.0	43	42.0	39.0	43
18	Manganese as Mn	mg/kg	9.76	11.03	11.80	10.10	9.75	10.67
19	Zinc as Zn	mg/kg	27.82	23.11	26.50	25.59	24.72	26.78
20	Cadmium as Cd	mg/kg	11.47	14.36	13.97	11.51	11.11	12.56
21	Chromium as Cr 6+	mg/kg	21.72	13.74	21.44	23.72	22.90	17.54
22	Copper as Cu	mg/kg	4.15	6.45	14.21	10.33	9.98	1.66
23	Lead as Pb	mg/kg	0.73	0.62	1.20	0.70	0.68	BDL (DL:0.5)
24	Iron as Fe	mg/kg	1.95	17.28	26.98	27.94	26.99	22.99
25	Organic Carbon	%	0.85	1.19	1.27	0.85	1.22	1.45
26	Boron as B	mg/kg	3.66	2.71	BDL (DL:0.5)	2.35	2.27	1.19

Source: Sampling Results by Global Lab and Consultancy Services,

Interpretation & Conclusion

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil and Bulk Density of Soils in the study area varied between 0.90 – 1.21g/cc. The Water Holding Capacity of the soil samples is found to be medium i.e. ranging from 31.0 – 41.0 %.

- The nature of soil is slightly alkaline to strongly alkaline with pH range 5.01 to 6.22
- The available Nitrogen content range between 137.9 to 238.3 kg/ha
- The available Phosphorus content range between 17.1 to 19.4 kg/ha
- The available Potassium range between 1.02 to 1.51 mg/kg
- Whereas, the micronutrient as zinc (Zn) and iron (Fe) were found in the range of 23.11 to 27.82 mg/kg; 1.95 to 27.94 mg/kg.

3.2 Water Environment

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water Resources:

The study area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

Table 3.8: Water Bodies in the Buffer Zone

Sl.No.	Water Bodies	Distance
1	Kuttai	230m NE
2	Thirumanimutharu	5.2km East
3	Tank	7km West
4	Idumbankulam	7.5km SE
5	Cauvery River	9.3km SW

Source: Survey of India Toposheet

3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

Two (2) surface water and four (4) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and ‘Standard methods for the Examination of Water and Wastewater’ published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

Table 3.9: Water Sampling Locations

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	SW1	Thirumanimuthaaru	5.5km SE	11°10'1.64"N 78° 1'6.03"E
2	SW2	Cauvery River	9.5km West	11° 9'9.14"N 77°53'13.33"E
3	WW-1	Near Project Area	800m SW	11°10'32.95"N 77°57'50.13"E
4	WW-2	Mel Sattambur	5.7km NE	11°13'59.85"N 77°59'17.48"E
5	BW-1	Near Project Area	620m NW	11°11'11.92"N 77°57'54.75"E
6	BW-2	Kabilarmalai	4.5km SW	11° 8'46.57"N 77°56'43.20"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

Figure 3.9: Collection of Water Sample

Table 3.10: Ground Water Sampling Results

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	WW1-Near Project area	WW2- Mel Sattambur	BW1- Near Project Area	BW2- Kabilarmalai
1	Color	IS 3025 PART 4	Hazen	< 5	< 5	< 5	< 5
2	Odor	IS 3025 PART 5	-	Agreeable	Agreeable	Agreeable	Agreeable
3	pH	IS 3025 PART11	-	7.65	7.24	7.36	7.49
4	Conductivity	IS 3025 PART14	µs/cm	1085	1036	909	928
5	Turbidity	IS 3025 PART10	NTU	<1	<1	<1	<1
6	Total Dissolved Solids	IS 3025 PART16	mg/l	640	611	536	547
7	Total Alkalinity as CaCO ₃	IS 3025 PART 23	mg/l	188	172.0	148	156
8	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	238.3	230.2	193.9	197.9
9	Calcium as Ca	IS 3025 PART40	mg/l	50.1	53.4	48.5	56.6
10	Magnesium as Mg	IS 3025 PART 46	mg/l	27.5	23.5	17.6	13.7
11	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	214.8	210.8	181.3	189.2
12	Sulphate as SO ₄ ⁻	IS 3025 PART24	mg/l	46.6	37.6	36.6	34.7
13	Iron as Fe	IS 3025 PART 53	mg/l	0.23	0.17	0.15	0.15
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
15	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:0.1)	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.26	0.23	0.18	0.17
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL :2.0)	BDL(DL :2.0)	BDL(DL :2.0)	BDL(DL:2.0)
19	Total Suspended Solids	IS 3025 PART 17	mg/l	<2	<2	<2	<2
20	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
21	Anionic Detergents	IS 13428	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
22	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
23	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1)	BDL(DL:1)	BDL(DL:1.0)	BDL(DL:1.0)
24	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.001)	BDL(DL:0.01)	BDL(DL:0.01)
25	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
26	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
27	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
28	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.031	BDL(DL:0.01)	BDL(DL:0.01)	0.016
29	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
30	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
31	Total Chromium as Cr	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
32	Barium as Ba	GLCS/SOP/W/62	mg/l	0.015	BDL(DL:0.01)	BDL(DL:0.01)	0.039
33	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
34	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
35	Ammonia as NH ₃	IS 3025 PART 34	mg/l	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
36	Total Coliforms	IS 15185	Per 100ml	Absent	Absent	Absent	<2
36	<i>Escherichia coli</i>	IS 15185	Per 100ml	Absent	Absent	Absent	<2

Source: Sampling Results by Global Lab and Consultancy Services,

Table 3.11: Surface Water Sampling Results

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	SW-1 - Thirumanimuthaaru	SW-2 Cauvery River
1	Color	IS 3025 PART 4	Hazen	6	7
2	Odor	IS 3025 PART 5	-	Agreeable	Agreeable
3	pH	IS 3025 PART11	-	8.09	7.93
4	Conductivity	IS 3025 PART14	µs/cm	1252	1319
5	Turbidity	IS 3025 PART10	NTU	3	4
6	Total Dissolved Solids	IS 3025 PART16	mg/l	739	778
7	Total Alkalinity as CaCO ₃	IS 3025 PART 23	mg/l	204	224
8	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	266.6	278.7
9	Calcium as Ca	IS 3025 PART40	mg/l	63.1	66.3
10	Magnesium as Mg	IS 3025 PART 46	mg/l	26.5	27.5
11	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	275.9	281.8
12	Sulphate as SO ₄ ⁻	IS 3025 PART24	mg/l	47.4	45.13
13	Iron as Fe	IS 3025 PART 53	mg/l	0.29	0.31
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
15	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.33	0.30
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL :2.0)	BDL(DL :2.0)
19	Dissolved Oxygen	IS 3025 PART 38	mg/l	6.4	5.9
20	Bio-Chemical Oxygen Demand @ 27°C for 3 days	IS 3025 PART 44	mg/l	10.2	12.0
21	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	36.4	44.5
21	Total Suspended Solids	IS 3025 PART 17	mg/l	8	11
22	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
23	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)	BDL(DL:0.05)
24	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)	BDL(DL:0.02)
25	Sulphide	GLCS/SOP/W/66	mg/l	1.6	2.4
26	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
27	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)
28	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
29	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)
30	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.045	BDL(DL:0.01)
31	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
32	Zinc as Zn	GLCS/SOP/W/62	mg/l	0.013	BDL(DL:0.01)
33	Total Chromium as Cr	GLCS/SOP/W/62	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
34	Barium as Ba	GLCS/SOP/W/62	mg/l	0.15	BDL(DL:0.01)
35	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
36	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)
37	Ammonia as NH ₃	IS 3025 PART 34	mg/l	BDL(DL:1.0)	BDL(DL:1.0)
38	Total Coliforms	IS 1622	MPN/100ml	26	17
39	Escherichia coli	Total Coliforms Organism MPN/100ml shall be 50 or less	MPN/100ml	<2	<2

3.2.4 Interpretation & Conclusion

Surface Water

Ph:

The pH varied from 7.93 to 8.09 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids varied from 739 to 778mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride varied between 275.9 mg/l and 281.8mg/l while sulphates varied from 45.13 to 47.4mg/l.

Ground Water

The pH of the water samples collected ranged from 7.24 to 7.65 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates 34.7-46.6 mg/l and Chlorides of water samples from 181.3-214.8mg/l. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 536-640 mg/l in all samples. The Total hardness varied between 193.9-238.3 mg/l.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 68- 64m. The maximum depth proposed out of proposed projects is 28m BGL for the entire period. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to these proposed projects.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels this is due to the high intensity of fracture and weathered portion up to a depth of 28m thus the collected seepage water will be stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will act as a temporary reservoir.

3.2.6 Ground Water Resources:

Namakkal district is underlain entirely by Archaean Crystalline formations with Recent alluvial deposits occurring along the river and streams courses and colluvium of valley-fills. The important aquifer systems in the district are constituted by weathered, fissured and fractured crystalline rocks and the recent alluvial deposits. Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is upto 5 m depending upon the topographic conditions. The study area falls in the Nadanthai which is categorized as Safe (< 70%) as per G.O (MS) No 113 dated 09.06.2016.

There are Seven open wells within the radius of 1km Most of the wells are almost in dry conditions: - The details of the well and depth in monsoon and non-monsoon is described below:

Table 3.12: Details of Borewell & Water Level In 1km Radius

S.No	Name	LONGITUDE	LATITUDE	Oct-23	Nov-23	Dec-23
1	BW1	77° 57' 41.0292" E	11° 11' 07.8673" N	66.8	67.4	68
2	BW2	77° 57' 52.5517" E	11° 11' 17.6066" N	67.3	67.9	68.5
3	BW3	77° 58' 08.0850" E	11° 11' 23.3688" N	65.8	66.4	67
4	BW4	77° 58' 30.0558" E	11° 11' 26.4418" N	66.3	66.9	67.5
5	BW5	77° 57' 49.8509" E	11° 10' 27.7751" N	66.6	67.2	67.8
6	BW6	77° 58' 16.2320" E	11° 10' 25.1918" N	67	67.6	68.2
7	BW7	77° 58' 48.6333" E	11° 11' 02.6552" N	67.2	67.8	68.4
8	BW8	77° 58' 34.2664" E	11° 10' 28.0962" N	66.8	67.4	68
9	BW9	77° 57' 34.4774" E	11° 10' 48.2530" N	66.7	67.3	67.9

Source: Data obtained by the FAE & Team Members

Table 3.13: Details of Open well & Water Level in 1km Radius

S.No	LABEL	LONGITUDE	LATITUDE	Oct	Nov	Dec
1	OW-1	77° 57' 55.9340" E	11° 11' 13.1963" N	12	12.6	13.2
2	OW-2	77° 58' 12.3422" E	11° 11' 23.5116" N	11.8	12.4	13
3	OW-3	77° 58' 25.1157" E	11° 11' 26.3781" N	11.3	11.9	12.5
4	OW-4	77° 58' 28.5499" E	11° 11' 08.4554" N	11.6	12.2	12.8
5	OW-5	77° 57' 38.1911" E	11° 10' 50.0888" N	11.3	11.9	12.5
6	OW-6	77° 57' 49.7351" E	11° 10' 29.4000" N	11	11.6	12.2
7	OW-7	77° 58' 35.5283" E	11° 10' 35.6794" N	10.8	11.4	12
8	OW-8	77° 58' 19.2842" E	11° 10' 21.3000" N	11.2	11.8	12.4

Figure 3.10: Post Monsoon Water Level of Open Well 1 Km Radius

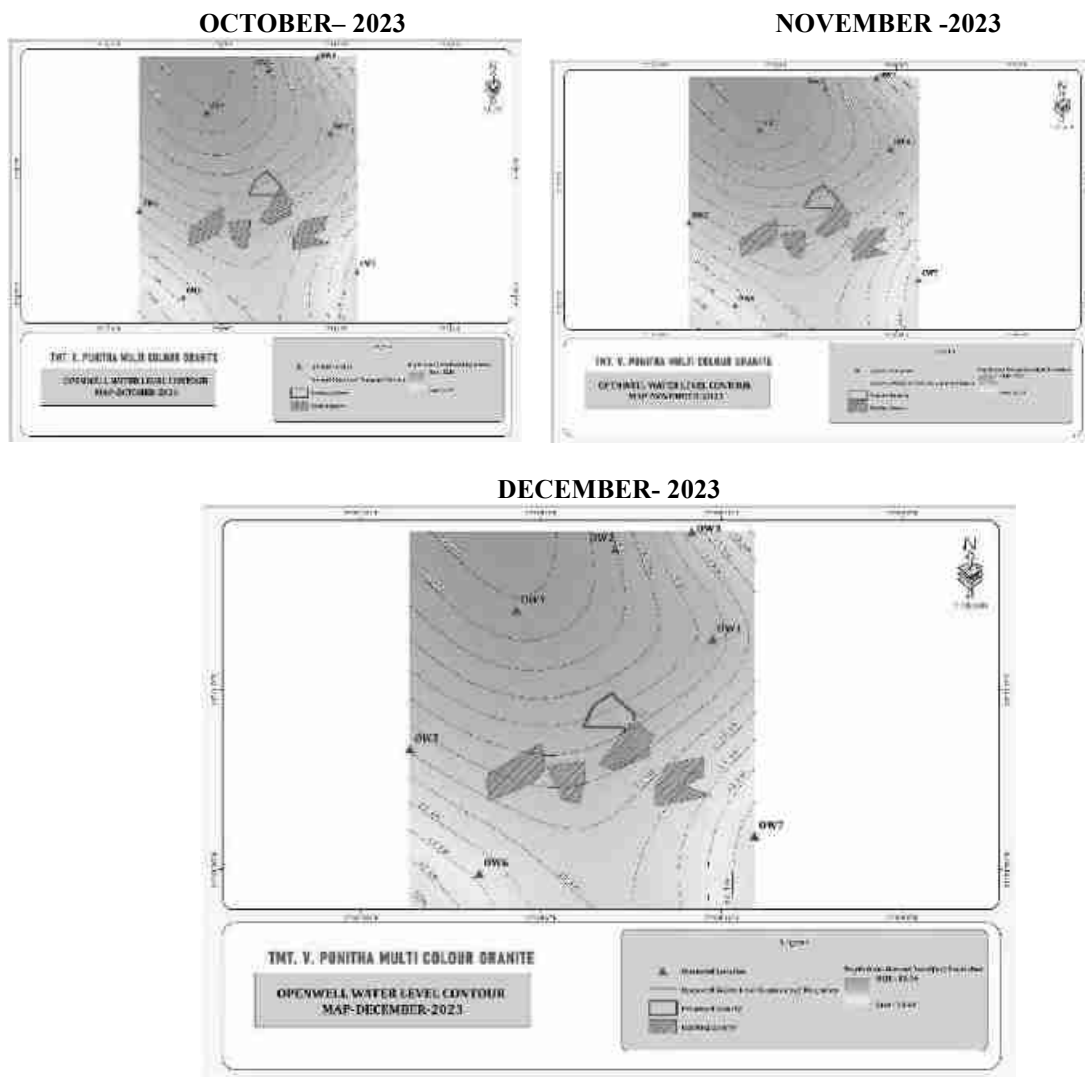
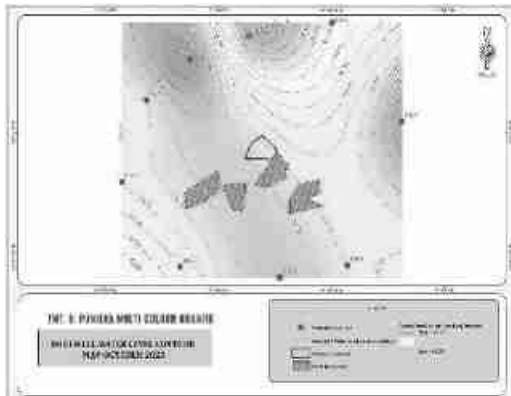
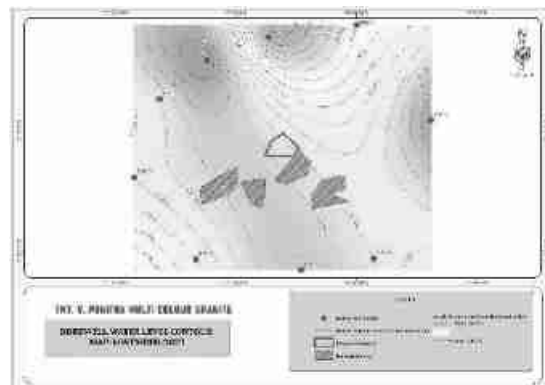


Figure 3.11: Post Monsoon Water Level of Bore Well 1 Km Radius

OCTOBER- 2023



NOVEMBER- 2023



DECEMBER 2023

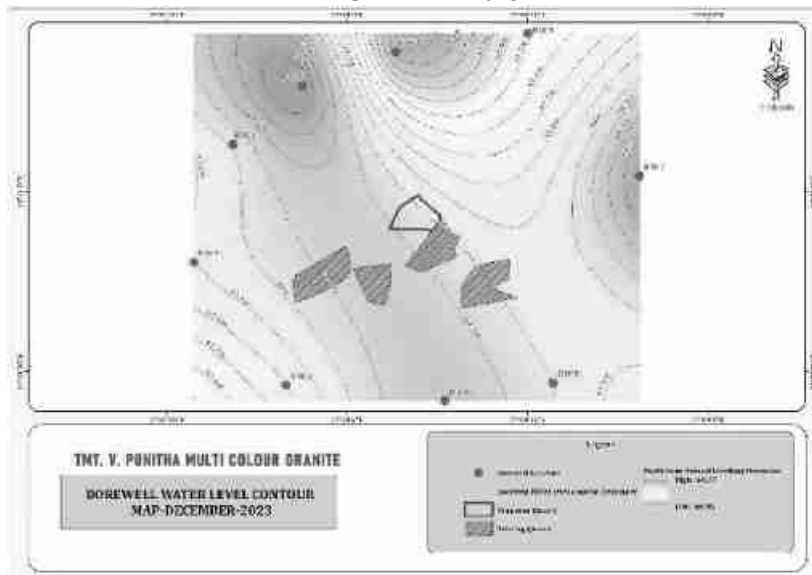


Figure 3.12: Drainage Map Around 10 Km Radius from Project Site

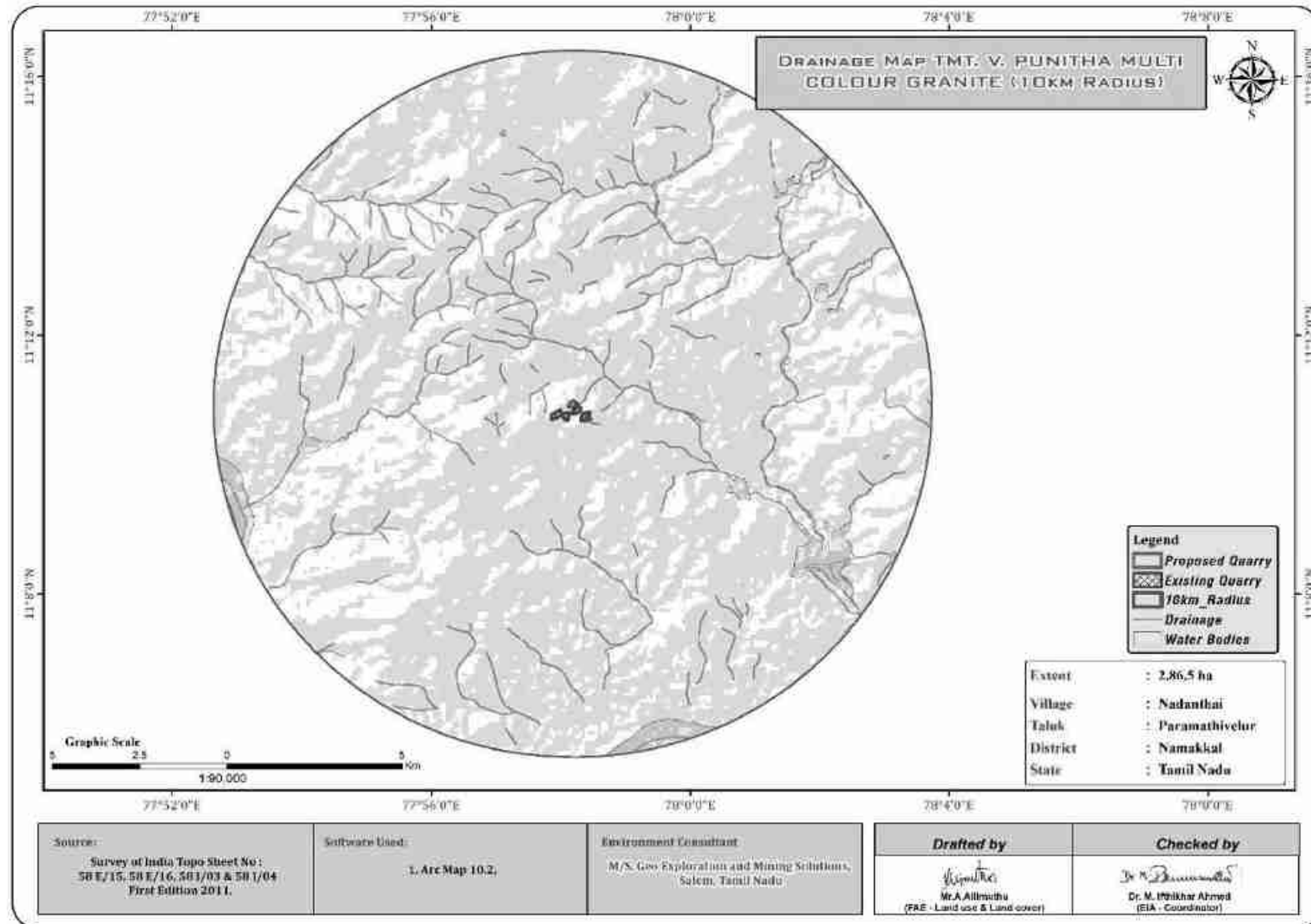
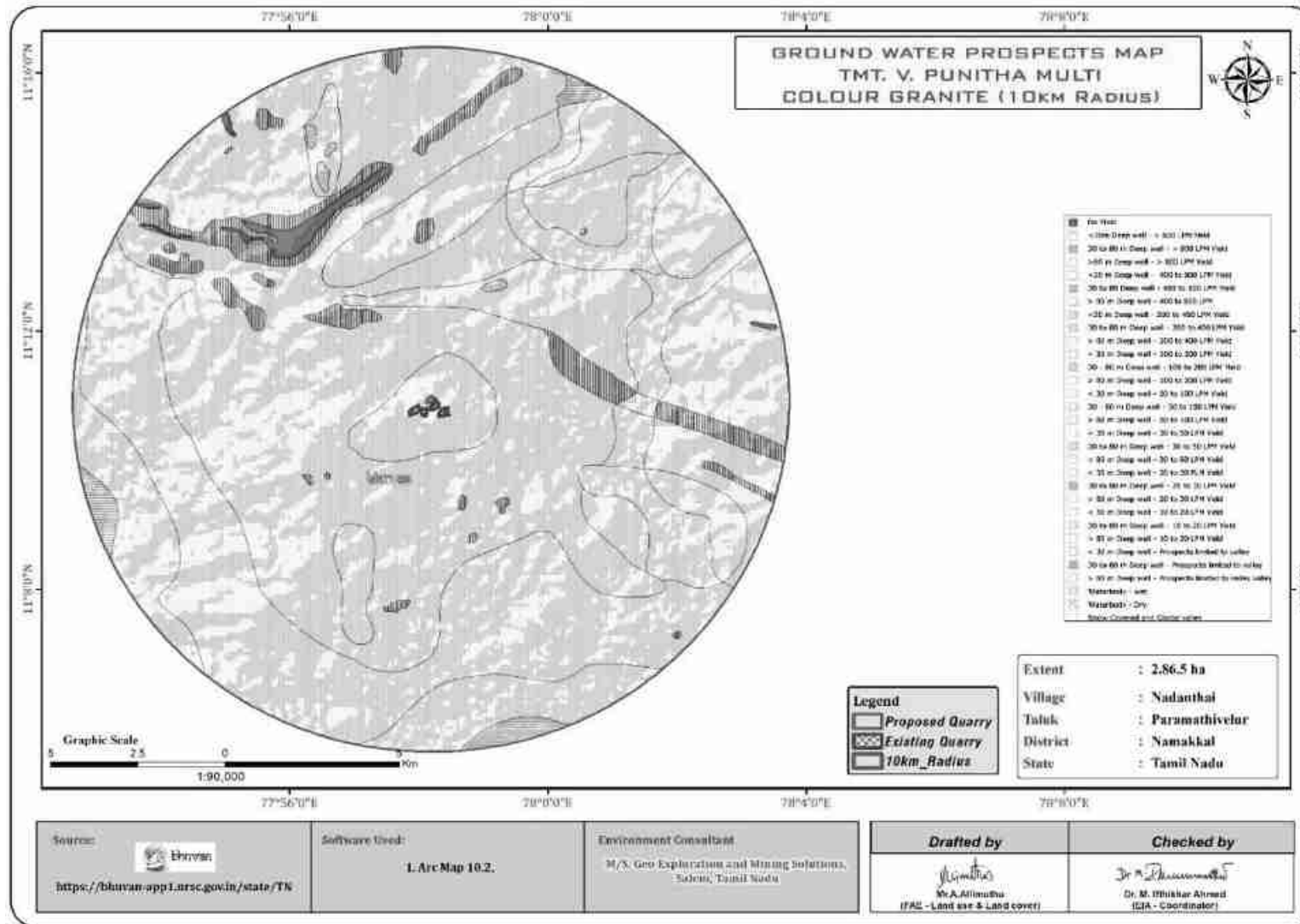


Figure 3.13: Ground Water Prospect Map



3.3 Air Environment

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality. The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed projects in cluster.

This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

3.3.1 Meteorology & Climate

Meteorology is the key to understand the Air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate –

- The climatic conditions of Namakkal are tropical in nature. In winter, there is much less rainfall than in summer. As per the Köppen-Geiger classification, the prevailing weather conditions in this region are categorized under Aw. The average temperature in Namakkal is 27.6 °C | 81.6 °F. Approximately 950 mm | 37.4 inch of rainfall occurs on a yearly basis.
- Namakkal experiences a moderate climate, and the summers are not easy to define. The best time to visit is January, February, March, August, September, October, November, December.
- The month characterized by the lowest precipitation levels is January, exhibiting a mere 7 mm | 0.3 inch of rainfall. Most precipitation falls in October, with an average of 186 mm | 7.3 inch.
- On average, the month of April experiences the highest temperature with an average value of 31.0 °C | 87.8 °F. In December, the average temperature is 24.3 °C | 75.7 °F. It is the lowest average temperature of the whole year.

<https://en.climate-data.org/asia/india/tamil-nadu/namakkal-24040/>

Rainfall

Table 3.14: Rainfall Data

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
783.7	649.8	630.5	629.2	1021.2	791.2

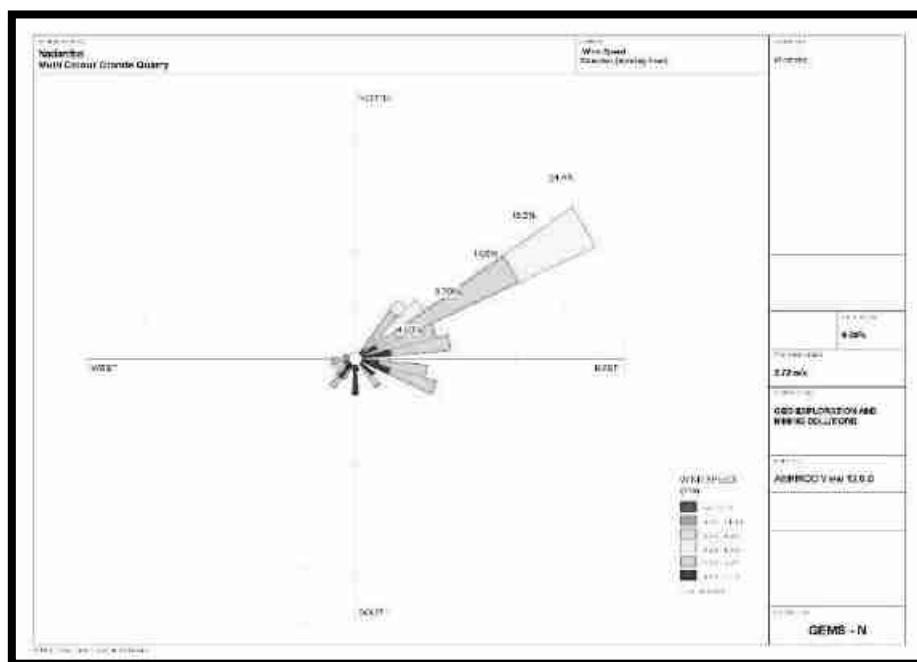
Source: <https://www.twadboard.tn.gov.in/content/namakkal>

Table 3.15: Meteorological Data Recorded at Site

S.No	Parameters		Oct-2023	Nov- 2023	Dec- 2023
1	Temperature (°C)	Max	29.83	27.04	27.36
		Min	26.57	24.81	22.91
		Avg	28.20	25.92	25.13
2	Relative Humidity (%)	Avg	69.41	82.25	82.37
3	Wind Speed (m/s)	Max	4.66	4.07	4.74
		Min	1.30	1.50	1.45
		Avg	2.98	2.78	3.09
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		ENE,E	ENE,ESE	NE,ENE

Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD station. A comparison of site data generated during the three months with that of IMD, Wind rose diagram of the study site is depicted in Figure. 3.8. Predominant downwind direction of the area during study season is North - East to South West.

Figure 3.14: Windrose Diagram

Source: Wind Rose plot view, Lake Environmental Software

In the abstract of collected data wind rose were drawn on presented in figure No.3.8 during the monitoring period in the study area

- Predominant winds were from SW, S, NS, NE
- Wind velocity readings were recorded between 0.50 to 5.70 m/s
- Temperature readings ranging from 22.91 to 29.83 °C
- Relative humidity ranging from 69.41 to 82.37 %

3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and

domestic activities. The baseline status of the ambient air quality has been established 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; etc.,

3.3.3 Sampling and Analytical Techniques

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

Source: Sampling Methodology followed by Global Lan and Consultancy Services Laboratories & CPCB Notification

Table 3.16: National Ambient Air Quality Standards

Sl. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	Sulphur Dioxide (µg/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10µm) PM ₁₀ (µg/m ³)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm) PM _{2.5} (µg/m ³)	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

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

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval

** 24 hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at seven (7) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period Oct to Dec 2023. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least 3 ± 0.5m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

3.3.5 Ambient Air Quality Monitoring Stations

Seven (7) monitoring stations were set up in the study area as depicted in Figure 3.15 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

Table 3.17: Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ1	Core Zone	Project Area	11°10'54.60"N 77°58'10.05"E
2	AAQ2	Near Project Area	280m SE	11°10'49.17"N 77°58'22.24"E
3	AAQ3	Surampalayam	800m NW	11°11'19.29"N 77°57'55.72"E
4	AAQ4	Kabilarmalai	5km SW	11° 8'35.01"N 77°56'46.28"E
5	AAQ5	Mel Sattambur	5.7km NE	11°13'56.00"N 77°59'13.54"E
6	AAQ6	Paramathi	6km SE	11° 9'11.05"N 78° 1'1.50"E
7	AAQ7	Thidumal	5.2km NW	11°11'41.42"N 77°55'25.38"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services Laboratories in association with GEMS

Figure 3.15: Site Photographs of Ambient Air Quality Monitoring



Source: Field Photos

Figure 3.16: Ambient Air Quality Locations Around 10 Km Radius

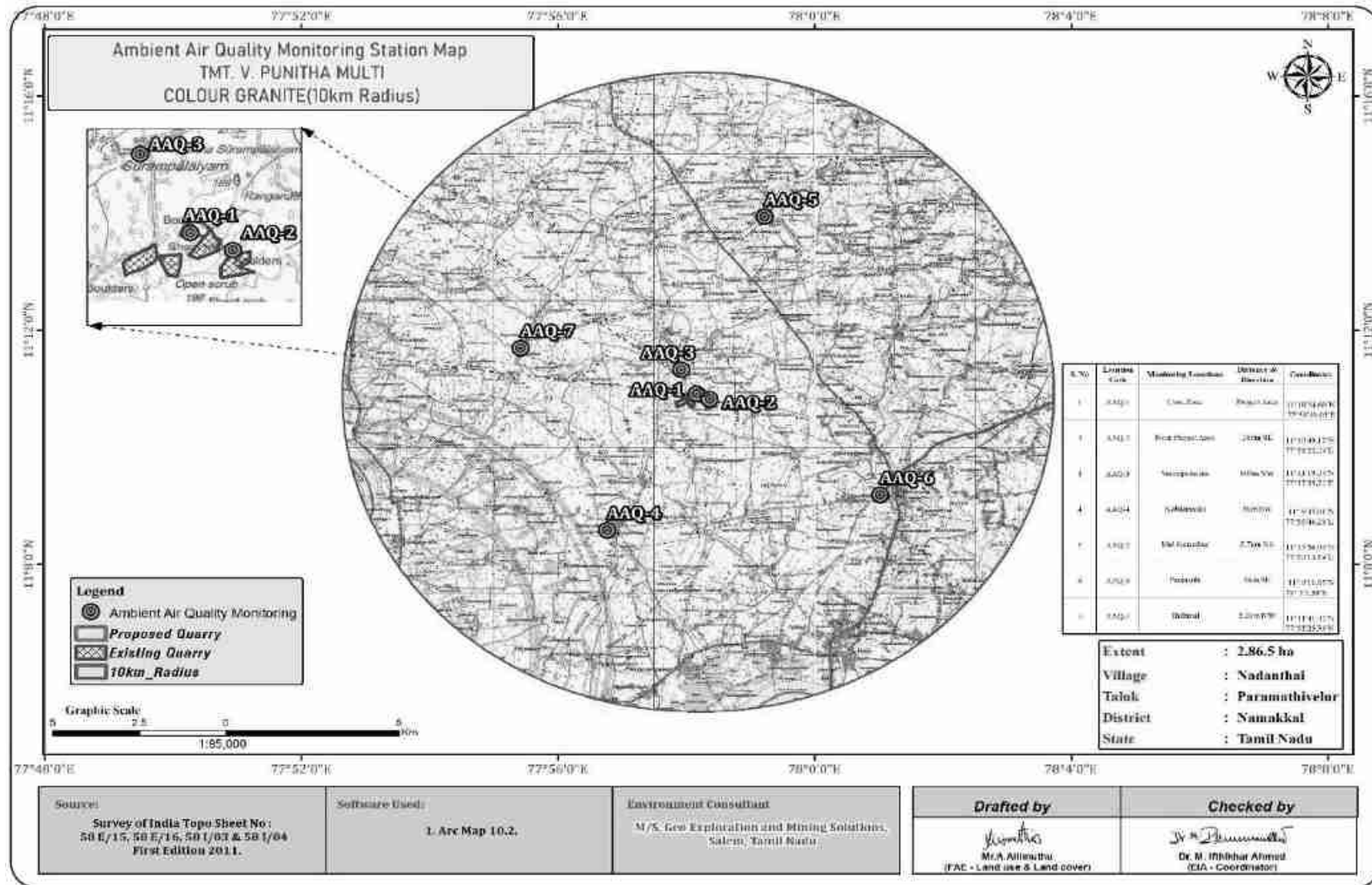


Table 3.18: Abstract of Ambient Air Quality Data

1	Parameter	PM2.5	PM10	SO ₂	NO ₂
2	No. of Observations	260	260	260	260
3	10 th Percentile Value	37.9	17.2	4.6	18.9
4	20 th Percentile Value	38.9	17.9	4.9	19.6
5	30 th Percentile Value	39.7	18.7	5.2	19.9
6	40 th Percentile Value	40.3	19.6	5.4	20.2
7	50 th Percentile Value	40.8	20.0	5.9	20.5
8	60 th Percentile Value	41.4	20.4	6.2	20.7
9	70 th Percentile Value	41.8	21.2	6.5	21.0
10	80 th Percentile Value	42.3	21.7	6.9	21.5
11	90 th Percentile Value	43.2	22.5	7.1	22.2
12	95 th Percentile Value	43.7	22.9	7.5	23.3
13	98 th Percentile Value	44.0	23.7	7.9	24.5
14	Arithmetic Mean	41.3	20.5	6.2	21.1
15	Geometric Mean	41.2	20.4	6.1	21.1
16	Standard Deviation	2.0	2.1	1.1	1.7
17	Minimum	37.9	17.2	4.6	18.9
18	Maximum	44.0	23.7	7.9	24.5
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

Legend: PM_{2.5}-Particulate Matter size less than 2.5 µm; PM₁₀-Respirable Particulate Matter size less than 10 µm; SO₂-Sulphur dioxide; NO₂-Nitrogen Dioxide; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits.

* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Area.

Table 3.19: Summary of Ambient Air Quality Data (AAQ1-AAQ7)

PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	42.1	41.3	41.0	40.7	40.3	40.3	39.4
Minimum	40.2	39.2	39.3	38.0	37.1	36.1	35.0
Maximum	44.9	43.7	43.4	43.9	43.6	44.0	44.1
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	21.4	20.7	20.1	19.7	40.3	39.7	18.9
Minimum	17.9	17.9	16.7	17.5	16.7	15.8	15.8
Maximum	24.2	23.7	22.1	22.5	22.9	23.7	22.5
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	5.7	5.7	5.8	5.9	5.7	6.0	6.1
Minimum	4.1	4.4	4.1	4.1	4.4	4.4	4.3
Maximum	7.4	7.3	7.7	7.9	7.4	7.9	7.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	20.3	20.4	20.7	20.8	20.3	20.5	20.6
Minimum	16.2	18.7	18.6	18.1	18.0	18.2	17.2
Maximum	23.9	22.7	23.2	23.9	24.5	23.6	24.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

Figure 3.17: Bar diagram of summary of air quality model (AAQ1-AAQ7)

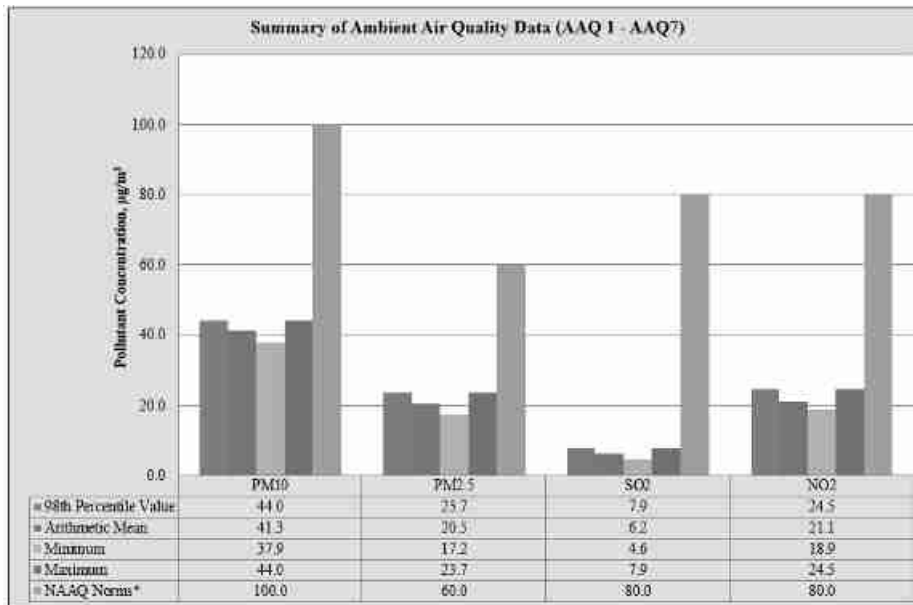


Figure 3.17-A : Bar diagram of particulate matter (PM2.5)

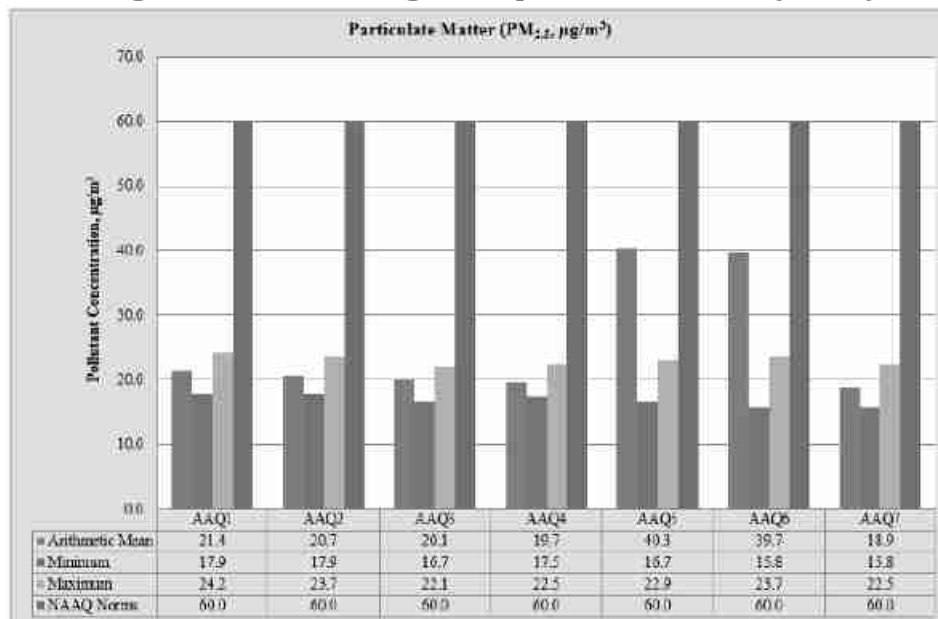


Figure 3.17-B: Bar diagram of particulate matter (PM₁₀)

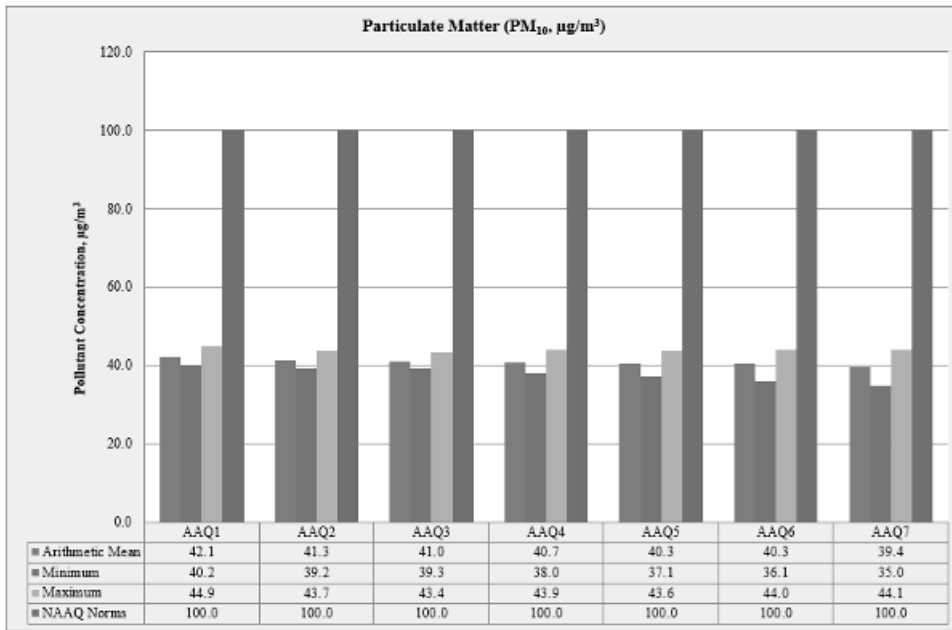


Figure 3.18-A: Bar diagram of particulate matter (SO₂)

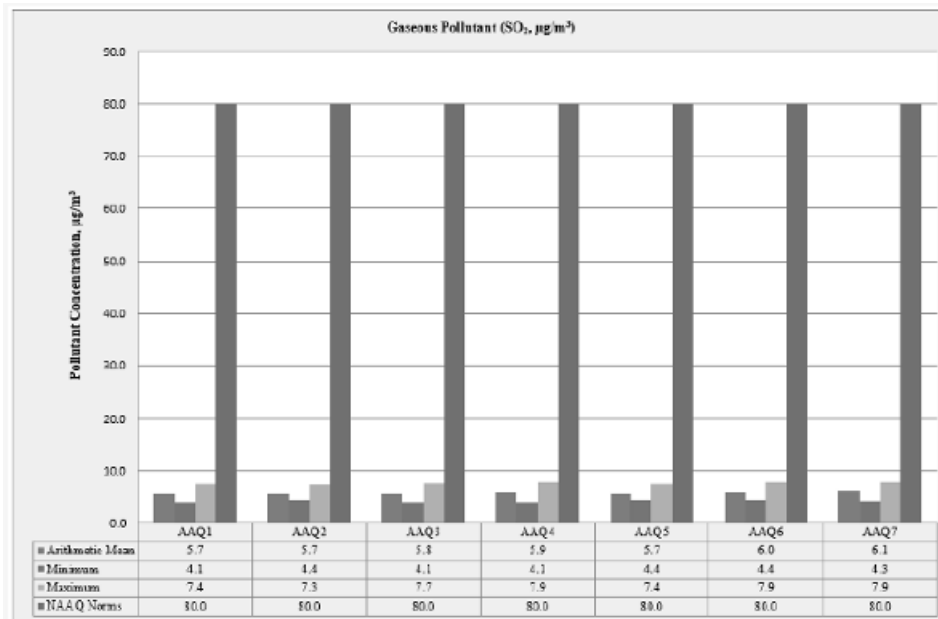
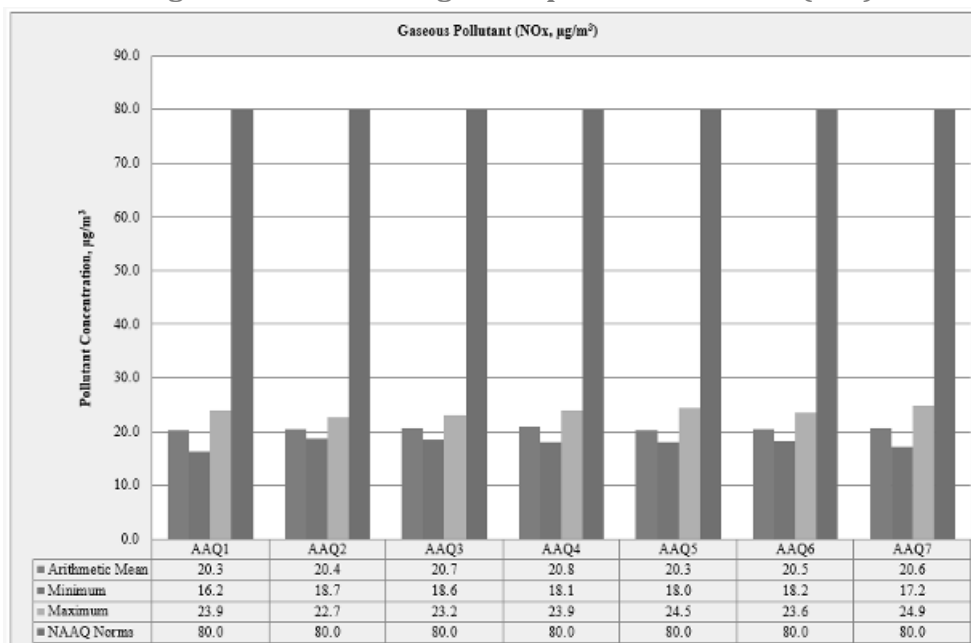


Figure 3.18-B: Bar diagram of particulate matter (NO_x)

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 35.0/m³ to 44.9 µg/m³, PM_{2.5} data ranges from 15.8µg/m³ to 24.2µg/m³, SO₂ ranges from 4.1 µg/m³ to 7.9 µg/m³ and NO₂ data ranges from 16.2 µg/m³ to 24.9 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB. The minimum & maximum concentrations of PM₁₀ were found to be 35.0µg/m³ in Thidumal area & 44.9 µg/m³ in Core area respectively. The minimum & maximum concentrations of PM_{2.5} were found to be 15.8µg/m³ in Paramathi and Thidumal Village & 24.2 µg/m³ in Core zone respectively. The maximum concentration in the core zone is due to the cluster of quarries situated within 500m radius.

Toxic Metals (Lead, Nickel & Arsenic): Representative samples from all sampling stations were collected and analysed for Toxic Metals i.e. Lead, Arsenic & Nickel. The concentrations of Toxic Metals were below detectable limit at all sampling stations.

Overall Ambient Air Quality of proposed project area and its buffer zone is good during monitoring period and there are no any abnormal values recorded. The maximum concentration in the core zone is due to the quarrying activity of the cluster of quarries situated within 500m radius. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

The ambient air quality of different locations has been compared with the respective NAAQS. The air quality has been categorized into four broad categories based on an Exceedance Factor (the ratio of average concentration of a pollutant with that of a respective standard).

3.4 Noise Environment

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Seven (7) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10 km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

Table 3.20: Details of Noise Monitoring Locations

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Core Zone	Project Area	11°10'56.16"N 77°58'14.54"E
2	N2	Near Project Area	280m SE	11°10'48.77"N 77°58'22.95"E
3	N3	Surampalayam	800m NW	11°11'19.33"N 77°57'56.45"E
4	N4	Kabilarmalai	5km SW	11° 8'34.63"N 77°56'45.84"E
5	N5	Mel Sattambur	5.7km NE	11°13'55.74"N 77°59'13.03"E
6	N6	Paramathi	6km SE	11° 9'11.03"N 78° 1'1.95"E
7	N7	Thidumal	5.2km NW	11°11'42.20"N 77°55'22.94"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS



Figure 3.19. Collection of Noise Sample

3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by Leq, is used. Equivalent sound level, 'Leq', can be obtained from variable sound pressure level, 'L', over a time period by using following equation.

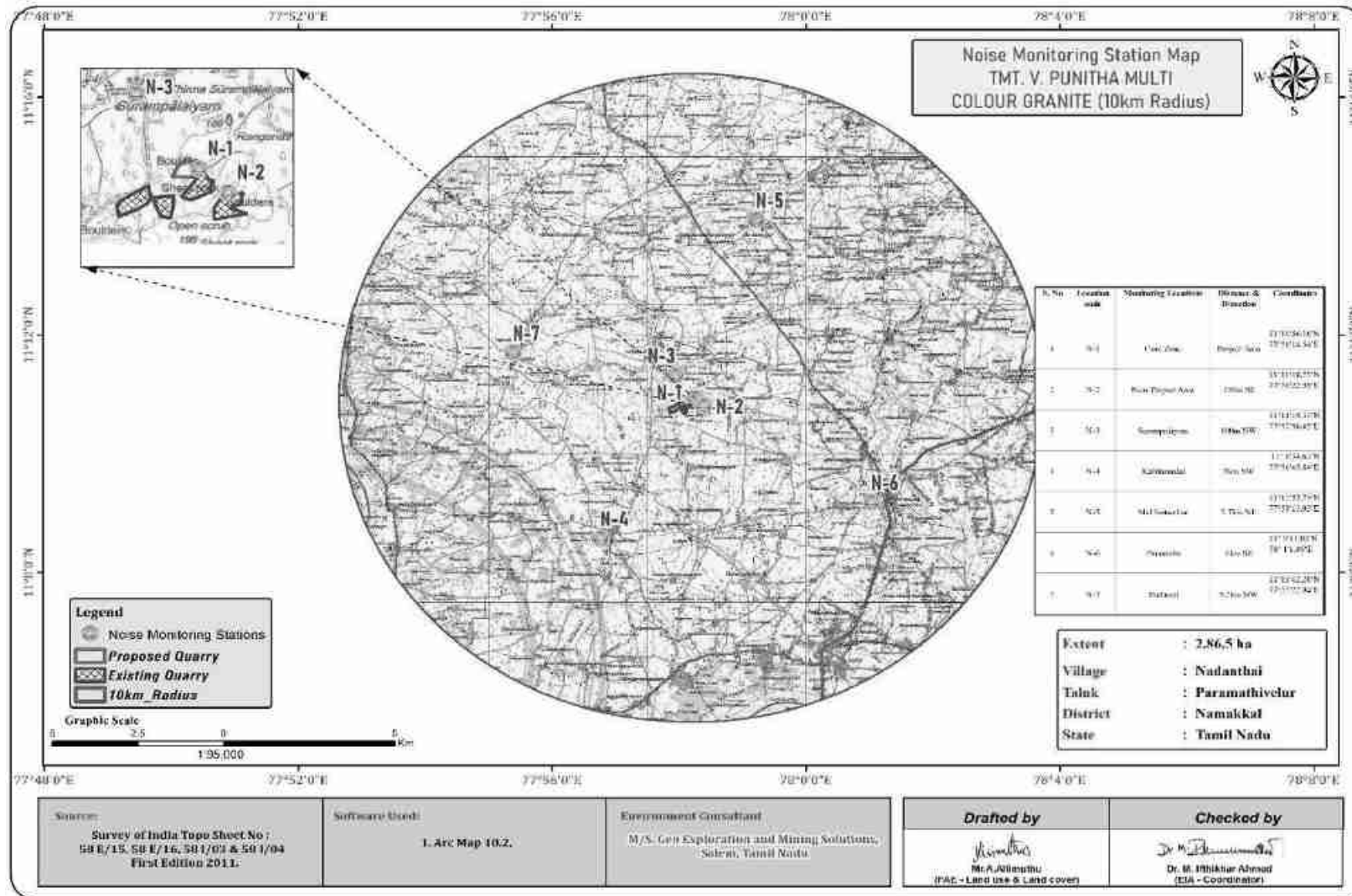
Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60 minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

$$Leq = 10 \log L / T \sum (10L_n/10)$$

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

Figure 3.20: Noise Monitoring Stations Around 10 Km Radius



3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level have been measured by a sound level meter (Model: HTC SL-1352) An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.6

Day time: 6:00 hours to 22.00 hours.

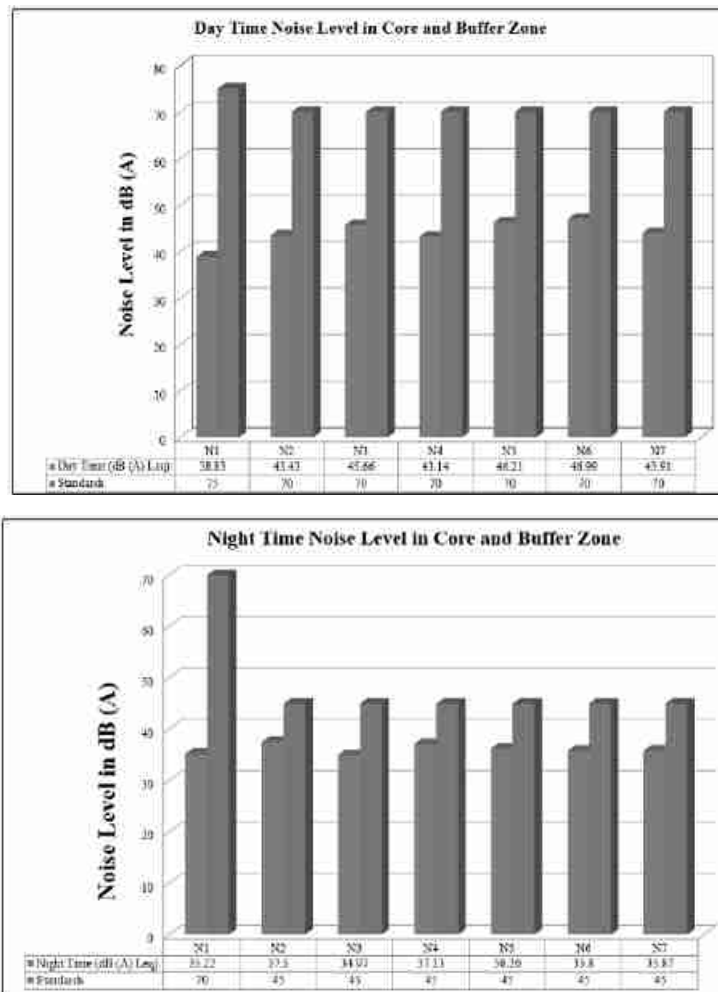
Night time: 22:00 hours to 6.00 hours.

Table 3.21: Ambient Noise Quality Result

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core Zone	38.83	35.22	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Near Project Area	43.43	37.50	Residential Day Time– 55 dB (A) Night Time- 45 dB (A)
3	Surampalayam	45.66	34.97	
4	Kabilarmalai	43.14	37.13	
5	Mel Sattambur	46.21	36.26	
6	Paramathi	46.99	35.80	
7	Thidumal	43.91	35.87	

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS

Figure 3.21: Day and Night Time Noise Levels In Core And Buffer



3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 38.83 (A) Leq and during night time were from 35.22 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 43.14– 46.99 dB (A) Leq and during night time were from 34.97 – 37.5 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 58.9 dB(A) Leq in Paramathi area and 30.4 dB(A) Leq in minimum Core area and Near project area 49.2 dB(A) in Near project area & 30.4 dB(A) in Paramathi Village at night time. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 Ecological Environment

3.5. Introduction

Ecology is a branch of science that deals with the relationship and interactions between organisms and their environment. An ecological survey of the study area was performed, particularly with reference to the listing of species and assessment of the existing baseline ecological conditions in the study area. The main objective of the biological study is to collect the baseline data regarding flora and fauna in the study area. Data has been collected through extensive surveys of the area with reference to flora and fauna. Information is also collected from different sources i.e., government departments such as the District Forest Office, Government of Tamil Nadu.

3.5.1. Scope of Work

The scope of work for this study includes the identification of ecologically sensitive receptors, based on a literature survey, field investigations, and their mitigation with conservation action plan. The study was carried out in the core as well as buffer zone of the proposed Multi-colour granite quarry of Tmt.V.Punitha (ML Area: 2.86.5 Ha). The study was carried out systematically and scientifically using primary and secondary data in order to bring out factual information on the ecological conditions of the mine site i.e. mine and 10 km radius area from the mine, i.e. Study Area.

The study involved the assessment of general habitat type, vegetation pattern, preparation of inventory of flora and fauna of terrestrial ecosystem within 10 km radius from the boundary of proposed mine. Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study also designed to suggest suitable mitigation measures if necessary for protection of wildlife habitats and conservation of REET species if any.

3.5.2. Ecology - Study Area

The core area extent of 2.86.5 Ha of Multi-colour granite quarry has an impact on the diversity of flora and fauna of surrounding area but present work was carried out on the detailed study of the impacts of Multi-colour granite quarry on ecology and biodiversity of core lease area with the proper mitigation and sustainable management plan. The mine lease applied area is almost plain topography whereas in buffer zone some places agricultural land is dominated. The following methods were applied during the baseline study of flora, fauna, and diversity assessment.

3.5.3. Objectives of Biological Studies

- a) To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measure, if required, for vulnerable biota.
- b) To assess the nature and distribution of vegetation Terrestrial in and around the mining activity.
- c) Detail of flora and fauna, Endemic, Rare, Endangered, and Threatened (RET Species) separately for core and buffer area based on such primary field survey and clearly indicating the Schedule of fauna present. In case of any schedule - I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department, and details furnished.

- d) The local flora was identified by their morphological observation, such as the size, age and shape of the leaf, flowers, fruits, and their bark features of the stem, and also documented their habitat viz. Trees, Shrubs, Herbs, Grasses, Climbers etc.
- e) After surveying the core and the buffer areas, a detailed floral inventory has been compiled. A list of all plants from the study area was prepared and their habitats were recorded.
- f) Selection of sampling locations was made with reference to topography, land use, vegetation pattern, wind pattern, etc. The observations were taken on natural vegetation, roadside plantations, and non-forest areas (agricultural fields, in plain areas, village wasteland, etc.) for quantitative representation of different species.
- g) Devise management & conservation measures for biodiversity.

3.5.4. Methodology of Sampling

1. Field survey was conducted by visual encounter survey for flora present within the 10 km radius study area of proposed mine.
2. After surveying the core and buffer areas, a detailed floral inventory has been compiled. List of all plants of the study area was prepared and their habitats were recorded.
3. Verification of Rare, Endangered and Threatened Flora species from IUCN Red Data Book.

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

In order to provide representative ecological status for the study area, the 10-km buffer zone has been divided into four quartiles for biodiversity sampling, i.e., NE (Quartile- 1), NW (Quartile-2) SW (Quartile-3) and SE (Quartile-4). Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (10x10-m), shrubs (5x5-m), and herbs (1x1-m) depending upon prevailing geographical conditions and bio- diversity aspects of study area.

3.5.4.1. Sampling

A stratified simple random sampling procedure was employed to obtain a sample from study area. The study area was further stratified in different land use/ecosystems.

3.5.4.2. Sampling Size

Keeping in mind both random sampling technique and covering all land use patterns for the study following sampling locations were chosen depending up on the area of the proposed site.

3.5.4.3. Timing of Study

The study was carried out during morning and evening hours, to cover the different activity phases for important species such as time resting, feeding, hunting, and daily movements.

3.5.4.4. Observations from Sampling

The various observations relating to flora and fauna species are discussed in detail below, in separate sections.

3.5.4.5. Equipment/ References

- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8x 20) to spot/identify species
- IUCN Red Data Book – <https://www.iucnredlist.org/species>

Ornithological/Entomological/Herpetological/Mammalian catalogues and pictorial descriptions from various authors and websites are followed for species identification.

3.5.5. Part I Field Sampling Techniques

3.5.5.1. Transect walk – Birds

Six no transect lines with varying length (100m-300m) and fixed width (2m) were laid which cuts through the core and buffer areas of proposed site. The transect surveys were conducted from 0700 to 1100Hrs and 1430 to 1730Hrs (Bibby et al. 2000). All avifauna found along these transects were recorded for analysing the data. Counts were conducted while there is no heavy rain, mist or strong wind.

3.5.5.2. Modified Pollard Walk – for Butterflies

The Modified Pollard Walk (Pollard 1977, 1993, Walpole 1999) using fixed width transect walk method were employed to investigate butterfly spatial distribution, diversity and abundance at the different survey sites.

3.5.5.3. Visual Encounter Survey (VES) - reptiles and amphibians

VES is a time-constrained sampling technique (Campbell and Christman, 1982; Corn and Bury, 1990). It needs a systematic search through an area or habitat for a prescribed time period (Campbell and Christman, 1982). The result of VES is measured against the time spent on search. VES technique is one of the simplest methods, and an appropriate technique for both inventory and monitoring Herpetofauna (Heyer et al. 1994).

3.5.5.4. Observational methods- Mammals

For the purpose of recording mammals, we used two different observational techniques: (1) direct observations, and (2) recording of occurrences like holes, markings, scats, hairs, and spines (Menon 2003). For identification confirmations, photographs with a scale reference were used, and locations were recorded using a portable GPS device. Indigenous knowledge particularly that of the locals, was occasionally employed to compile a preliminary list of species and/or aid in the recognition of indicators.

3.5.5.5. Multiple Stage Quadrat – Vegetation

A variety of habitat or vegetation structure variables were measured using the Multiple Stage Quadrat sampling protocol (Sykes and Horrill 1977). All of those areas were sampled, and the major corners were temporarily delineated with colored ribbons. Each site was identified in the field using a compass and clinometer, and the plot's latitude, longitude, and elevation were recorded using a handheld Global Positioning System (Garmin 12XL).

3.6. Flora

The quadrat sampling technique was used for sampling vegetation. Sampling quadrats of the regular shape of dimensions 10 × 10 m, 5 × 5 m, and 1 × 1 m, were nested within each other and were defined as the units for sampling the area and measuring the diversity of trees, Shrubs, and herbs respectively.

3.6.1. Flora Composition in the Core Zone

Taxonomically a total of 30 species belonging to 19 families have been recorded from the core zone mining lease area. The area exhibits slightly undulated terrain. Based on the habitat classification of the enumerated plants the majority of species were Herbs 16, followed by Trees 6, Shrubs 4, Grass 3, and Creeper 2. Details of flora with the scientific name were mentioned in Table No. 3.53. The result of the core zone of flora studies shows that Fabaceae and Poaceae, Asteraceae are the main dominating species in the study area mentioned in Table No.3.22. No species were found as threatened category.

Table No: 3.22. Flora in the Core zone of Nadanthai Village, Multi colour Granite quarry

SI. No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Mesquite	Mullu maram	Prosopis juliflora	Fabaceae
2.	Asian Palmyra palm	Panai maram	Borassus flabellifer	Arecaceae
3.	Pala indigo	Pala maram	Wrightia tinctoria	Apocynaceae
4.	Neem	Vembu	Azadirachta indica	Meliaceae
5.	Millettia pinnata	Pongam oiltree	Pongamia pinnata	Fabaceae
6.	Bitter Albizia	Arappu Tree	Albizia amara	Fabaceae
Shrubs				
1.	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
2.	Lantana	Unni chedi	Lantana camara	Verbenaceae
3.	Indian Jujube	Elantha pazham	Ziziphus mauritiana	Rhamnaceae
4.	Night shade plan	Sundaika	Solanum torvum	Solanaceae
Herbs				
1.	Common leucas	Thumbai	Leucas aspera	Lamiaceae
2.	Fish poison	Kolinchi	Tephrosia purpurea	Fabaceae
3.	Mexican mint	Karpuravalli	Coleus amboinicus	Lamiaceae
4.	Cleome viscosa	Nai kadugu	Celome viscosa	Capparidaceae
5.	Pignut	Nattapoochedi	Hyptis suaveolens	Lamiaceae
6.	Ban Tulsi	Milagai poondu	Croton sparsiflorus	Euphorbiaceae
7.	Asthma-plant	Amman pacharisi	Euphorbia hirta	Euphorbiaceae

8.	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
9.	Malabar catmint	Pei veratti	<i>Anisomeles malabarica</i>	Lamiaceae
10.	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae
11.	Aloe barbadensis	Katrazhai	<i>Aloe vera</i>	Asphodelaceae
12.	Coat buttons	Thatha poo	<i>Tridax procumbens</i>	Asteraceae
13.	Mountain knotgrass	Thengaipoo kirai	<i>Aerva lanata</i>	Amaranthaceae
14.	Arrowleaf sida	Jelly Leaf	<i>Sida rhombifolia</i>	Malvaceae
15.	Bindii	Nerunji mullu	<i>Tribulus terrestris</i>	Zygophyllaceae
16.	Prickly chaff flower	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae
Creeper /Climbers				
1.	Stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
2.	Stinking passionflower	Poonai puduku chedi	<i>Passiflora foetida</i>	Passifloraceae
Grass				
1.	Eragrostis	Pullu	<i>Eragrostis ferruginea</i>	Poaceae
2.	Great brome	Thodappam	<i>Bromus diandrus</i>	Poaceae

(Sources: Species observation in the field study)



a. *Aerva lanata*



b. *Calotropis gigantea*



c. *Cissus quadrangularis*



d. *Tridax procumbens*



e. *Achyranthes aspera*



f. *Sida rhombifolia*



g. *Azadirachta indica*



h. *Borassus flabellifer*



i. *Ziziphus mauritiana*

j. *Anisomeles malabarica*

Fig No: 3.33. Flora species observation in the Core zone area

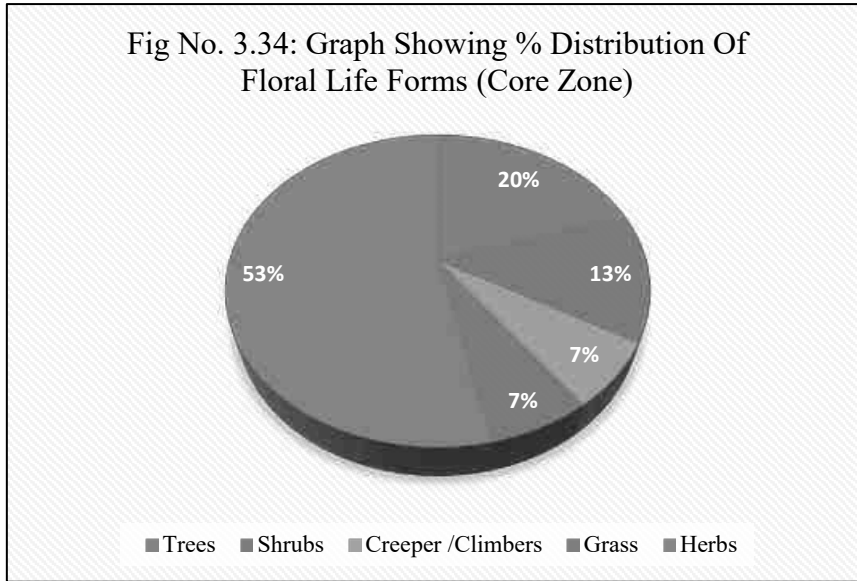


Table No: 3.23. Flora in Buffer Zone of Nadanthai Village, Multi colour Granite quarry

S.No.	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Mesquite	Mullu maram	Prosopis juliflora	Fabaceae
2.	Pala indigo	Pala maram	Wrightia tinctoria	Apocynaceae
3.	White Bark Acacia	Vela maram	Vachellia leucophloea	Fabaceae
4.	Wild Date Palm	Icham	Phoenix sylvestris	Arecaceae
5.	Blue gum	Thayala maram	Eucalyptus	Myrtaceae
6.	Indian ash tree	Odiya maram	Lannea coromandelica	Anacardiaceae
7.	Mango	Manga	Mangifera indica	Anacardiaceae
8.	Neem	Vembu	Azadirachta indica	Meliaceae
9.	Tamarind	Puliyamaram	Tamarindus indica	Legumes
10.	Jackfruit	Palamaram	Artocarpus heterophyllus	Moraceae
11.	Monkey pod tree	Thungumoonchi	Samanea saman	Fabaceae
12.	Coral Tree	Kalyana murungai	Erythrina variegata	Papilionoide
13.	Asian Palmyra palm	Panai maram	Borassus flabellifer	Arecaceae
14.	Indian ash tree	Odiya maram	Lannea coromandelica	Anacardiaceae
15.	Custard apple	Seethapazham	Annona reticulata	Annonaceae
16.	Banana tree	Vazhaimaram	Musa acuminata	Musaceae
17.	Malayan Cherry	Ten Pazham	Muntingia calabura	Muntingiaceae
18.	Lemon	Ezhumuchaipalam	Citrus lemon	Rutaceae
19.	Bidi leaf tree	Thiruvathi Plant	Bauhinia racemosa	Fabaceae
20.	Millettia pinnata	Pongam oiltree	Pongamia pinnata	Fabaceae
21.	Rusty Acacia	Parambai	Acacia ferruginea	Mimosaceae
22.	Indian almond	Padam maram	Terminalia catappa	Combretaceae
23.	Curry leaves	Karuveppali	Murraya koenigii	Rutaceae
24.	Yellow flame tree	Perunkondrai	Peltophorum pterocarpum	Fabaceae
25.	Jamun Fruit Plant	Naval maram	Syzygium cumini	Myrtaceae
26.	Flamboyant	Cemmayir-konrai	Delonix regia	Fabaceae
27.	Chinaberry	Malai vembu	Melia azedarach	Meliaceae
28.	Peepal	Arasanmaram	Ficus religiosa	Moraceae
29.	Yellow Flame	Iyalvagai	Peltophorumpterocarpum	Fabaceae
30.	Teak	Thekku	Tectona grandis	Verbenaceae
31.	Indian gooseberry	Nelli	Emblica officinalis	Phyllanthaceae
32.	Henna	Marudaani	Lawsonia inermis	Lythraceae

33.	Black Siris	Karuvagai	Albizia odoratissima	Mimosaceae
34.	Portia tree	Poovarasam	Thespesia populnea	Malvaceae
35.	Pomegranate	Mathulai	Punica granatum	Lythraceae
36.	Banyan tree	Alamaram	Ficus benghalensis	Moraceae
37.	Peepal	Asoka maram	Ficus religiosa	legume
38.	Chinese chaste tree	Nochi	Vitex negundo	Verbenaceae
39.	Ceylon satinwood	Porasu	Chloroxylon swietenia	Rutaceae
40.	Indian Jujube	Ilanthai	Ziziphus jujuba	Rhamnaceae
41.	Madras thorn	Kudukapuli	Pithecellobium dulce	Fabaceae
42.	Coconut	Thennai maram	Cocos nucifera	Arecaceae
43.	Guava	Koyya	Psidium guajava	Myrtaceae
44.	Notched Leaf Soapnut	Poovankottai	Sapindus emarginata	Sapindaceae
45.	Butter Tree	Kattu illupai	Madhuca indica	Sapotaceae
46.	Conkerberry	Sirukilaa	Carissa spinarum	Apocynaceae
47.	Bitter Albizia	Arappu Tree	Albizia amara	Fabaceae
48.	River tamarind	Savundal maram	leucaena leucocephala	Fabaceae
49.	Drumstick tree	Murunga maram	Moringa oleifera	Moringaceae
50.	Sacred Tree	Porasu	Butea monosperma	Fabaceae
51.	Mesquite	Mullu maram	Prosopis juliflora	Fabaceae
52.	Papaya	Pappali maram	Carica papaya L	Caricaceae
53.	Bamboo	Moonghil	Bambusa bambo	Poaceae
Shrubs				
1.	Tanner's cassia	Avaram	Senna auriculata	Fabaceae
2.	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
3.	Lantana	Unni chedi	Lantana camara	Verbenaceae
4.	Triangular spruge	Chaturakalli	Euphorbia antiquorum	Euphorbiaceae
5.	Night shade plan	Sundaika	Solanum torvum	Solanaceae
6.	Indian Jujube	Elantha pazham	Ziziphus mauritiana	Rhamnaceae
7.	Broom creeper	Kattukodi	Cocculus hirsutus	Menispermaceae
8.	Solanum pubescens	Malaisundai	Solanum pubescens Wild	Solanaceae
9.	Orange Jasmine	Mock Orange	Murraya paniculata	Rutaceae
10.	Asian Bush beech	Sirukumalaan	Gmelina asiatica	Verbenaceae
11.	Wild jasmine	Kattumalli	Jasminum trichotomum	Oleaceae
12.	Rough cocklebur	Marul-umattai	Xanthium strumarium	Asteraceae
13.	Rough cocklebur	Marlumuttu	Xanthium indicum	Asteraceae
14.	Mexican prickly poppy	Bramathndu	Argemone mexicana	Papaveraceae

15.	Puriging nut	Kattamanakku	Jatropha curcas	Euphorbiaceae
16.	Indian Oleander	Arali	Nerium indicum	Apocynaceae
17.	Clustered Morning Glory	Onan kodi	Ipomoea staphylina	Convolvulaceae
18.	Shoe flower	Chemparuthi	Hibiscu rosa-sinensis	Malvaceae
19.	Dwarf Heliotrope	Theelkodu	Heliotropium supinum	Boraginaceae
20.	Jackal jujube	Suraimullu	Ziziphus oenoplia	Rhamnaceae
21.	Prickly pear	Nagathali	Opuntia dillenii	Cactaceae
22.	Triangular spruge	Chaturakalli	Euphorbia antiquorum	Euphorbiaceae
23.	Touch-me-not	Thottalchinungi	Mimosa pudica	Mimosaceae
24.	Chinese chaste tree	Nalla nochi	Vitex negundo L	Verbinaceae
25.	Thorn apple	Oomathai	Datura stramonium	Solanaceae
26.	Malabar catmint	Pei veratti	Anisomeles malabarica	Lamiaceae
27.	Indian mallow	Thuthi	Abutilon indicum	Meliaceae
28.	Bush Morning Glory	Neiveli Kattamani	Ipomoea carnea	Convolvulaceae
29.	Carray Cheddle	Kaarai	Canthiumparviflorum	Rubiaceae
30.	Castor oil plant	Amanakku	Ricinus communis	Euphorbiaceae
31.	Flame of the Woods	Idlipoo	Xoracoc cinea	Rubiaceae
Herbs				
1.	Eggplant	Kathrikkai	Solanum melongena	Solanaceae
2.	Common leucas	Thumbai	Leucas aspera	Lamiaceae
3.	Aloe barbadensis	Katrazhai	Aloe vera	Asphodelaceae
4.	Bara Gokhru	Yanainerunjil	Pedaliium murex	Pedaliaceae
5.	Commelina benghalensis	Kanavazha	Commelina benghalensis	Commelinaceae
6.	Coat buttons	Thatha poo	Tridax procumbens	Asteraceae
7.	Indian doab	Arugampul	Cynodon dactylon	Poaceae
8.	Chilli	Milakai	Capsicum annum	Solanaceae
9.	Mexican prickly poppy	Kudiyotti	Argemone mexicana	Papaveraceae
10.	Indian Copperleaf	Kuppaimeni	Acalypha indica	Euphorbiaceae
11.	Asthma-plant	Amman pacharisi	Euphorbia hirta	Euphorbiaceae
12.	Riceweeds	Seruppadai	Coldenia procumbens	Boraginaceae
13.	Goatweed	Kallurukki	Scoparia dulcis	Plantaginaceae
14.	Tomato	Thakkali	Solanum lycopersicum	Solanaceae
15.	Painted euphorbia	Pal perukki	Euphorbia heterophyla	Euphorbiaceae
16.	White dammar	Mookutipoondu	Vicoa indica	Asteraceae
17.	Benghal dayflower	Kanavachai	Commelina benghalensis	Commelinaceae
18.	Mountain knotgrass	Sirupulai	Aerva lanata	Amaranthaceae

19.	White head	Vellarugu	Enicostemma axillare	Gentianaceae
20.	Cleome viscosa	Nai kadugu	Celome viscosa	Capparidaceae
21.	Bindii	Nerunji mullu	Tribulus terrestris	Zygophyllaceae
22.	Fish poison	Kollukaivelai	Tephrosia purpureae	Papilionaceae
23.	Field beans	Avarai	Hyacinth Beans	Fabaceae
24.	Septicweed	Kattuttakarai	Senna occidentalis	Fabaceae
25.	Prickly chaff flower	Nayuruv	Achyranthes aspera	Amaranthaceae
26.	Rough cocklebur	Marul-umattai	Xanthium strumarium	Asteraceae
27.	Monarch redstem	Kalluruvi	Ammannia baccifera	Lythraceae
28.	Spiny amaranth	Mullu keerai	Amaranthus spinosus	Amaranthaceae
29.	Holy basil	Thulasi	Ocimum tenuiflorum	Lamiaceae
30.	Green amaranth	Kuppaikerai	Amaranthus viridis	Amaranthaceae
31.	Arrowleaf sida	Jelly Leaf	Sida rhombifolia	Malvaceae
32.	Ban Tulsi	Melakai poondu	Croton bonplandianus	Euphorbiaceae
33.	Gale of the wind	Keelaneeli	Phyllanthus niruri	Phyllanthaceae
34.	Europeanblack nightshade	Manathakkali	Solanumnigrum	Solanaceae
35.	Indian Mercury	Kuppamani	Acalypha indica	Euphorbiaceae
36.	Ladies' fingers	Vendakkai	Abelmoschus esculentus	Malvaceae
37.	Majjigeberru gida	Purpannai	Aerva monsoniae	Amaranthaceae
38.	Vigna mungo	Ulunthu	Vigna mungo	Fabaceae
39.	Water hyssop	Nilappachai	Bacopa monnieri	Scrophulariaceae
40.	Century plant	Agave	Agave america	Agavaceae
41.	Sand Herbage	Manal keerai	Gisekia pharnaceoides	Gisekiaceae
42.	Bright eyes	Nithiyakalyani	Catharanthus roseus	Apocynaceae
43.	Chicken weed	Sirupasalai	Portulaca quadrifida	Portulacaceae
44.	Carrot grass	Partiniyam	Parthenium hysterophorus	Asteraceae
45.	Indian mint	Karpura valli	Coleus amboinicus	Lamiaceae
Climber/Creepers				
1.	Stemmed vine	Perandai	Cissus quadrangularis	Vitaceae
2.	Ivy gourd	Kovai	Coccinia grandis	Cucurbitaceae
3.	Balloon plant	Mudakrttan	Cardiospermum halicacabum	Sapindaceae
4.	Bitter apple	Peikkumatti	Citrullus colocynthis	Cucurbitaceae
5.	Butterfly pea	Sangu poo	Clitoria ternatea	Fabaceae
6.	Wild jasmine	Malli	Jasminum augustifolium	Oleaceae
7.	Red Pea Eggplant	Vellai tuduvalai	Solanum trilobatum	Solanaceae
8.	Betel	Vetrilai	Piper betle	Piperaceae

9.	Pointed gourd	Kovakkai	Trichosanthes dioica	Cucurbitaceae
10.	Nut grass	Korai	Cyperus rotandus	Poaceae
11.	Cucumis maderaspatanus	Musumusukkai	Mukia maderaspatana	Cucurbitaceae
12.	Wild bitter	Pavarkai	Momordica charantia	Cucurbitaceae
13.	Bottle Guard	Sorakkai	Lagenaria siceraria	Cucurbitaceae
14.	White pumpkin	Poosanaikkaai	Cucurbitaceae	Cucurbitaceae
15.	Rosary Pea	Gundumani	Abrus precatorius	Fabaceae
Grass				
1.	Eragrostis	Pullu	Eragrostis ferruginea	Poaceae
2.	Windmill grass	Chevvarakupul	Chloris barbata	Amaranthaceae
3.	Great brome	Thodappam	Bromus diandrus	Poaceae
4.	Finger grass	Kuruthupillu	Chloris dolichostachya	Poaceae
5.	Umbrella-sedge	Vattakorai	Cyperus difformis	Cyperaceae
6.	Marvel grass	Marvel grass	Dichanthium annulatum	Poaceae
7.	Apluda	Kattu kanchippul	Apluda mutica	Poaceae
8.	Nut grass	Korai	Cyperus rotandus	Poaceae

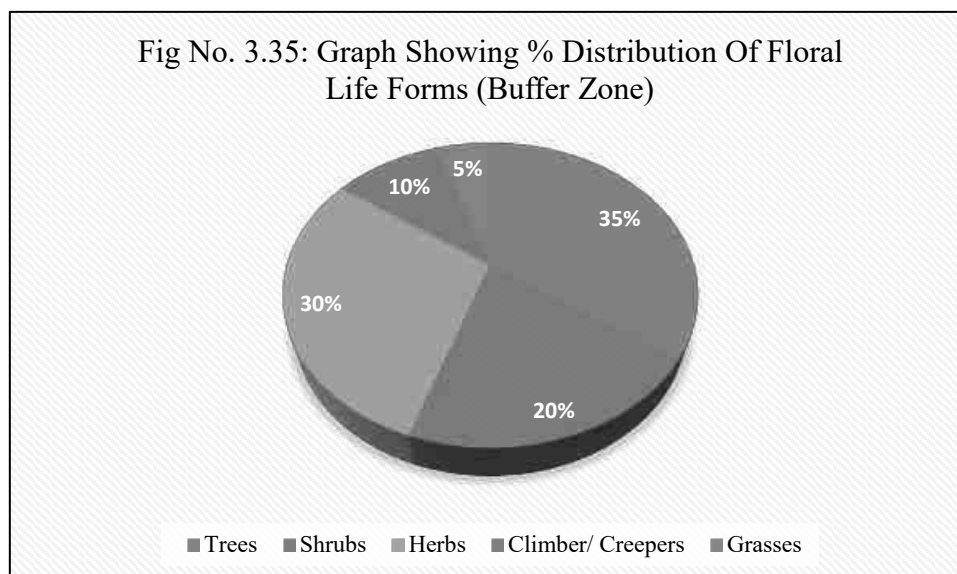
(Sources: Species observation in the field study)

3.7. Flora Composition in the Buffer Zone

Similar habitats may be found in the buffer area as well, although there is a wider variety of plants there than in the core zone area. The buffer zone has some forests located away from the proposed project site and there are 152 species in the buffer zone study area in total, based on records. The floral (152) varieties among them Trees 53, herbs 45, shrubs 31, Climbers/Creepers 15, and Grasses 8 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Cucurbitaceae, Euphorbiaceae is the main dominating species in the study area mentioned in Table No.3.54. There are no impacts due to this mining activity. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people (Secondary data). The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.24 and their % distribution is shown in Figure 3.35.

Table 3.24: Number of floral life forms in the Study Area

S. No	Plant Life Form	Number of Species
1	Trees	53
2	Shrubs	31
3	Herbs	45
4	Climber/ Creepers	15
6	Grass	8
Total No. of Species		152



3.7.1. The vegetation in the RF / PF areas, ecologically sensitive areas etc.

There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the mine lease area. There are no impacts due to this mining activity. There are no protected forests within the project area, Hence submission of clearance from the National Board of Wildlife does not arise. No Wildlife Sanctuary in the study area around 10km radius. In addition, No Biosphere Reserves, Wildlife corridors, or, Tiger / Elephant reserves within 10 km of the project area. No protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner.

There are no protected or ecologically sensitive areas such as National parks or Important Bird Areas (IBAs), or Wetlands or migratory routes of fauna or water bodies or human settlements within the proposed mine lease area. There are no Biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thus, the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive.

Thus, no forest land is involved in any manner. There are no impacts due to this mining activity. There are neither forests nor forest dwellers nor 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.

3.8. Fauna

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians, and Butterflies. All the listed species were compared with Red Data Book and Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET) and endemic species present in the core area.

3.8.1. Fauna Composition in the Core Zone

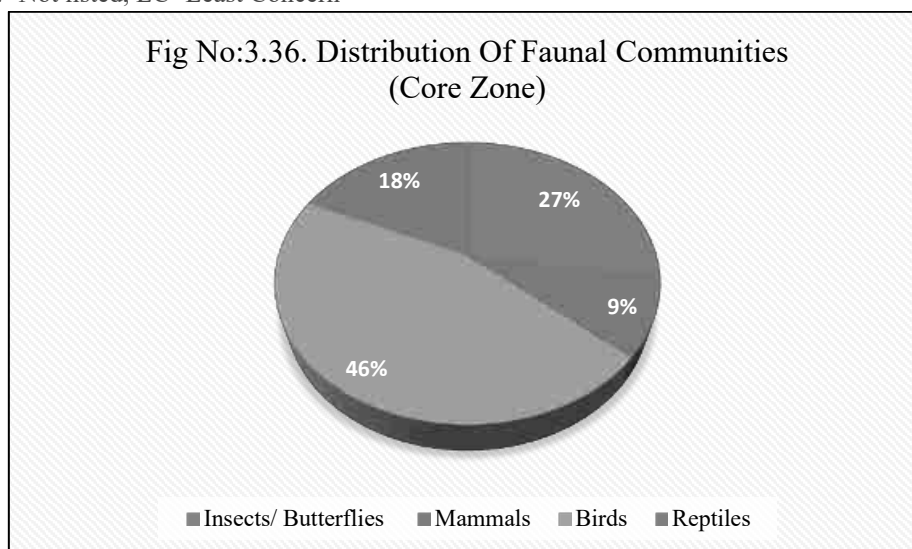
A total of 22 varieties of species were observed in the Core zone of Nadanthai Village, Multi colour granite quarry (Table No.3.56) among them numbers of Insects 6, Reptiles 4, Mammals 2, and Avian 10. A total of 23 species have been recorded from the core mining lease area. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and 15 species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 10 species of bird were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. Details of fauna in the core zone with the scientific name were mentioned in Table No. 3.25

Table No: 3.25. Fauna in the Core zone of Nadanthai Village, Multi colour granite quarry, Namakkal District, Tamil Nadu

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
Insects/Butterflies			
1.	Red-veined darter	Sympetrum fonscolombii	NL
2.	Common Tiger	Danaus genutia	Schedule IV
3.	Grasshopper	Hieroglyphus sp	NL
4.	Striped tiger	Danaus plexippus	Schedule IV
5.	Termite	Hamitermes silvestri	NE
6.	Grey pansy	Junonia atlites	Schedule IV
Reptiles			
1.	Rat snake	Ptyas mucosa	Sch II (Part II)
2.	Common skink	Mabuya carinatus	NL
3.	Garden lizard	Calotes versicolor	NL
4.	Green vine snake	Ahaetulla nasuta	Schedule IV
Mammals			
1.	Indian Field Mouse	Mus booduga	Schedule IV
2.	Common rat	Rattus rattus	Schedule IV
Aves			

1.	Koel	Eudynamys	Schedule IV
2.	House crow	Corvus splendens	Schedule V
3.	Black drongo	Dicrurus macrocercus	Schedule IV
4.	Common myna	Acridotheres tristis	Schedule IV
5.	Common quail	Coturnix coturnix	Schedule IV
6.	Sunbird	Cinnyris asiaticus	Schedule IV
7.	Shikra	Lanius excubitor	Schedule IV
8.	Rose-ringed parakeet	Psittacula krameri	Schedule IV
9.	Indian Robin	Saxicoloides fulicata	Schedule IV
10.	Cattle egret	Bubulcus ibis	Schedule IV

*NL- Not listed, LC- Least Concern



3.8.2. Fauna Composition in the Buffer Zone

Taxonomically a total of 67 species have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 39 and the list of bird species recorded during the field survey and literature from the study area is given in Table 3.57, followed by Insects 24, Reptiles 10, Mammals 5 (*directly sighted animals & Secondary data), and amphibians 6. 5 species belongs to schedule-II, 2 species belongs to schedule-III, 1 species belongs to schedule-V and rest of the species belongs to schedule-IV of Wildlife protection Act, 1972. A total of 39 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species. It is apparent from the list that none of the species either spotted or reported is included in Schedule I of the Wildlife Protection Act. Similarly, none of them comes under the REET category.

Dominant species are mostly birds and insects, and six amphibian was observed during the extensive field visit is mentioned in Table No 3.57. The result of core & Buffer zone of fauna studies shows that Nymphalidae, Colubridae, and Scincidae are the main dominating species in the study area; it is mentioned in Table No.3.57. There is no schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No: 3.26. Faunal Diversity in Buffer Zone of Nadanthai Village, Multi colour Granite quarry, Namakkal District, Tamil Nadu.

SI. No	Common Name/English Name	Scientific Name	Schedule list wildlife Protection act 1972
Insects/Butterflies			
1.	Chocolate pansy	Junonia iphita	Schedule IV
2.	Indian honey bee	Apis cerana	Schedule IV
3.	Common Tiger	Danaus genutia	Schedule IV
4.	Crimson rose	Atrophaneura hector	Schedule IV

5.	Common Pierrot	Castalius rosimon	NL
6.	Plain Tiger	Danaus chrysippus	Schedule IV
7.	Red Tip	Colotis danae	Schedule IV
8.	Common picture wing	Rhyothemis variegata	NE
9.	Common emigrant	Catopsilia pomona	Schedule IV
10.	Common grass yellow	Eurema hecabe	Schedule IV
11.	Blue pansy	Junonia orithya	Schedule IV
12.	Danaid Eggfly	Hypolimnasmisippus	Schedule IV
13.	Lemon Pansy	Junonialemonias	Schedule IV
14.	Mottled Emigrant	Catopsilia pyranthe	Schedule IV
15.	Common Mormon	Papiliopolytespolytes	Schedule IV
16.	Grasshopper	Hieroglyphus sp	NL
17.	Jewelled grass blue	Freyeria putli	Schedule IV
18.	Red-veined darter	Sympetrum fonscolombii	NL
19.	Tawny coster	Danaus chrysippus	Schedule IV
20.	Dragonfly	Ceratogomphus pictus	Schedule IV
21.	Common Indian crow	Euploea core	Schedule IV
22.	Common caster	Ariadne merione	Schedule IV
23.	Lesser grass blue	Zizina Otis indica	Schedule IV
24.	Striped tiger	Danaus plexippus	Schedule IV
Reptiles			
1.	Rat snake	Ptyas mucosa	Sch II (Part II)
2.	Fresh water snake	Nerodia piscator	Sch III (Part II)
3.	Fan-Throated Lizard	Sitanaponticeriana	NL
4.	Indian wall lizard	Hemidactylus flaviviridis	Schedule IV
5.	Fresh water tortoise	Groemyda bijuga	Schedule IV
6.	Green vine snake	Ahaetulla nasuta	Schedule III
7.	Indian cobra	Naja naja	Sch II (Part II)
8.	Common krait	Bungarus caeruleus	Schedule IV
9.	Striped basilisk	Basiliscus vittatus	Schedule IV
10.	Garden lizard	Calotes versicolor	NL
11.	Russell's viper	Vipera russelli	Sch II (Part II)
Mammals			
1	Indian palm squirrel	Funambulus palmarum	Schedule IV
2	Asian Small Mongoose	Herpestes javanicus	Schedule (Part II)
3	Indian Field Mouse	Mus booduga	Schedule IV
4	Brown rat	Rattus norwegicus	Schedule IV
5	Indian hare	Lepus nigricollis	Schedule (Part II)
Aves			
1.	Common Babbler	Turdoides caudata	Schedule IV
2.	House crow	Corvus splendens	Schedule V
3.	Rain Quail	Coturnix coromandelica	Schedule IV
4.	Oriental Turtle-Dove	Streptopelia orientalis	Schedule IV
5.	House sparrow	Passer domesticus	Schedule IV
6.	Indian Silver Bill	Lonchura Malabarica	Schedule IV
7.	Indian robin	Saxicoloides fulicatus	Schedule IV
8.	Rose Ringed Parakeet	Psittacula krameri	Schedule IV
9.	Small Bee Eater	Merops orientalis	Schedule IV
10.	Asian Koel	Eudynamys	Schedule IV
11.	Barn Swallow	Hirundo rustica	Schedule IV

12.	Purple Rumped Sunbird	<i>Nectarinia zeylonica</i>	NL
13.	Blue Rock Pigeon	<i>Columba livia</i>	Schedule IV
14.	Common myna	<i>Acridotheres tristis</i>	Schedule IV
15.	Jungle babbler	<i>Turdoides striata</i>	Schedule IV
16.	Baya Weaver	<i>Ploceus philippinus</i>	Schedule IV
17.	Little Cormorant	<i>Microcarbo niger</i>	Schedule IV
18.	Pied Cuckoo	<i>Clamator Jacobins'</i>	Schedule IV
19.	Purple sunbird	<i>Cinnyris asiaticus</i>	Schedule IV
20.	Night Heron	<i>Nycticorax nycticorax</i>	Schedule IV
21.	House Swift	<i>Apus affinis</i>	Schedule IV
22.	Indian Cuckoo	<i>Cuculus micropterus</i>	Schedule IV
23.	Cattle egret	<i>Bubulcus ibis</i>	Schedule IV
24.	Alexandrine Parakeet	<i>Psittacula eupatria</i>	Schedule IV
25.	White-breasted Waterhen	<i>Amauornis phoenicurus</i>	Schedule IV
26.	Spotted Dove	<i>Streptopelia chinesis</i>	Schedule IV
27.	Tickell's Flowerpecker	<i>Dicaeum erythrorhynchus</i>	Schedule IV
28.	Red- Vented Bulbul	<i>Pycnonotus cafer</i>	Schedule IV
29.	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	Schedule IV
30.	White Throated Kingfisher	<i>Halcyon smyrnensis</i>	Schedule IV
31.	Indian Pond Heron	<i>Ardeola grayii</i>	Schedule IV
32.	Black drongo	<i>Dicrurus macrocercus</i>	Schedule IV
33.	White Headed Babbler	<i>Turdoides affinis</i>	Schedule IV
34.	Weaver bird	<i>Ploceus philippines</i>	Schedule IV
35.	Two-tailed Sparrow	<i>Dicrurus macrocercus</i>	Schedule IV
36.	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Schedule IV
37.	Blue-Tailed Bee Eater	<i>Merops philippinus</i>	Schedule IV
38.	Indian Roller	<i>Coracias benghalensis</i>	Schedule IV
39.	Jungle Bush-Quail	<i>Perdica asiatica</i>	Schedule IV
Amphibians			
1.	Indian Burrowing frog	<i>Sphaerotheca breviceps</i>	Schedule IV
2.	Ornate Narrow-mouthed Frog	<i>Microhyla ornata</i>	Schedule IV
3.	Indian Skipper Frog	<i>Euphlyctis cyanophlyctis</i>	Schedule IV
4.	Paddyfield Cricket Frog	<i>Limnonectes limnocharis</i>	Schedule IV
5.	Indian Toad	<i>Bufo melanostictus</i>	Schedule IV
6.	Indian Pond Frog	<i>Euphlyctis hexadactylus</i>	Schedule IV

Sources:

Nair.N.C and A.N. Henry, Flora of Tamil Nadu 1983, Series 1, Botanical Survey of India, Southern Circle. (Flora)

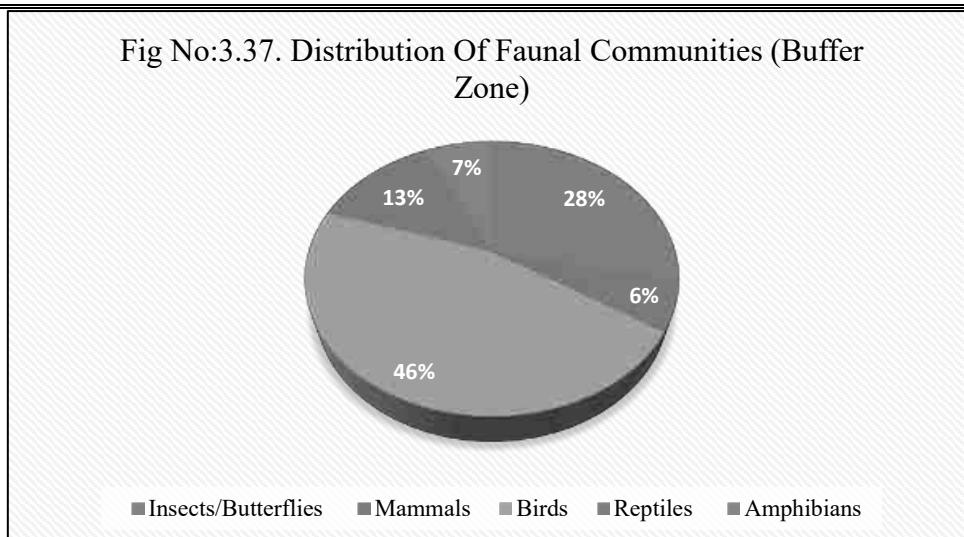
<https://avibase.bsc-eoc.org/checklist.jsp?region=INsetnm> (Birds).

Ali, S. (2002). The Book of Indian Birds (13th revised edition). Oxford University Press, New Delhi. 326pp.

<https://ebird.org/region/IN-TN-NM> (Birds).

<https://www.inaturalist.org/places/namakkal> (Butterfly).

<https://www.inaturalist.org/places/namakkal#page=3> (Flora and Fauna).



The study area is marked with moderate population of flora and fauna. With reference to the Wildlife Protection Act 1972 total number of wildlife tabulated in this study can be characterized as given in the Table 3.58.

Table No: 3.27. Characterization of Fauna in the Study Area (As Per W.P Act, 1972)

S.No	Schedule of Wildlife Protection Act 1972	No. of species	Remark
1.	Schedule I	0	-
2.	Schedule II	5	-
3.	Schedule III	2	-
4.	Schedule IV	71	-
5.	Schedule V	1	-
6.	Schedule VI	0	-

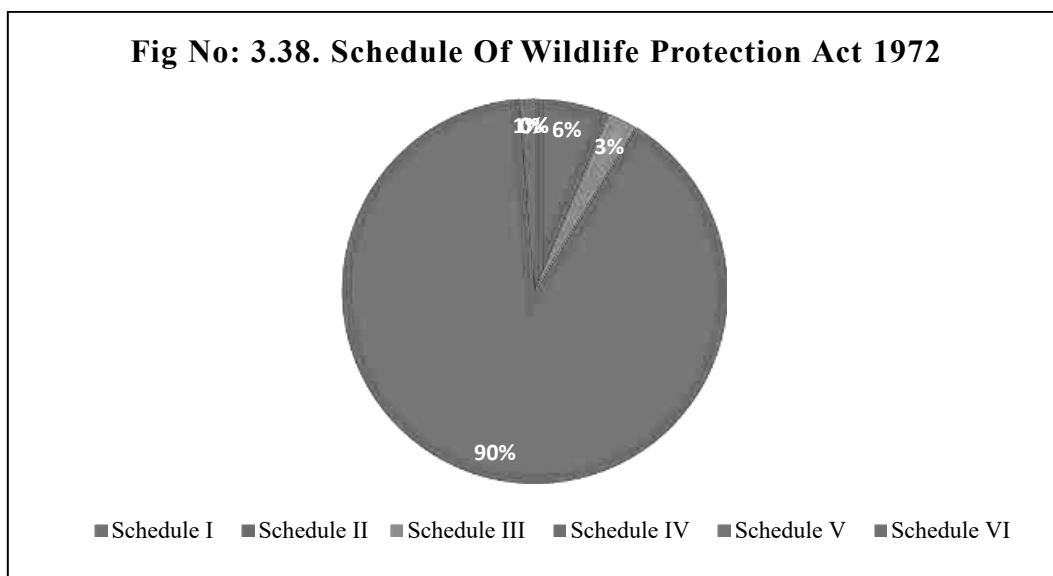


Table 3.28: Description of Flora & Fauna

S.No	Type of Species	Name	Local Name
Flora			
1.	Endangered species	None	None
2.	Threatened species	None	None

3.	Near Threatened species	None	None
4.	Vulnerable species	None	None
Fauna			
5.	Endangered species	None	None
6.	Threatened species	None	None
7.	Near Threatened species	None	None
8.	Vulnerable species	None	None
9.	Migratory Corridors & Flight Paths	No corridors & flight paths	-
10.	Breeding & Spawning grounds	None	-

A comprehensive Central Legislation namely Wild Life (Protection) Act was enforced in 1972 to provide protection to wild animals. Schedule-I of this act contains the list of rare and endangered species, which are completely protected throughout the country. The list of animals and their conservation status as per Wild Life Act (1972) presented in Table 3.58 are the species recorded/reported from the study area, out of which 5 species belongs to schedule-II, 2 species belongs to schedule-III, 1 species belongs to schedule-V and rest of the species belongs to schedule-IV of Wildlife protection Act, 1972.

3.9. Aquatic Ecology

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Multi-Coloured Granite Quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. Kaveri River is located about 9.5km on the South side. Aquatic weeds are found to be growing everywhere in 10 km radius area, in every water bog, pond, etc. Typha angustata can be found growing all along the drains of villages, small water-logged depressions, and agricultural fields lacking water but containing enough moisture to support its growth. And where water is present, Eichhornia crassipes has taken its roots and covers the entire water surface by its sprawl and invasion.

3.9.1. Objectives of Aquatic Studies

- Generating data through actual field collection in these locations over the study period.
- Impacts on aquatic fauna/flora
- Consulted with locals to obtain knowledge about aquatic flora and animals.

3.9.2. Macrophytes

The macrophytes observed within the study area are tabulated in Table 3.29.

Table No.3.29. Description of Macrophytes

S.No	Scientific name	Common Name	IUCN Red List of Threatened Species
1.	Cyperus exaltatus	Tall Flat Sedge	LC
2.	Carex cruciata	Cross Grass	NA
3.	Aponogetonmatans	Floating laceplant	NA
4.	Hydrilla verticillata	Waterhymes	LC
5.	Eichornia crassipe	Water hyacinth	NA
6.	Chrysopogon aciculatus	Golden false beard grass	NA
7.	Marsilea quadrifolia	Water clover	LC

3.9.3. Fishes

Fish is commonly found in all types of natural water bodies and very common source of food in Easterner South India. The local fishermen were enquired and also the secondary resources were reviewed to collect information on the fishes found in the study area. Few common species are; Catla (*Catla catla*), Tank goby (*Glossogobius giuris*), Greenstripe barb (*Puntius vittatus*), Roho (*Labeo rohita*) and Pool barb (*Puntius sophore*) etc., Species of fish reported in the study area are given in table 3.30.

Table 3.30. Based on Actual Sighting, based on inputs from locals and Perused from Secondary Data

S.No	Scientific name	Common name	Family
1.	Glossogobius giuris	Tank goby	Gobiidae
2.	Labeo rohita	Rohu	Cyprinidae
3.	Siluriformes	Catfish	Diplomystidae
4.	Puntius vittatus	Greenstripe barb	Cyprininae
5.	Puntius sophore	Pool barb	Cyprinidae
6.	Catla Catla	Catla	Cyprinidae

3.10. Findings/Results

The assessment was carried out during the Post monsoon season. The inspection day was quite all right with respectable weather. The details of the flora and fauna observed are given below.

S.No	Ecological sensitive habitat	Direction and Distance from the project site
1.	National Parks/ Wildlife Sanctuary/ Biosphere reserves/ Elephant Reserve/ Any Other Reserve	Nil
2.	Reserved Forests	Nil
3.	Wildlife Corridors & Routes	Nil
4.	Wetlands / Water bodies	Nil
5.	Ramsar Site	Nil
6.	Important Bird Habitats	Nil
7.	Breeding/nesting areas of endangered species	Not present
8.	Mangroves	None

There are no critically endangered, endangered, vulnerable, and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET species. There are no ecologically sensitive areas or protected areas within the 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

3.11. Conclusion

The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types, and land cover, distances from natural habitats, vegetation/forest types, and sensitive ecological habitats such as Wetlands sites, Important Bird areas, migration corridors of important wildlife etc. Such baseline information provides better understanding of the situation and overall ecological importance of the area. This baseline information viewed against proposed project activities help in predicting their impacts on the wildlife and their habitats in the region. Data collected and information gathered from secondary literature on flora, fauna, protected area, natural habitats, and wildlife species etc., and consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.8 Socio Economic Environment

There is no habitation/ village within the radius of 1km from the project area. Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

It is expected that the Socio-Economic Status of the area will slightly improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

3.8.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area of the proposed mining project
- To assess the impact of the project on Quality of life of the people in the study area
- To recommend Community Development measures needs to be taken up in the study Area.

3.8.2 Scope of Work

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

3.8.3 Administrative Setup of Namakkal District

Namakkal district includes 2 Revenue Divisions, 8 Taluks, 7 Town Panchayats. There are 391 Revenue Villages, 322 Village panchayats in this district.

In 2011, Namakkal had population of 1,726,601 of which male and female were 869,280 and 857,321 respectively.

3.8.4 Study area

Nadandai is a large village located in Paramathi-Velur Taluka of Namakkal district, The total geographical area of village is 1191.25 hectares. Nadandai has a total population of 2,838 peoples, out of which male population is 1,424 while female population is 1,414.

In 2011, literacy rate of Nadandai village was 65.51 % compared to 80.09 % of Tamil Nadu. In Nadandai Male literacy stands at 78.35 % while female literacy rate was 52.64 %.

Table 3.31: Population Characteristics -Nadandai Village

Particulars	Total	Male	Female
Total No. of Houses	882	-	-
Population	2,838	1,424	1,414
Child (0-6)	226	117	109
Schedule Caste	644	331	313
Schedule Tribe	0	0	0
Literacy	65.51 %	78.35 %	52.64 %
Total Workers	1,616	884	732
Main Worker	1,533	-	-

Particulars	Total	Male	Female
Marginal Worker	83	36	47

Source: <https://www.census2011.co.in/data/village/634733-nadandai-tamil-nadu.html>

Workers:

In Nadandai village out of total population, 1616 were engaged in work activities. 94.86 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 5.14 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1616 workers engaged in Main Work, 320 were cultivators (owner or co-owner) while 756 were Agricultural labourer.

Table 3.32: Population Characteristics Around 10km Radius

Total No of Villages	No. of Households	Total Population	Population Male	Population female	SC Population Male	SC Population female	Total Literates Male	Total Literates Female	Total Illiterates Male	Total Illiterates Female
23	25285	87639	43990	43649	8815	8915	33305	25746	10685	17903

Table 3.33: Occupational Characteristics Around 10km Radius

Total Worker Population Male	Total Worker Population Female	Main Working Population Male	Main Working Population Female	Main Cultivator Population Male	Main Cultivator Population Female	Main Agricultural Labourers Population Male	Main Agricultural Labourers Population Female	Non Working Population Male	Non Working Population Female
27404	20600	25474	18548	5642	4917	7106	8909	16586	23049

Source: Census 2011, Tamil Nadu

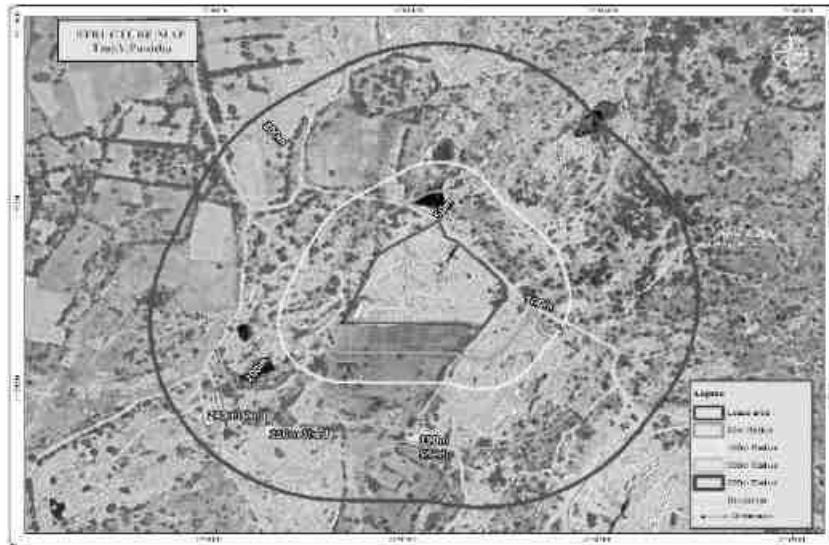
3.8.5 Basic Amenities

A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz. health and education, water and sanitation, veterinary services and co-operative) is essential for development of the rural economy.

A review of infrastructure facilities available in the area has been given on the basis of field survey. In this study the villages which fall within 10 km radius around the site has been covered. Infrastructure facilities available in the area are presented below.

All basic amenities Education (higher education, colleges, universities, medical college, Transport facilities, Railway station, Bus station area available in the district headquarters Namakkal at a distance of 22km –North East).

FIGURE.3.39 STRUCUTRE ENUMERATION WITHIN 300M RADIUS



0-100m no structures in the view of the Image							
100-200m Number of Structure - 1 Nos							
Structure Numbers	Type of Structure	Usage Purpose	Commercial / industry / residential / farm house / Govt. building	Occupants of Building/ Structure	Structure belongs to owner	Structure Not belongs to owner	Remarks
1	Mines Shed – 190m – S	Used to store mine equipment's	Nil	Yes	No	No Stay	Mines Shed – 190m – S
200-300m Number of Structure - 2 Nos							
1	Mines Shed – 210m – SW	Used to store mine equipments	Commercial	Nil	Yes	No	No Stay
2	Mines Shed – 240m – SW	Used to store mine equipments	Commercial	Nil	Yes	No	No Stay

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 General

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post-operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction. The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail.

- Land environment
- Soil environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

4.1 Land Environment

4.1.1 Anticipated Impact

The main anticipated impact on the Land Environment due to quarrying operation is change in Landscape, change in Land – use Pattern. The total area applied for quarry lease is 2.86.5 Ha, the total extent of the cluster is 17.09.5Ha (Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016) including existing and proposed quarries. The proposed project area is proponent own patta land, no forest land involved in this lease applied area. The ultimate depth of the proposed project is quarrying is varying from 28m below the ground level and will not intersect the ground water table. The project is site specific.

4.1.2 Mitigation measures

Due to the quarrying activities in the project the land use pattern will be altered. In order to minimize the adverse effects, the following control measures will be implemented:

- In the Opencast Method of Mining the degradation of land is insignificant, after completion of the quarrying operation the land, the land will be partially backfilled with dumped material and part of the area will be allowed to collect rainwater which will act as temporary reservoir, this Granite waste, overburden not produce any toxic effluents in the form of solid, liquid or gas
- The periphery of the mining lease area will be converted to a greenbelt to prevent Noise and sound propagation to the nearby lands

- Construction of garland drains all around the quarry pit and construction of check dam at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Barbed wire fencing will be re constructed at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.1.1.2 Soil Environment

4.1.1.3 Impact on Soil Environment

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

4.1.1.4 Mitigation measures for Soil Conservation

- There is no topsoil in the Proposed area.
- Garland drains will be constructed around the project area to arrest any soil from the quarry area being carried away by the rainwater. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches.

4.1.1.5 Waste Dump Management

4.1.1.6 Anticipated Impact

Solid waste is in the form of Granite waste which does not produce any toxic effluent during dumping. Garland drains will be constructed around the waste dump to prevent the rainwater entering into the quarrying pit besides this garland drain will also help in facilitating the rainwater to the natural gradient.

The generation of total waste is estimated about 30,711m³ (Granite waste + weathered Rock) and Marketable granite blocks as 59,965 m³ during the entire life of quarry. The excavated waste (29,983 m³) is proposed to dump on the Southeastern side with maximum dimension of (L)72m x(W) 40m x (H)20.95m during the first five years. As and when there is accumulation of waste, the same is loaded into the tipper by loading machines and dumped in the respective places ear-marked for the purpose.

4.1.1.7 Mitigation measures

- Retaining wall with weep hole, Garland drain will be provided around the dump areas
- Proper angle of repose to be maintained
- Grasses to be done over the dump areas for stability.
- Soil erosion may also be accelerated on areas where the overburden from the ore excavation operation will be dumped. As there is neither a toxic effluent nor solid waste from the mine, quality of soil is not expected to be adversely affected.

4.2 Water Environment (Impact & Mitigation Measures)

4.2.1 Anticipated Impact on Surface and ground water

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. For the quarrying activity water will be utilized for wire saw cutting (which will be recycled), water sprinkling on haul roads and greenbelt development. The quarrying activity will not intersect ground water table as ultimate depth of the quarry is 28m and water table is found at a depth of 68m summer and 64m rainy season BGL.

4.2.2 Mitigation measures

The following mitigation measures are suggested for water management

The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc.,) in the proposed project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.

There is no proposal Granite processing or workshop within the project area thus there is no effluent anticipated in the mine.

Detail of water requirements in KLD as given below:

Table 4.1 Water Requirement for the Project

Purpose	Quantity	Source
Domestic & Drinking purpose	0.6KLD	From Existing, bore wells and drinking water will be sourced from Approved Water vendors.
Dust Suppression	0.8KLD	From Existing bore wells from nearby area
Green Belt	0.7KLD	From Existing bore wells from nearby area
Total	2.1KLD	

Source: Prefeasibility report

- With respect to Turbidity, Total Iron and Silica, Pre-treatment methods like settling or filtration, Water Softening (Ion Exchange) shall be adopted to make it fit for drinking purposes. But it can be used for other domestic purposes
- Rainwater will be collected in sump in the mining pit and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting
- Construction of garland drains to divert surface run-off into the quarrying area
- Retaining walls with weep hole will be constructed around the dump to arrest silt wash off
- Periodic analysis of quarry pit water and ground water quality in nearby villages
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits
- Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes
- De-silting will be carried out before and immediately after the monsoon season
- Regular monitoring and analysing the quality of water in open well, bore wells and surface water

4.3 Air Environment (Impact & Mitigation Measures)

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out by Diamond wire saw cutting, jackhammer drilling (35mm dia) and Hydraulic Excavators will be utilized for handling of Granite waste.

4.3.1. Anticipated Impact

The air borne particulate matter generated by quarrying operation, and transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Granite and overburden, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been

carried out taking into consideration proposed production of 59,965 cbm (ROM) on air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.2 AERMOD Frame work of Computation & details

By using the above-mentioned inputs, ground level concentrations due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. PM₁₀ was the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM₁₀ was observed close to the source due to low to moderate wind speeds. Incremental value of PM₁₀ was superimposed on the base line data monitored at the proposed site to predict total GLC of PM₁₀ due to combined impacts.

4.3.2.1 Emission Rate

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

- E = Emissions;
- A = Activity rate;
- EF = Emission factor, and
- ER = Overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

Table 4.2: Estimated Emission Rate for PM₁₀

Activity	Source type	Value	Unit
Drilling	Point Source	0.044622776	g/s
Blasting	Point Source	0.000042795	g/s
Mineral Loading	Point Source	0.033549330	g/s
Haul Road	Line Source	0.002483104	g/s/m
Overall Mine	Area Source	0.058171525	g/s

Table 4.3: Estimated Emission Rate for So₂

Activity	Source type	Value	Unit
Drilling	Point Source	6.98078E-05	g/s

Table 4.4: Estimated Emission Rate for No_x

Activity	Source type	Value	Unit
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Overall Mine	Area Source	0.000004294	g/s
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4.3.2 Frame work of Computation & Model details

By using the above-mentioned inputs, ground level concentrations due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. PM₁₀ was the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM₁₀ was observed close to the source due to low to moderate wind speeds. Incremental value of PM₁₀ was superimposed on the base line data monitored at the proposed site to predict total GLC of PM₁₀ due to combined impacts.

Figure 4.1: AERMOD Terrain Map

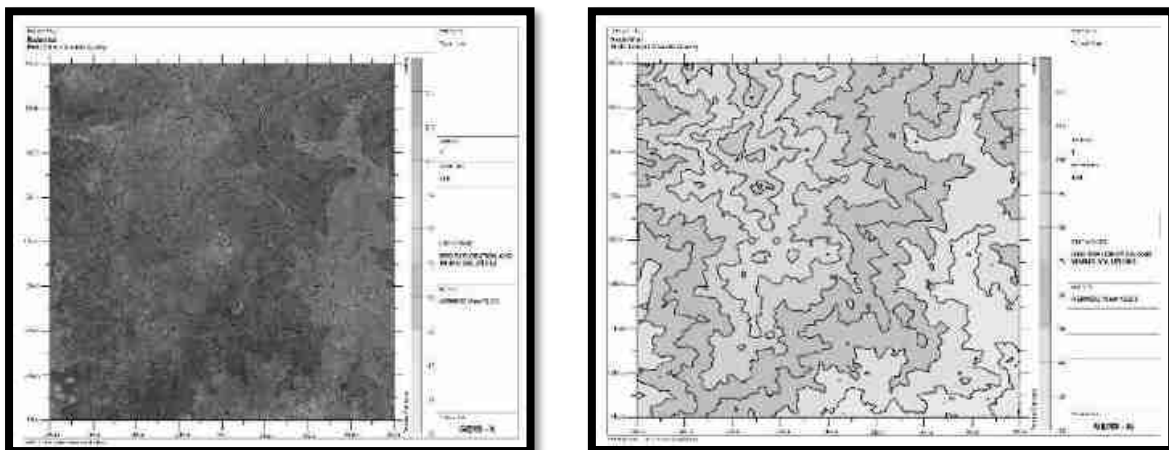


Figure 4.2: Predicted Incremental Concentration of Fugitive Dust

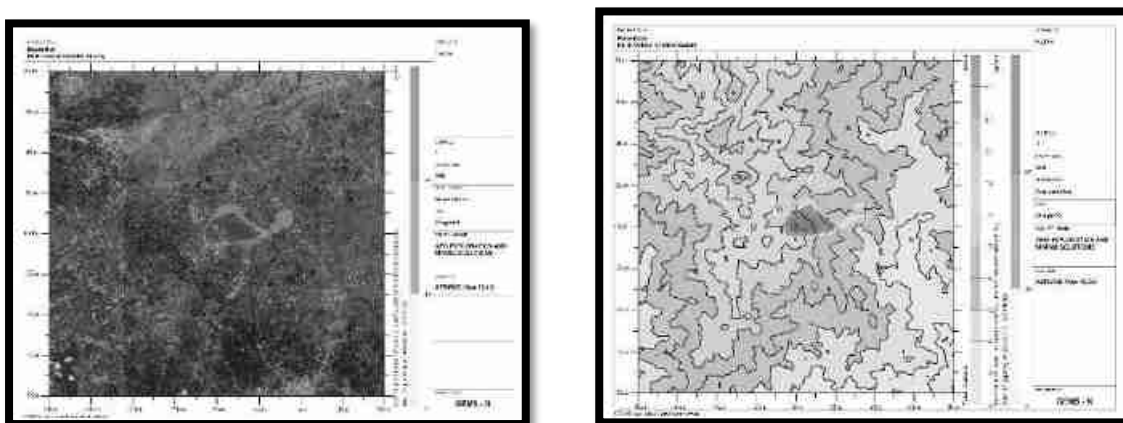


Figure 4.3: Predicted Incremental Concentration of PM₁₀

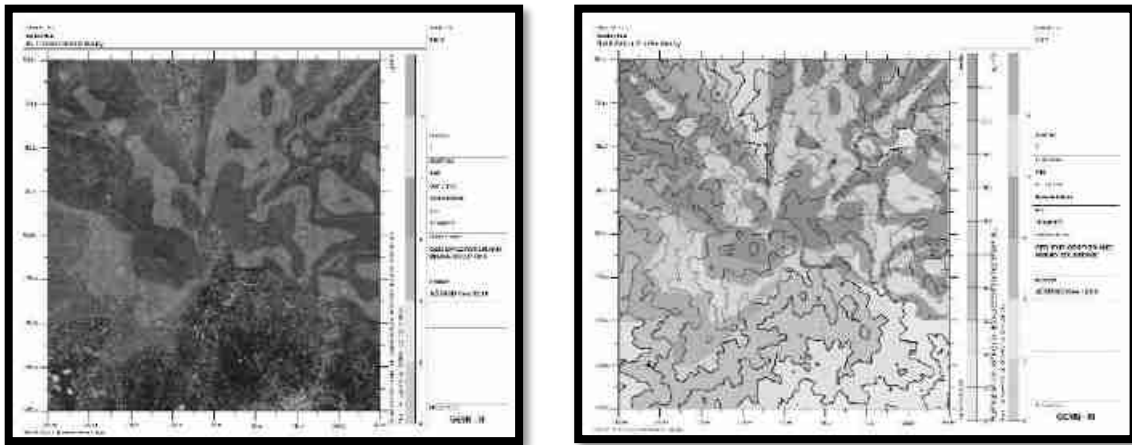


Figure No 4.4: Predicted Incremental Concentration of PM_{2.5}

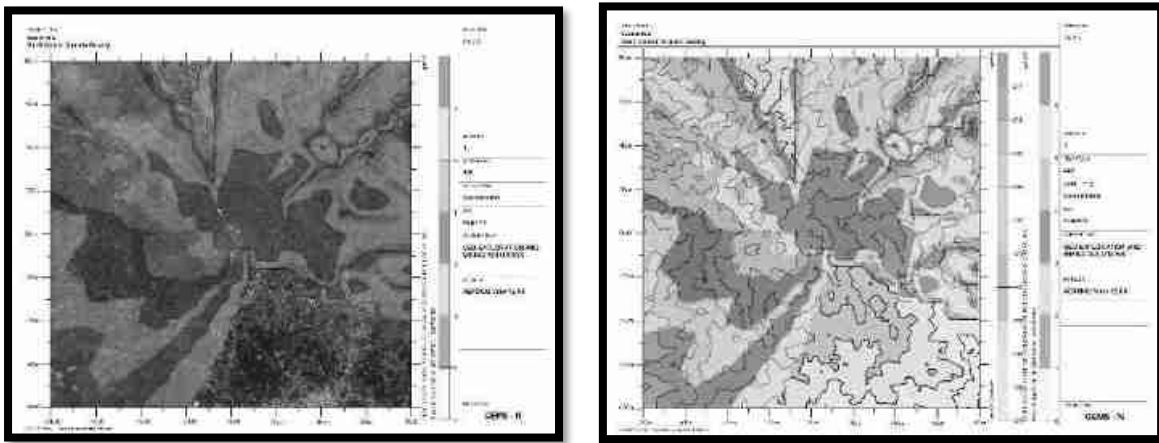


Figure No 4.5: Predicted Incremental Concentration Of So₂

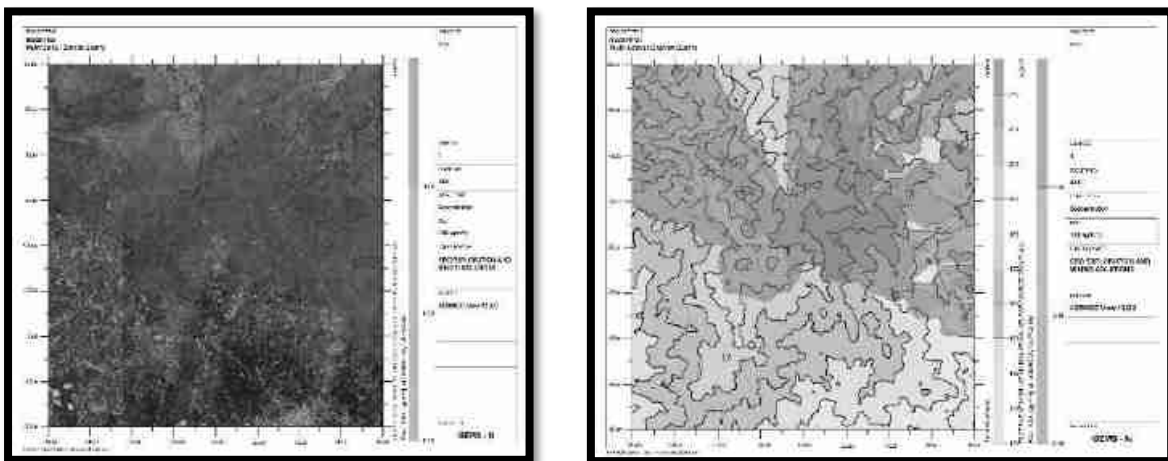
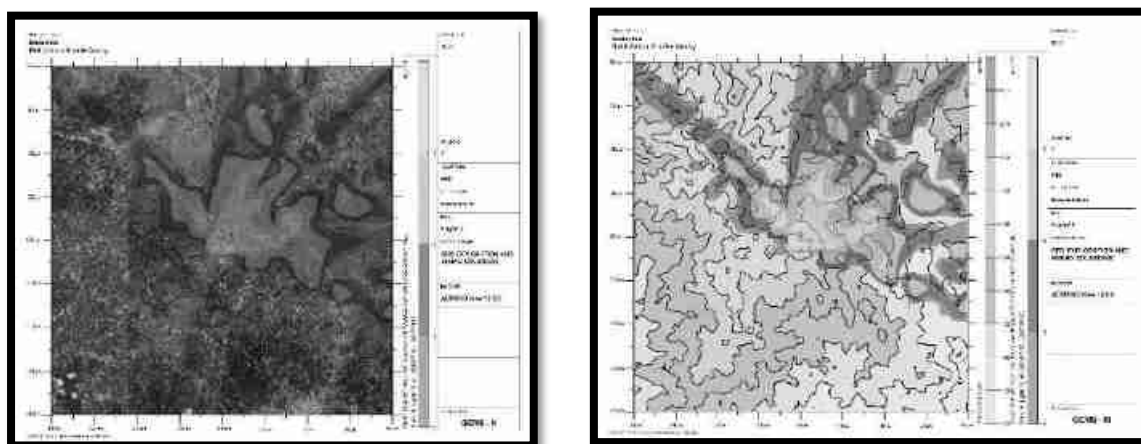


Figure No 4.6: Predicted Incremental Concentration of NO_x

4.3.2.1 Model Results

The post project Resultant Concentrations of Fugitive Dust emission, PM₁₀, PM_{2.5}, SO₂ & NO_x (GLC) is given in Table below:

Table 4.5: Incremental & Resultant GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³)
AAQ1	11°10'54.60"N 77°58'10.05"E	-47	-33	42.1	14.89	57.0
AAQ2	11°10'49.17"N 77°58'22.24"E	330	-205	41.3	14.26	55.6
AAQ3	11°11'19.29"N 77°57'55.72"E	-484	731	41.0	13	54.0
AAQ4	11° 8'35.01"N 77°56'46.28"E	-2616	-4373	40.7	1.1	41.8
AAQ5	11°13'56.00"N 77°59'13.54"E	1902	5595	40.3	12.3	52.6
AAQ6	11° 9'11.05"N 78° 1'1.50"E	5205	-3246	40.3	0	40.3
AAQ7	11°11'41.42"N 77°55'25.38"E	-5100	1420	39.4	9.5	48.9

Table 4.6: Incremental & Resultant GLC OF PM_{2.5}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³)
AAQ1	11°10'54.60"N 77°58'10.05"E	-47	-33	21.4	6.92	28.3
AAQ2	11°10'49.17"N 77°58'22.24"E	330	-205	20.7	6.49	27.2
AAQ3	11°11'19.29"N 77°57'55.72"E	-484	731	20.1	6.12	26.2
AAQ4	11° 8'35.01"N 77°56'46.28"E	-2616	-4373	19.7	2.56	22.3
AAQ5	11°13'56.00"N 77°59'13.54"E	1902	5595	40.3	5.88	46.2
AAQ6	11° 9'11.05"N 78° 1'1.50"E	5205	-3246	39.7	0	39.7
AAQ7	11°11'41.42"N 77°55'25.38"E	-5100	1420	18.9	4.43	23.3

Table 4.7: Incremental & Resultant GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline So ₂ (µg/m ³)	Incremental value of So ₂ due to mining (µg/m ³)	Total So ₂ (µg/m ³)
AAQ1	11°10'54.60"N 77°58'10.05"E	-47	-33	5.7	1.89	7.6
AAQ2	11°10'49.17"N 77°58'22.24"E	330	-205	5.7	1.86	7.6
AAQ3	11°11'19.29"N 77°57'55.72"E	-484	731	5.8	1.83	7.6
AAQ4	11° 8'35.01"N 77°56'46.28"E	-2616	-4373	5.9	0	5.9
AAQ5	11°13'56.00"N 77°59'13.54"E	1902	5595	5.7	1.8	7.5
AAQ6	11° 9'11.05"N 78° 1'1.50"E	5205	-3246	6.0	0	6.0
AAQ7	11°11'41.42"N 77°55'25.38"E	-5100	1420	6.1	0.7	6.8

Table 4.8: Incremental & Resultant GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline No _x (µg/m ³)	Incremental value of No _x due to mining (µg/m ³)	Total No _x (µg/m ³)
AAQ1	11°10'54.60"N 77°58'10.05"E	-47	-33	20.3	9.73	30.0
AAQ2	11°10'49.17"N 77°58'22.24"E	330	-205	20.4	9.29	29.7
AAQ3	11°11'19.29"N 77°57'55.72"E	-484	731	20.7	8.4	29.1
AAQ4	11° 8'35.01"N 77°56'46.28"E	-2616	-4373	20.8	0	20.8
AAQ5	11°13'56.00"N 77°59'13.54"E	1902	5595	20.3	6.19	26.4
AAQ6	11° 9'11.05"N 78° 1'1.50"E	5205	-3246	20.5	0	20.5
AAQ7	11°11'41.42"N 77°55'25.38"E	-5100	1420	20.6	0	20.6

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 60, 80 & 80 µg/m³ for PM₁₀, PM_{2.5}, SO₂ & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.3. Mitigation Measures

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

Advantages of Wet Drilling:-

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Blasting will be carried out only to remove the overburden and weathered portion
- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole

Haul Road & Transportation –

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

Green Belt –

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

Occupational Health –

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

4.4 Noise Environment

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

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources.

Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

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

Where:

L_{p1} & L_{p2} are sound levels at points located at distances r_1 & 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.

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

4.4.1 Anticipated Impact

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed considering of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

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

Table 4.9: Predicted Noise Incremental Values

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	46.9	55.2	56.6	55.8	50.9	58.90	54.40
Incremental Value dB(A)	60.1	51.2	42.0	26.1	25.0	24.5	25.8
Total Predicted Noise level dB(A)	60.3	56.6	56.7	55.8	50.9	58.9	54.4
NAAQ Standards	Industrial Day Time- 75 dB (A) & Night Time- 70 dB (A) Residential Day Time- 55 dB (A) & Night Time- 45 dB (A)						

The incremental noise level is found within the range of 60.1 dB (A) in Core Zone and 24.5 to 51.2 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance 33.3 involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.4.2 Mitigation measures for Control of Noise

The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker are utilized for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will reduce noise;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- 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 though training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

4.4.3 Ground Vibrations

Ground vibrations due to mining activities in the project area are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from the proposed mine is moving of Heavy Earth Moving Machineries vibration due to blasting is very minimal since the blasting will not carried out frequently in this type of Granite quarry operation. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the project area is located 420 m North West. The ground vibrations due to the blasting in proposed mine are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

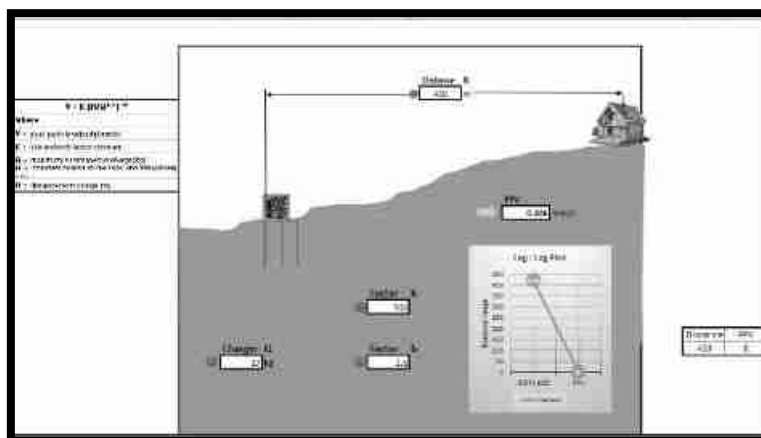
B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	17	420-NW	0.306

Figure No 4.7: Ground Vibration Prediction



From the above graph, the charge per blast of 17 kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. It should be ensured that the explosives used for blasting at one blast should not exceed more than 100kg at any point of time. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Mitigation measures for Control of Vibration

- The blasting operations in the mine are proposed to be carried out by jackhammer drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system should be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting should be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably a greater number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity shall be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.

4.5 Ecology and Biodiversity

4.5.1. Impact Identification and Evaluation

In general, impact prediction methods argue that the foremost step in impact appraisal must consider and identify project actions that are likely to bring significant changes in the project environment. The present study determined to predict the likely impacts of the Proposed Multi colour granite quarry, mining Project in the surrounding environment with a specific focus on biological attributes covering habitats/ecosystems and associated biodiversity. Likely impacts identified were categorized into different levels like direct or primary and indirect or secondary impacts based on the influence of sources of impacts.

4.5.2. Impact on Flora

The proposed mine lease area slightly undulated terrain and it is not fit for cultivation. It is mostly devoid of any considerable vegetation. The proposed mine lease area (core zone) does not encompass any designated forest land within it. The vegetation is very sparse and scanty. So, there will be no impact on flora from the mining operation. There will not be much contamination of soil or any other materials from the mining operation. No threatened plant species were reported in the core and buffer study area during the field survey.

4.5.2.1. Anticipated Impact on agricultural land associated with flora

1. There are no impacts on the nearby agricultural land due to this mining activity.
2. None of the plants will be cut during the operational phase of the mine.
3. There shall be negligible air emissions or effluents from the project site. During the loading of 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 croplands, grass patches, and small shrubs.

Hence, there will be no effect on the flora of the region.

4.5.3 Mitigation Measures

4.5.3.1. General Guidelines for Green Belt Development

Drone survey was covered the green belt and fencing as per the terms of references. The green belt and plantation purposes in and around the proposed mine lease area native species, fruit-bearing trees, medicinal plants, and dense canopy trees should be selected. These species should be tolerant to pollution levels as per Bio-Geography zones of India.

After the operation of mining production capacity, Green belt and Plantation species should be in accordance with the Terms and Conditions of the Environmental Clearance Green belt is created not only for the purpose of protecting sensitive areas or maintaining the ecological balance but because they also act as efficient biological filters or sinks for particulate and gaseous emissions, generated by vehicular movements and various industrial and mining activities. Optimally designed green belts can be effective in reducing the impact of fugitive emissions and pollutants accidentally or otherwise released at ground levels.

4.5.3.2. Proposed Green Belt

Extensive green belt development will be started during the construction phase, which will continue till the operation of the plant. About 1500-2000 trees will be planted per hectare all around the plant, approach roads, and township premises. Locally available types of trees that are resistant to pollutants will be planted. In addition to the above, all open spaces available within the premises will be developed as nurseries, parks, gardens, and other forms of greenery. 5 m wide greenbelt will be developed along the plant premises, as per land available.

4.5.3.3. Guidelines & Techniques for Green Belt Development

An extensive survey of the project area was undertaken to observe the structure and composition of vegetation. Hence a combination of plants is selected depending upon the topographical suitability and species selected as per the SPCB Guideline and ToR. The soil characteristics were kept in mind. Based on this survey and environmental conditions suitable native plant species have been proposed for the green belt development plan.

4.5.3.4. Development of Green Belt

The plantation matrix adopted for the green belt development includes pit of 0.3 m x 0.3 m in size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration. Multi-layered plantations comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt.

A greenbelt is a set of rows of trees planted in such a fashion, to create an effective barrier between the project and its surroundings. The greenbelt helps to capture fugitive emissions, attenuate the noise levels in the existing project, and simultaneously improve aesthetics of the surroundings.

4.5.3.5. Design of Green Belt

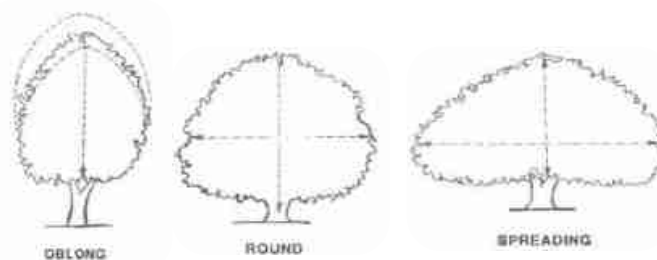
The present plan comprises the details of field investigations. Plant species for greenbelt development are selected as per CPCB guidelines. The green belt will be developed along the periphery of the Proposed Multi colour granite quarry. The greenbelt development plan has been formulated considering the parameters such as climate, soil types, topography, etc.

a. Characteristic features of plants to be used for Absorption of pollutant gases

- Plant species should be perennial and evergreen with thick canopy cover.
- The crown of the tree (mass of foliage/leaves and branches growing outward from the trunk of the tree) should be either Oblong, Round, or Spreading for effective absorption of pollutant gases.
- Plant should have foliage of longer duration.
- The foliage should be freely exposed through: Adequate height of crown, Openness of foliage/leaves in canopy, Big leaves (long and broad laminar surfaces).

The purpose of Green belt around the project is to capture the fugitive emissions. Carbon sequestration and to attenuate the noise generated. In addition to improving the aesthetics. A wide range of indigenous plant species was planted as given in the table No 4.1 & 4.2 in consulted with the DFO. The plant species with dense/moderate canopy of native origin was chosen are given below. Species of small/ medium/tall trees alternating with shrubs was planted.

- Plants that grow fast will be preferred.
 - Preference for high canopy covers plants with local varieties.
 - Perennial and evergreen plants will be preferred.
 - The development of the Green Belt is an important aspect for any plant because:
 - It improves the ambient air quality by controlling Suspended Particulate Matter (SPM) in the air.
 - It helps in noise abatement for the surrounding area.
 - It helps in the settlement of new birds and insects within itself.
 - It maintains the ecological balance.
 - It increases the aesthetic value of the site.
-



(*Source: Guidance for Developing Green belts Manual, CPCB 2000)

Table No 4.1. List of plant species proposed for Greenbelt development

S. No	Scientific name	Tamil Name
1	<i>Aegle marmelos</i>	Vilva maram
2	<i>Albizia lebbek</i>	Vaagai maram
3	<i>Cassia fistula</i>	Konrai tree
4	<i>Lannea coromandelica</i>	Othiyam
5	<i>Limonia acidissima</i>	Vila maram
6	<i>Syzygium cumini</i>	Naval maram
7	<i>Toona ciliata</i>	Santhana Vembu
8	<i>Ficus hispida</i>	Aththi maram
9	<i>Borassus flabellifer</i>	Panai-maram
10	<i>Madhuca longifolia</i>	Illupai maram

(*Source: Term of Reference-ToR)

Table No 4.2. Species suitable for abatement of noise and dust pollution

S. No	Botanical name	Common name
1	<i>Azadirachta indica</i>	Vembhu maram
2	<i>Ficus religiosa</i>	Arasan maram
3	<i>Ficus hispida</i>	Aththi maram
4	<i>Bombax ceiba</i>	Mul Elavu
5	<i>Syzygium cumini</i>	Naval maram
6	<i>Tamarindus indica</i>	Puliyamaram
7	<i>Mangifera indica</i>	Manga maram
8	<i>Harwickia binata</i>	Anjan maram
9	<i>Delonix regia</i>	Neruppu Kondrai
10	<i>Cassia Fistula</i>	Sara Kondrai

(*Source: Guidance for Developing Green belts Manual, CPCB 2000)

The above-suggested list covers species with thick canopy cover, perennial green nature, native origin, and a large leaf area index. The proposed species will help in forming an effective barrier between the mine site area and the surroundings.

These species need to be planted along the periphery of the lease area for absorb fugitive emissions and noise levels which is generated during mining activities. All the open spaces, where tree plantation may not be possible, should be covered with shrubs and grass to prevent erosion of topsoil.

Some of the important aspects to be considered are:

- ✓ Planting of trees in each row will be in staggered orientation.
- ✓ In the front row, shrubs will be grown.
- ✓ Since the trunks of the tall trees are generally devoid of foliage, it will be useful to have shrubs in front of the trees so as to give coverage to this portion.
- ✓ The spacing between the trees will be maintained slightly less than the normal spaces, so that the trees may grow vertically and slightly increase the effective height of the green belt.

4.5.4. Anticipated Impact on Fauna

- Since the terrestrial fauna in the study area are distributed away from the mine site, the impacts of project are likely to be much low on terrestrial fauna of the region. The proposed mining lease area is devoid of any significant vegetation, it is not suitable for permanent habitat for any specific wildlife.
- Habitat degradation and disturbance to faunal group due to ground vibration and increase in noise level will be minimize or resolved by modern technologies. So, from above facts it is revealed that there will be no impact on fauna. No threatened fauna species reported in the core and buffer study area.

4.5.4.1. Measures for protection and conservation of wildlife species

- Topsoil has a large number of seeds of native plant species in the mining area.
- Topsoil will be used for restoration and suitable surfaces for planted seedlings.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment to the flora and fauna in consultation with Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.
- Plantation around the mine area will help in creating habitats for small faunal species and create a better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

4.5.3. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed/Existing from the Multi colour granite quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. There are few seasonal water bodies located in the study area. There are a few Odai and Canals located in the study area. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. Kindly refer the clause no 3.6.3. Aquatic biodiversity is observed in the study area.

4.5.4. Impacts on Bird Fauna:

The project does not involve any tree felling or removal of vegetation. Therefore, there may not be loss of nesting and roosting habitat of avian fauna.

4.5.5. Impacts on wildlife

There is no National Park, Biosphere Reserve, Wildlife corridors, and Tiger/Elephant Reserve found within 10 km radius of the project site.

4.5.2.2. Afforestation

More number of trees has been observed along the approach road to the lease area, the trees will be maintained in good condition. The 7.5m and 10m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata, Mango will be planted along the Lease boundary and avenues as well as over non-active dumps at a rate of 50 trees per annum with interval 3m in between. A retaining wall will be constructed around the dumping yard. The rate of survival expected to be 80% in this area. Afforestation Plan is given in Table No.4.11 and preparation of green belt details are given in Table No.4.11.

Table 4.11: Greenbelt development plan

<i>Plantation details</i>	<i>Required</i>	<i>Provided (Considering 80% survival rate)</i>	<i>1st Year</i>
No of	1450	1740	1740
Yearly %	100%	120%	100%

4.5.2.2.1. Species Recommendation for Plantation

Following points have been considered while recommending the species for plantation:

- 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.
- The following species may be considering primary for plantation best suited for the prevailing climate condition in the area.

Table 4.12: Recommended Species to Plant in the Greenbelt

S. No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	Borassus flabellifer	Arecaceae	Panai	T
2	Morinda pubescens	Rubiaceae	Nuna	T
3	Pongamia pinnata	Fabaceae	Pungam	T
4	Thespesia Populnea	Malvaceae	Puvarasu	T
5	Syrygium cumini	Myrtaceae	Naval	T
6	Saraca asoca	Fabaceae	Asoca	T
7	Limonia acidissima	Rutaceae	Odham	T
8	Lanea coromandelica	Anacardiaceae	Vila maram	T
9	Cassia roxburghii	Fabaceae	Sengondrai	T
10	Pterocarpus marsupium	Fabaceae	Vengai	T

Table No: 4.13 Overall Ecological impact assessments of Nadanthai Village, Multi colour granite quarry, Namakkal District and Tamil Nadu.

S.No	Attributes	Assessment
1	Impact of mining activity on agricultural land nearby the proposed project site.	Agricultural land is located away from the proposed project site. There are no impacts on the agricultural land & Horticulture. Kindly refer to the conclusion.
	Activities of the project affect the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in the mining lease site. The fauna sighted mostly migrated from the buffer area.
2	Located near an area populated by rare or endangered species	No Endangered, Critically Endangered, or vulnerable species were sighted in the core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	Nil
4	The proposed project restricts access to waterholes for wildlife	‘No ‘

5	Proposed mining project impact surface water quality that also provides water to wildlife	'No 'scheduled or threatened wildlife animals are sighted regularly core in the core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity areas.	Surface runoff management such as drains is constructed properly so there will be no siltation effect in the nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities.	'No'
8	The project release effluents into a water body that also supplies water to a wildlife.	No water body near to core zone so the chances of water becoming polluted is low.
9	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
10	The project likely to affect migration routes.	'No 'migration route was observed during the monitoring period.
11	The project is likely to affect the flora of an area, which have medicinal value	'No'
12	Forestland is to be diverted, has carbon high sequestration.	'No 'There was no forest land diverted.
13	The project is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

(*Source: EIA Guidance Manual-Mining and Minerals, 2010)

4.6 Socio Economic

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.

4.6.1 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.

4.6.2 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

4.7 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
- Explosive storage and handling

4.7.1 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

4.7.2 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

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests, Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly, Lung function/ Silicosis test – yearly, those who are exposed to dust
- Eye test

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

4.7.5 Post COVID Health Management Plan for Workers

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

- Temperature will be checked to all the workers while arriving to work on each day
 - If any persons/employees have fever of 100.4 or higher, chills, shortness of breath will be sent to Hospital and the persons will be employed after fourteen days
-

- All the persons inside the mine area instructed to wear fabric or disposable pleated masks covering Nose and Mouth
- Social distancing of 6 feet will be maintained all the time
- Temporary Hand washing points will be installed near the working places, workers will be initiated to Wash hands frequently with soap and water for a minimum of 20 seconds and advised to avoid touching face. This is an essential contagion-control mechanism

4.7.6 Plastic Waste Management

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

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

Action Plan:

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

4.8 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.

4.8.1 Mine Closure criteria

The criteria involved in mine closure are discussed below:

4.8.1.1 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.,

4.8.1.2 Chemical Stability

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

4.8.1.3 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 mine plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan (Annexure I).

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.1 Introduction

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

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

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

Enough infrastructures exists and lesser resources are required to be deployed. Since, any further construction for infrastructure is not required and hence does not affect the environment considerably. The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise for this project.

6. 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 as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

6.1 Methodology of Monitoring Mechanism

Implementation of EMP and periodic monitoring will be carried out by Project Proponent. 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 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 Mine Management.

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures.

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. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA 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).

6.2 Implementation Schedule of Mitigation Measures

The mitigation measures proposed in Chapter-4 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

S.No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediate
2	Soil Quality Control Measures	Before commissioning of the project	Immediate
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediate and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediate and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediate and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediate 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 monitoring is detailed in Table 6.2

Table 6.2: Monitoring Schedule for the Project Area

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, PM2.5, PM10, SO2 and NOx.
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 bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

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

6.4 Budgetary Provision for EMP

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed capital cost for Environmental Monitoring Programme for Tmt. V. Punitha Multi Colour Granite Quarry is Rs. 3,80,000 for conducting Air Quality, Meteorology, Water Quality, Hydrology, Soil Quality, Noise Quality Vibration Study, Greenbelt.

Table 6.3: Environmental Monitoring Budget

Sl.No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs 35,000/-
2	Meteorology	-	Rs 5,000/-
3	Water Quality	-	Rs 15,000/-
4	Hydrology	-	Rs 25,000/-
5	Soil Quality	-	Rs 35,000/-
6	Noise Quality	-	Rs 35,000/-
7	Vibration Study	-	Rs 1,80,000/-
8	Greenbelt	Rs 40,000/-	Rs 50,000/-
	Total	Rs 40,000/-	Rs 3,80,000

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 Mine Management level and 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 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 – 7: ADDITIONAL STUDIES

7.0 General

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

- Public Consultation
- Risk Assessment
- Disaster Management Plan

7.1 Public Consultation:

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

7.2 Risk Assessment

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.4.

Table 7.1 Risk Assessment

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	<ul style="list-style-type: none"> ▪ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; ▪ Entry of unauthorized persons will be prohibited; ▪ Firefighting and first-aid provisions in the mine office complex and mining area; ▪ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use ▪ Working of quarry, as per approved plans and regularly updating the mine plans;

			<ul style="list-style-type: none"> ▪ Cleaning of mine faces shall be daily done in order to avoid any overhang or undercut; ▪ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; ▪ Maintenance and testing of all mining equipment as per manufacturer guidelines.
2	OB / Waste Dump	Sliding of benches Height and slope of the benches Drainage facilities	<ul style="list-style-type: none"> ▪ Dumps benches are maintained with proper 3 m height and 37° slope to prevent slope failure and terraced. ▪ Dumping in the waste dump in layers and dozing daily. ▪ Vegetation of the top and slopes of the dump to prevent erosion and providing water drainage channels ▪ Providing proper drainage facilities in mine and dump area. ▪ Construction of retaining wall around dump area to stop sliding of material. ▪ Garland drain to be made around OB dump area
3	Drilling & Wire Saw Cutting	Due to improper and unsafe practices Due to high pressure of compressed air, hoses may burst Drill Rod may break	<ul style="list-style-type: none"> ▪ Safe operating procedure established for drilling (SOP) will be strictly followed. ▪ Only trained operators will be deployed. ▪ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ▪ Drill & Wire saw operator shall examine the drilling and wire saw equipment and satisfy himself ▪ Drilling & cutting operations shall not be carried on simultaneously on the benches at places directly one above the other. ▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment and wire saw equipment as per operator manual. ▪ All drills and wire saw unit shall be provided with wet drilling and cutting arrangement and it shall be maintained in efficient working in condition. ▪ Operator shall regularly use all the personal protective equipment.
4	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/fining of blast holes Vibration due to movement of vehicles	<ul style="list-style-type: none"> ▪ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast can be conducted safely. ▪ SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be

			<p>followed by blasting crew during initial stage of operation</p> <ul style="list-style-type: none"> ▪ Shots are fired during daytime only. ▪ All holes charged on any one day shall be fired on the same day. ▪ The danger zone is and will be distinctly demarcated (by means of red flags)
5	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<ul style="list-style-type: none"> ▪ Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. ▪ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. ▪ Concave mirrors should be kept at all corners ▪ All vehicles should be fitted with reverse horn with one spotter at every tipping point ▪ Loading according to the vehicle capacity ▪ Periodical maintenance of vehicles as per operator manual
6	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> ▪ Escape Routes will be provided to prevent inundation of storm water ▪ Garland drains will be provided at the toe of dump ▪ Fire Extinguishers & Sand Buckets
7	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

7.3 Disaster Management Plan

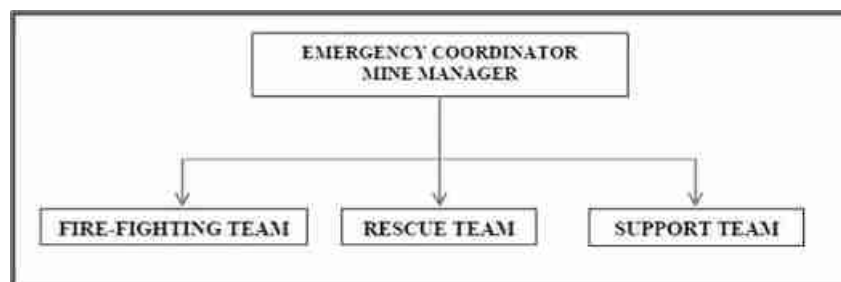
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

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

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

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

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown below –



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. In his absence senior most people available at the mine shall be emergency coordinator till arrival of mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.5.

Table 7.2: Proposed Teams to Deal with Emergency Situation

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

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

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

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

(f) Emergency security controller

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

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

Proposed fire extinguishers at different locations –

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

Table 7.3: Proposed Type of Fire Extinguishers

Location	Type of Fire Extinguishers
Electrical Equipment's	CO ₂ type, foam type, dry chemical powder type
Fuel Storage Area	CO ₂ type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type
Location	Type of Fire Extinguishers

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.
- Firefighting and first-aid provisions in the mines office complex and mining area are provided.

- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

7.4 Cumulative Impact Study

There are 1 Proposed and 4 existing quarries forms the cluster category. The list of quarries is as below

Table 7.4: List of Quarries in the Cluster

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	ToR Status
P-1	Tmt. V. Punitha	482 in Nadanthai Village Paramathivelur Taluk,	2.86.5 Ha	SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024
	Total Extent		2.86.5 Ha	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Lease Period
E-1	M/s.M.M.Exports	483/2A Nadanthai Village, Paramathivelur Taluk,	2.75.5Ha	05.01.2017 to 04.01.2037
E-2	M/s.M.M.Exports	492/2 Nadanthai Village, Paramathivelur Taluk,	2.73.0Ha	05.01.2017 to 04.01.2037
E-3	Tmt.L.Selvi	494/1,494/2 Nadanthai Village, Paramathivelur Taluk,	4.40.5Ha	25.02.2016 to 24.02.2036
E-4	Thiru. P. Velmani	456 &25/1 Nadanthai IrukkurVillage, Paramathivelur Taluk,	4.34.0Ha	02.12.2015 to 01.12.2035
	TOTAL		14.23.0 Ha	

ABANDONED/EXPIRED QURRIES				
CODE	Name of the Proponent and Address	S.F. Nos, Village & Taluk	Extent in Ha	Lease Period
A-1	Thiru.J.A.Richard	493/1A(P), 515/2(P) Nadanthai Village, Paramathivelur Taluk,	1.76.0	10 years Lease Period
A-2	Gem Granites	483/2 Nadanthai Village, Paramathivelur Taluk,	4.05.0	10 years Lease Period
TOTAL CLUSTER EXTENT			17.09.5Ha	

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

Table 7.5: Salient Features of Proposed Project-P1

Name of the Quarry	Tmt. V. Punitha Multi Colour Granite Quarry							
Previous Environment Clearance details	DEIAA-NMK-TN/F.No.259/Mines/02/EC.No. 2 / 2017 dated: 24.11.2017.							
CCR Letter	CCR Letter No: E.P/12.1/2022-23/SEIAA/155/TN/1200							
Lease period	20 years							
Mining Lease area	2.86.5 Ha							
Type of Land	Proponent own patta Land							
Land use classification	It is patta land, jointly registered in the name of the applicant (Tmt. V. Punitha, W/o. Velmani) and Thiru. P. Velmani, vide patta no. 5543 (Refer Annexure IV to VI). The lessee has obtained consent from joint pattadhar for quarrying operations (Refer Annexure VII).							
Location	S.F.No. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District.							
Mining Plan Period (2018-2023)	5 Years							
First Scheme Mining Plan Period (2023-2028)	5 Years							
Estimated Life of the Mine	20years							
Lease Period	Mining license applied for period of twenty years only. (03.01.2018 to 02.01.2038) First Scheme of Mining plan period for the five years (2023-24 to 2027-28) Estimated life of the quarry is 19 years							
Proposed Depth	28m (2m topsoil + 1m Weathered rock + 25m Multi Colour granite)							
Existing Pit Details (As per AD Letter Roc.No 165/Mines/2022 dated 07.10.2022)	Existi ng Pit No.	R.L. (m)	Pit R.L. (m)	Area(m ²)	Total Dept h (m)	Topsoi l Thickn ess (m)	Weathe red Thickne ss (m)	Granite (m)
	Pit-1	180	176	330	4	2	1	1
	Pit-2	180	175	155	5	2	1	2
	Pit-3	180	170	1120	10	2	1	7
	Pit-4	180	167	2430	13	2	1	10
	Pit-5	180	163	435	17	2	1	14
Ultimate Depth	156m(L) x 142m (W) x 28m (D)							
Toposheet No	58-E/16							
Latitude between	11°10'53.4595"Nto 11°10'59.4554"N							
Longitude between	77°58'07.0660"E to 77°58'15.4169"E							
Topography	The area is exhibits slightly undulated terrain Altitude – 182m to 179m above from MSL Slope - towards east							
Water table	68m-64m							
Water requirements	2.1KLD							

Proposed manpower deployment	33
Operational Cost	Rs. 3,39,87,000/-
EMP Cost	Rs. 3,80,000/-
Total Project Cost	Rs. 3,43,67,000/-
CER Cost	Rs. 5,00,000/-
R.F area	Sarvumalaikaradu 16.85km-W
Wildlife sanctuaries	Vellode Bird Sanctuary-35km-W
Nearest Habitation	420m-NW

Table 7.5 A: Salient Features of Existing Quarry “E1”

SALIENT FEATURES OF PROPOSAL “E1”		
Name of the Mine	Multi-colour Granite quarry belongs to M/s. M.M.Exports Partner of Thiru.P.Mayilvaganan	
Survey Nos	483/2A	
Land Type	Patta land	
Extent	2.75.5Ha	
Mining Plan Period / Lease Period	20 years	
Depth of Mining first five years	8m	
Ultimate Pit Dimension	PIT I- 166 L(m) x 81 W (m) x 13D (m)	
Latitude between	11°10'46.54''N To 11°10'56.38''N	
Longitude between	77°58'09.58''E To 77°58'18.70''E	
Highest Elevation	182m AMSL	
Machinery Proposed	Jack Hammer	6
	Compressor	2
	Diamond Wire Saw	2
	Hydraulic Crane	1
	Excavator	2
	Tipper	4
Proposed Blasting Method	Only Secondary blasting	
Manpower Proposed	40	

Table 7.5 B: Salient features of existing quarry “E2”

SALIENT FEATURES OF PROPOSAL “E2”		
Name of the Mine	Multi-colour Granite quarry belongs to M/s. M.M.Exports Partner of Thiru.P.Mayilvaganan	
Survey Nos	492/2	
Land Type	Patta land	
Extent	2.73.0 Ha	
Depth of Mining	13m	
Mining Plan Period / Lease Period	20 years	
Ultimate Pit Dimension	PIT I- 121 L(m) x 67 W (m) x 13D (m) PIT II- 154 L(m) x 38 W (m) x 13D (m)	
Latitude between	11°10'40.92''N to 11°10'47.91''N	
Longitude between	77°58'01.02''E to 77°58'07.32''E	
Highest Elevation	186m MSL	
Machinery Proposed	Jack Hammer	6
	Compressor	2
	Diesel Generator	1
	Diamond Wire Saw	2
	Wagon Drill machine	1
	Hydraulic Crane	1
	Hydraulic Excavator	2
	Tipper	4
Proposed Blasting Method	Only Secondary blasting	

Manpower Proposed	40
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Table 7.5 C: Salient features of existing quarry “E3”

SALIENT FEATURES OF PROPOSAL “E3”		
Name of the Mine	Multi-colour Granite quarry belongs to Tmt.L.Selvi	
Survey Nos	494/1,494/2	
Land Type	Patta land	
Extent	4.40.5 Ha	
Depth of Mining first five years	9m	
Mining Plan Period / Lease Period	20 years	
Ultimate Pit Dimension	304 L(m) x 69W (m) x 13D (m)	
Latitude between	11°10'41"N to 11°10'51"N	
Longitude between	77°57'51"E to 77°58'01"E	
Highest Elevation	185m ASML	
Machinery Proposed	Jack Hammer	6
	Compressor	2
	Diesel Generator	1
	Diamond Wire Saw	1
	Hydraulic Drill machine	1
	Crawler Crane	1
	Hydraulic Excavator	1
	Tippers	2
Proposed Blasting Method	Only Secondary blasting	
Manpower Proposed	35	

Table 7.5 D: Salient features of existing quarry “E4”

SALIENT FEATURES OF PROPOSAL “E4”		
Name of the Mine	Multi-colour Granite quarry belongs to Thiru. P. Velmani	
Survey Nos	456 & 25/1	
Land Type	Patta land	
Extent	4.34.0 Ha	
Depth of Mining for Next Five years (Scheme of Mining Plan)	39m	
Mining Plan Period / Lease Period	20 years	
Ultimate Pit Dimension	171 L(m) x 221 W (m) x 44 D (m)	
Latitude between	11°10'40.60"N to 11°10'48.77"N	
Longitude between	77°58'18.81"E to 77°58'28.30"E	
Highest Elevation	179-187m AMSL	
Machinery Proposed	Jack Hammer	8
	Compressor	2
	Diamond Wire Saw	2
	Crawler Crane	1
	Excavator	2
	Tippers	2
Proposed Blasting Method	Only Secondary blasting	
Manpower Proposed	43	

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment Movement of HEMM and operating of machineries in the cluster.

Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.10.

Table 7.6: Cumulative Production Load of Granite

Quarry	Mineable Reserves ROM in m ³	Mineable Reserves of Granite in m ³	Proposed production of ROM for five-year period in m ³	Production of ROM Per Day in m ³	Production of Granite Per day in m ³	Number of Lorry loads of Granite per day
P1	2,23,055	1,11,527.5	59,965	40	20	3
E1	67,950	40,770	17,100	11	7	1
E2	61,770	37,062	15,300	10	6	1
E3	1,04,760	62,856	17,100	11	7	1
E4	6,14,945	3,68,967	50,069	33	20	3
Total	10,72,480	6,21,182.5	1,59,534	105	60	9

Source: Approved Mining plan and Scheme of Mining Plan of Respective mines

On a cumulative basis considering all the 5 quarries (4 Existing and 1 Proposed) it can be seen that the overall production of Granite ROM per day is 105 m³ and overall production of Granite is 60m³ per day (recovery percentage is vary from one quarry to another), No of Lorry loads per day is 9.

Based on the above production quantities the emissions due to various activities in all the 6 mines includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.11.

Table 7.7: Emission Estimation from Quarries within 500 Meter Radius

Emission Estimation for quarry P1- Tmt.V.Punitha				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.044622776	g/s
	Blasting	Point Source	0.000042795	g/s
	Mineral Loading	Point Source	0.033549330	g/s
	Haul Road	Line Source	0.002483104	g/s/m
	Overall Mine	Area Source	0.058171525	g/s
Estimated Emission rate for SO ₂	Overall Mine	Area Source	6.98078E-05	g/s
Estimated Emission rate for NO _x	Overall Mine	Area Source	0.000004294	g/s
Emission Estimation for quarry E1- M/s.M.M.Exports				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.037533756	g/s
	Blasting	Point Source	0.000018019	g/s
	Mineral Loading	Point Source	0.031669339	g/s
	Haul Road	Line Source	0.00248269	g/s/m
	Overall Mine	Area Source	0.057172502	g/s
Estimated Emission rate for SO ₂	Overall Mine	Area Source	3.91041E-05	g/s
Estimated Emission rate for NO _x	Overall Mine	Area Source	0.000002319	g/s
Emission Estimation for quarry E2 - M/s.M.M.Exports				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.036302005	g/s
	Blasting	Point Source	0.000015250	g/s
	Mineral Loading	Point Source	0.031319046	g/s
	Haul Road	Line Source	0.002482634	g/s/m
	Overall Mine	Area Source	0.056951622	g/s
Estimated Emission rate for SO ₂	Overall Mine	Area Source	3.49611E-05	g/s
Estimated Emission rate for NO _x	Overall Mine	Area Source	0.000002056	g/s

Emission Estimation for quarry E3 - Tmt.L.Selvi				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.037533756	g/s
	Blasting	Point Source	0.000018019	g/s
	Mineral Loading	Point Source	0.033673972	g/s
	Haul Road	Line Source	0.00248314	g/s/m
	Overall Mine	Area Source	0.069078742	g/s
Estimated Emission rate for SO ₂	Overall Mine	Area Source	6.87011E-05	g/s
Estimated Emission rate for NO _x	Overall Mine	Area Source	0.000006222	g/s
Emission Estimation for quarry E4 - Thiru. P. Velmani				
Estimated Emission Rate for PM ₁₀	Activity	Source type	Value	Unit
	Drilling	Point Source	0.051984192	g/s
	Blasting	Point Source	0.000091827	g/s
	Mineral Loading	Point Source	0.036200744	g/s
	Haul Road	Line Source	0.002484181	g/s/m
	Overall Mine	Area Source	0.068956060	g/s
Estimated Emission rate for SO ₂	Overall Mine	Area Source	0.000148388	g/s
Estimated Emission rate for NO _x	Overall Mine	Area Source	0.000013297	g/s

Source: Emission Calculations

Table 7.8: Incremental & Resultant GLC within Cluster

PM ₁₀ in µg/m ³	
Location	CORE
Background	42.1
Highest Incremental	14.89
Resultant	57.0
NAAQ standard	100 µg/m ³
PM _{2.5} in µg/m ³	
Location	CORE
Background	21.4
Highest Incremental	6.92
Resultant	28.3
NAAQ standard	60 µg/m ³
SO ₂ in µg/m ³	
Location	CORE
Background	5.7
Highest Incremental	1.89
Resultant	7.6
NAAQ standard	80 µg/m ³
NO _x in µg/m ³	
Location	CORE
Background	20.3
Incremental	9.73
Resultant	30.0
NAAQ standard	80 µg/m ³

Noise Environment –

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

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

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

Where:

L_{p1} & L_{p2} are sound levels at points located at distances r_1 & 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.

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

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

Source data has been computed considering of all the machinery and activities used in the mining process.

Table 7.9: Predicted Noise Incremental Values from quarry

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	46.9	55.2	56.6	55.8	50.9	58.90	54.40
Incremental Value dB(A)	60.1	51.2	42.0	26.1	25.0	24.5	25.8
Total Predicted Noise level dB(A)	60.3	56.6	56.7	55.8	50.9	58.9	54.4
NAAQ Standards	Industrial Day Time- 75 dB (A) & Night Time- 70 dB (A) Residential Day Time- 55 dB (A) & Night Time- 45 dB (A)						

The incremental noise level is found within the range of 60.1dB (A) in Core Zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

Socio Economic Environment –

Table 7.10: Socio Economic Benefits from 5 Quarries

Location code	Employment	Project Cost	CER
P1	33	Rs. 3,43,67,000	Rs.5,00,000/-
E1	40	Rs. 55,55,000	Rs.5,00,000/-
E2	40	Rs.58,30,000	Rs.5,00,000/-
E3	35	Rs.49,10,000	Rs.5,00,000/-
E4	43	Rs. 3,21,17,000	Rs.5,00,000/-
Total	191	Rs. 8,27,79,000	Rs.25,00,000

About 191 people getting and will get employment from these cluster quarries. 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 by all the mines

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is \leq 100 crores, they shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC and the total CER amount from the 5 mines is Rs 30,00,000/-

CHAPTER – 8: PROJECT BENEFITS

8.0 General

Multi Colour Granite Quarry of Tmt. V. Punitha, 29,983 m³ of Granite @ 50% recovery (ROM 59,965m³ for the entire period- Life of the mine) for Life of Mine of 20 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
- To meet out the demand supply gap of Granite and enhance the foreign exports

8.1 Employment Potential

It is proposed to provide employment to about 33 persons for carrying out mining operations and give preference to the local people in providing employment. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc., the economic status of the local people will be enhanced due to mining project.

8.2 Socio-Economic Welfare Measures Proposed

The impact of mining activity in the area will be more positive than negative 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 mine is located in Nadanthai Village, Paramathivelur Taluk and Namakkal District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

- 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.,

8.5.1 Corporate Social Responsibility

The project proponent Tmt. V. Punitha 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 proponent will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

8.5.2 CSR Cost Estimation

CSR activities will be taken up in the Nadanthai village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., CSR budget is allocated as 2.5% of the profit.

8.5.3 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.

Table 8.1: CER – Action Plan

Activity	Beneficiaries	Total in Rs
Water Management – Construction of rainwater harvesting structures	Nadanthai village	5,00,000
Sanitation – Maintenance & repairs of toilets in nearby schools	One school in Nadanthai village	
Solar Power – Installation of Solar Street Lamps	Nadanthai village roads	
Total		5,00,000

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

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER - 10: 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 of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 Environmental Policy

The Project Proponent committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent will –

- Allocate necessary resources to ensure the implementation of the environmental policy
- 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
- 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 programmes 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 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of the proposed quarry.

The said team will be responsible for:

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

- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 Land Environment Management –

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (un utilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the Environment will not be affected. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

Table 10.1: Proposed Controls for Land Environment

Control	Responsibility
Designing vehicle wash-down system so that all washed water is captured and passed through grease and oil separators.	Mines Manager
Re fuelling will be carried out in a safe location, away from vehicle movement pathways	Mine Foreman & Mining Mate
No external dumping i.e., outside the project area	Mine Foreman
Greenbelt on dumps and its maintenance	Environment Officer
Garland drains with catch pits to be provided all around the project area to prevent run off affecting the surrounding lands.	Environment Officer
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager
Thick plantation using native flora species will be carried out on the backfilled area.	Mines Manager
There will be formation of a small surface water body in the mined-out area, which can be used for watering the greenbelt at the conceptual stages.	Environment Officer

10.3 Soil Management

10.3.1 Top Soil Management –

There is 1,984m³ of topsoil will be generated during this scheme period

10.3.2 Overburden / Waste and Side Burden Management –

Total waste produced during this scheme period will be around 30,711m³ (Granite Waste + Weathered rock). The total waste material will be proposed to dump with two different dimension, one on the Southern side with maximum dimension of (L)140m x (W)25m x (H)3m and another dump proposed on South eastern portion with maximum dimension of (L)72m x (W)40m x (H)20.95m, which will be act as temporary waste dumps.

Table 10.2: Proposed Controls for Soil Management

Control	Responsibility
backfilling process during mine closure as per mining plan	Mines Manager
The dump slopes will be planted with deep rooting shrubs, grasses and creepers for stabilizing them	Environment Officer
Garland drains are to be paved around the dump area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface dumps via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
The backfilled area shall be covered with the soil for green belt development	Environment Officer

Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
The overall slope of the dump is maintained at angle of repose not exceeding 37° from horizontal	Mines Manager
The retaining wall has to be made to arrest the waste dump spills	Mines Manager
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

10.4 Water Management

Water is a key component in mining projects as it is required for, and affected by, mining activities. Effective water management is important for a variety of reasons including: uninterrupted operation of the mine, compliance with operational permissions and applicable legislation, and minimization of effects on the receiving environment.

This section focuses on actions for avoidance, mitigation, and control, as well as a water management monitoring program –

- To protect water-related resources, and avoid harmful impacts;
- To supply and retain water for mine operations;
- to Define water-related environmental control structures; and
- To manage water to ensure that any discharges are following the applicable water quality levels and guidelines.

Table 10.3: Proposed Controls for Water Environment

Control	Responsibility
To maximize the reuse of pit water for water supply	Mines Manager
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Environment Officer
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations Safety distance of 50m will be always maintained from the odai	Mines Manager
Mine pit water is used for dust suppression and greenbelt development utilization of mine pit water is optimal and effective ways	Environment Officer
Ensure there is no process effluent generation or discharge from the project area into water bodies	Environment Officer
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Manager
Fast growing grasses, small plants and bushes will be grown on the overburden dumps to control soil erosion and siltation	Mines Manager
Retention walls and garland drains will be constructed around toe of waste dumps to arrest silt wash off from dumps during monsoon	Environment Officer

Rainwater harvesting measures will be adopted in the project area and in nearby villages to maintain and enhance the ground water table of the area	Environment Officer
Regularly assess and modify Water Management Plan to adapt to changing work plans and site conditions	Environment Officer
Familiarize all site personnel with the purpose and content of the Water Management Plan, and their responsibilities in its implementation	Environment Officer
Water management and sediment control structures and facilities will be regularly inspected and maintained according to the monitoring schedules	Environment Officer
Monthly or after rainfall, inspection for performance of water management structures and systems	Environment Officer
Conduct ground water and surface water monitoring for parameters specified by State Pollution Control Board (SPCB)	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.5 Air Quality Management

The proposed mining activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements.

Table 10.4: Proposed Controls for Air Environment

Control	Responsibility
Generation of dust during excavation is minimized by water sprinkling on working face	Mines Manager
Develop thick Greenbelt with tall growing trees and thick foliage cover all along the boundary of the project (7.5 Meter Buffer Zone) to arrest dust spreading outside the project area and to be maintained. This plantation cover will also act as an acoustic barrier	Environment Officer
Daily maintenance of haul roads and daily water sprinkling to minimize the generation of fugitive dust due to movement of heavy earth moving machineries on it	Mines Manager
Handle the waste from the mine pit to respective dumps and backfilling during closure process, fugitive dust is anticipated. this fugitive emission can be controlled by well-maintained machineries, well maintained haul roads water sprinkling on haul roads twice a day. Besides it is also advised not to handle the waste during high windy periods	Mines Manager & Environment Officer
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself to be implemented	Environment Officer
Plantation will be carried out on surface dumps, backfilled area and top benches of the mined out area	Environment Officer
Water reservoir will be developed in the left over mined out pit, which will serve as additional surface water resources for the nearby villages	Environment Officer
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution and noise generation	Mines Manager
Over loading of trucks should be avoided	Mines Manager
All the mining equipment and trucks has been controlled with emission norms	Environment Officer
The village roads used for mineral transport will be maintained weekly and monthly basis to avoid fugitive dust emissions	Mines Manager
Dust mask are provided to the workers working in high dust generating areas and continue to provide the same	Mines Manager

Weekly and Monthly maintenance of deployed machineries, to reduce gaseous emission	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Environment Officer
Monitor meteorological conditions (temperature, wind, rainfall)	Environment Office

Source: Proposed by FAE's & EIA Coordinator

10.6 Noise Management

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time.

Table 10.5: Proposed Controls for Noise Environment

Control	Responsibility
A thick greenbelt to be developed all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Plantation activities to be carried out on surface dumps and infrastructure facilities, these plantations will help in attenuating the noise levels	Environment Officer
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Manager
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Environment Officer
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Environment Officer
Provision of effective silencers for mining machinery and transport vehicles	Environment Officer
Provision of sound proof AC operator cabins to HEMM	Environment Officer
Sharp drill bits are used to minimize noise from drilling	Environment Officer
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring to be carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Environment Officer
Undertake noise or vibration monitoring in response to a complaint (from any sensitive receptor).	Mines Manager
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination during initial stage of operation	Mines Manager
If a noise or vibration complaint is received, follow the complaints and inquiries	Environment Officer
Undertake noise or vibration monitoring half yearly	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

10.7 Ground Vibration and Fly Rock Control

Table 10.6: Proposed Controls for Ground vibration & Fly rocks

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

Prior to blasting within 500 meters of the lease boundary, establish a fly rock exclusion zone within adjacent properties and check with landholders that the area is not occupied by humans, blast clearance zones are applied for all blasts.	Environment Officer
Undertake vibration monitoring	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

10.8 Biological Environment Management

The mine management will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of mined out area, backfilled area, etc., the water reservoir will be developed in lower benches of the mined-out area at conceptual stage will be used for the maintenance of green belt after the closure of mine.

Following control measures are proposed for its management and will be the responsibility of the environment officer.

- Greenbelt development all along the safety barrier of the project area
- The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and constructing a sprinkler near the newly planted area.
- Year wise plantation should be recorded and monitored
 - Based on the area of plantation.
 - Period of plantation
 - Type of plantation
 - Spacing between the plants
 - Type of manuring and fertilizers and its periods
 - Lopping period, interval of watering
 - Survival rate
 - Density of plantation
- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.8.1 Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

Table 10.7: Recommended Species to Plant in the Greenbelt

S. No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	Borassus flabellifer	Arecaceae	Panai	T
2	Morinda pubescens	Rubiaceae	Nuna	T
3	Pongamia pinnata	Fabaceae	Pungam	T
4	Thespesia Populnea	Malvaceae	Puvarasu	T
5	Syrygium cumini	Myrtaceae	Naval	T
6	Saraca asoca	Fabaceae	Asoca	T
7	Limonia acidissima	Rutaceae	Odham	T
8	Lannea coromandelica	Anacardiaceae	Vila maram	T
9	Cassia roxburghii	Fabaceae	Sengondrai	T
10	Pterocarpus marsupium	Fabaceae	Vengai	T

Source: Proposed by FAE's & EIA Coordinator

10.9 Occupational Safety & Health Management

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

10.9.1 Medical Surveillance and Examinations –

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

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

- General Physical Examination and Blood Pressure
- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

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

10.9.2 Proposed Occupational Health and Safety Measures –

- Providing a clean working environment that is conducive to safety & health annually
- Employee involvement and commitment in the implementation of health and safety guidelines
- Implementing safety and health management system and assessing the effectiveness through periodic audits
- Setting of safety and health objectives based on comprehensive strategic plans and measure performance against these plans
- Provision of necessary standard personal protective equipment's (PPE)

- Ensuring that all employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities.
- Provision of rest shelters for mine workers with amenities like drinking water, fans, toilets urinals, canteen etc.,
- Rotation of workers exposed to noisy areas.
- Daily dust suppression on haul roads to prevent fugitive dust emission into the air.
- First-aid facility at the mine office.

10.9.3 Health and Safety Training Programme

The company shall provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State. And engage an Environmental Consultants to provide periodical training to all the employ to carry out the mining operation in and eco-friendly manner.

Table 10.8: List of Periodical Trainings Proposed for employees

Course	Personnel	Frequency	Duration	Instruction
New-hire Training	All new hires exposed to mine hazards	Once	One week	Employee rights, Supervisor responsibilities, Self-rescue Respiratory devices, Transportation controls, Communication systems, Escape and emergency evacuation, Ground control hazards, Occupational health hazards, Electrical hazards, First aid, Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance,	Employees assigned to new work tasks	Before new Assignments	Variable	Task-specific health & safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations, Fire warning Ground control hazards First aid, Electrical hazards Accident prevention Explosives, Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules, Respiratory devices

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms

10.9.4 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.9: Emp Budget for Proposed Project

	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	28650	28650
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 3 Units	100000	10000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2Units	10000	500
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	57300
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, 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 implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0

	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	1893
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
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	28650	5000
	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	573000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 1450Trees - (380 inside Lease Area & 1360Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendmets, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	76000	11400
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	408000	40800
	4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	46950	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	4295	0

Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	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	50000
	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) - 33Employees	132000	33000
	Health check up for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	33000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	5730
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	143250	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
TOTAL			2959550	1204272.8

In order to implement the environmental protection measures, an amount of Rs.29.59 lakhs as capital cost and recurring cost as Rs. 12.04 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project.

Year Wise Break Up	
1st Year	₹41,63,822.8
2nd Year	₹12,64,486.4
3rd Year	₹13,27,710.8
4th Year	₹13,94,096.3
5th Year	₹15,10,751.1
Total	₹97 Lakhs

10.11 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 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 – 11: SUMMARY AND CONCLUSIONS

Tmt.V.Punitha Multi Colour Granite Quarry – (Extent 2.86.5Ha) falls under “B” category as per MoEF & CC Notification (S.O. 3977 (E)).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

A detailed Draft EIA/ EMP Report is prepared for public and other stakeholders’ suggestions and a Final EIA/ EMP Report will be prepared based on the outcome of Public Consultation.

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the month of Oct to Dec 2023 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Granite as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 33 people directly in the cluster and indirectly around 120 people.

As discussed, it is safe to say that the proposed quarries are not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Tmt.V.Punitha (Total cluster Extent: 17.09.5ha).

12. DISCLOSURE OF CONSULTANTS

Tmt. V. Punitha have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below

Sl.No.	Name of the expert	In house/ Empanelled	EIA Coordinator		FAE	
			Sector	Category	Sector	Category
1	Dr. M. Ifthikhar Ahmed	In-house	1	A	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	-	-	HG GEO	A A
3	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	-	SW	B
6	Mr. Govindasamy	In-house	-	-	WP	B
7	Mrs. K. Anitha	In-house	-	-	SE	A
8	Mrs. Amirtham	In-house	-	-	EB	B
9	Mr. Alagappa Moses	Empanelled	-	-	EB	A
10	Mr. A. Allimuthu	In-house	-	-	LU	B
11	Mr. S. Pavel	Empanelled	-	-	RH	B
12	Mr. J. R. Vikram Krishna	Empanelled	-	-	SHW RH	A A

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

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP for Multi Colour Granite Quarry Tmt. V. Punitha over an Extent of 2.86.5 ha in Nadanthai Village of Paramathivelur Taluk, Namakkal District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge. I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA/EMP Report.

Name: **Dr. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:




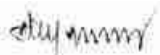

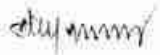














Period of Involvement: **Dec 2022 to till date**

Associated Team Member with EIA Coordinator:



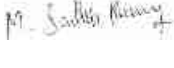
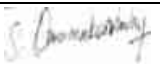
1. Mr.S.Nagamani
2. Mr. P.Viswanathan
3. Mr. Santhoshkumar
4. Mr. S. Ilavarasan







FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul style="list-style-type: none"> ▪ Identification of different sources of air pollution due to the proposed mine activity ▪ Prediction of air pollution and propose mitigation measures / control measures 	Mr. A. Jagannathan	
2	WP	<ul style="list-style-type: none"> ▪ Suggesting water treatment systems, drainage facilities ▪ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures. 	Dr. M. Ifthikhar Ahmed	
			Mr. N. Senthilkumar	
3	HG	<ul style="list-style-type: none"> ▪ Interpretation of ground water table and predict impact and propose mitigation measures. ▪ Analysis and description of aquifer Characteristics 	Dr. P. Thangaraju	
4	GEO	<ul style="list-style-type: none"> ▪ Field Survey for assessing the regional and local geology of the area. ▪ Preparation of mineral and geological maps. ▪ Geology and Geo morphological analysis/description and Stratigraphy/Lithology. 	Dr. M. Ifthikhar Ahmed	
			Dr. P. Thangaraju	
5	SE	<ul style="list-style-type: none"> ▪ Revision in secondary data as per Census of India, 2011. ▪ Impact Assessment & Preventive Management Plan ▪ Corporate Environment Responsibility. 	Mrs. K. Anitha	
6	EB	<ul style="list-style-type: none"> ▪ Collection of Baseline data of Flora and Fauna. ▪ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ▪ Impact of the project on flora and fauna. ▪ Suggesting species for greenbelt development. 	Mrs. Amirtham	
			Mr. Alagappa Moses	

7	RH	<ul style="list-style-type: none"> ▪ Identification of hazards and hazardous substances ▪ Risks and consequences analysis ▪ Vulnerability assessment ▪ Preparation of Emergency Preparedness Plan ▪ Management plan for safety. 	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	<ul style="list-style-type: none"> ▪ Construction of Land use Map ▪ Impact of project on surrounding land use ▪ Suggesting post closure sustainable land use and mitigative measures. 	Mr. A. Allimuthu	
9	NV	<ul style="list-style-type: none"> ▪ Identify impacts due to noise and vibrations ▪ Suggesting appropriate mitigation measures for EMP. 	Mr. A. Jagannathan	
10	AQ	<ul style="list-style-type: none"> ▪ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ▪ Recommending mitigations measures for EMP 	Mr. N. Senthilkumar	
11	SC	<ul style="list-style-type: none"> ▪ Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr. M. Ifthikhar Ahmed	
12	SHW	<ul style="list-style-type: none"> ▪ Identify source of generation of non-hazardous solid waste and hazardous waste. ▪ Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Provide inputs on Geological Aspects ▪ Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures 	
2	Mr. Viswanathan	AP; WP; LU	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Assisting FAE on sources of water pollution, its impacts and suggest control measures ▪ Assisting FAE in preparation of land use maps 	
3	Mr. Santhoshkumar	GEO; SC	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
4	Mr. Umamahesvaran	GEO	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects 	

			<ul style="list-style-type: none"> ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan 	
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of data's ▪ Provide inputs by analysing primary and secondary data 	
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assisting FAE in preparation of land use maps ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE & provide inputs on aquifer characteristics, ground water level/table ▪ Assist with methods of ground water recharge and conduct pump test, flow rate 	
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures ▪ Assist FAE with prediction modelling 	
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the EIA/EMP for Multi Colour Granite Quarry Tmt. V. Punitha over an Extent of 2.86.5 ha in Nadanthai Village of Paramathivelur Taluk, Namakkal District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature & Date:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

NABET/EIA/2225/RA0276 Dated: 20-02-2023

Validity:

Valid till 06.08.2025

ANNEXURE

TMT. V.PUNITHA MULTI COLOUR GRANITE QUARRY

S.F. No: 482,

Nadanthai Village,

Paramathivelur Taluk,

Namakkal District

EXTENT = 2.86.5 ha

ToR obtained

Letter No. SEIAA-TN/F.No. 10213/SEAC/1 (a) ToR-1645/2023 Dated :09.01.2024

Project Proponent

Tmt. V. PUNITHA,

S W/o. P. Velmani residing at No. 109,

Narasinghapuram Post,

Nethaji Nagar, Attur Taluk,

Salem District,

Tamil Nadu.

LIST OF ANNEXURES

Annexures	DESCRIPTION	PAGE NOS
P1 Tmt. V. Punitha	COPY OF TERMS OF REFERENCE	1 - 23
	COPY OF 500M RADIUS QUARRIES DETAILS & EXISTING PIT DETAILS LETTER	24- 26
	COPY OF 300m & VAO ATTESTATION LETTER	27 - 28
	COPY OF MINING PLAN APPROVED LETTER	29 - 33
	COPY OF APPROVED MINING PLAN WITH PLATES	34 - 138
	COPY OF HYDROGEOLOGICAL REPORT	139 - 149
	COPY OF EXPLOSIVE LETTER	150 - 151
E1 M/s.M.M.Exports	COPY OF ENVIRONMENTAL CLEARANCE	152 - 159
E2 M/s.M.M.Exports	COPY OF ENVIRONMENTAL CLEARANCE	160 - 167
E3 Tmt.L.Selvi	COPY OF ENVIRONMENTAL CLEARANCE	168 - 175
E4 Thiru. P. Velmani	COPY OF ENVIRONMENTAL CLEARANCE	176 - 183
	COPY OF BASE LINE MONITORING DATA	184 - 257
	COPY OF CONSULTANT ACCREDITATION CERTIFICATE	258



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

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

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.10213/SEAC/1(a)ToR-1645/2023 Dated:09.01.2024.

To

Tmt. V. Punitha,
W/o. P. Velmani,
No. 109, Narasinghapuram post,
Nethaji Nagar, Attur Taluk,
Salem District.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Existing Multi Colour Granite Quarry lease over an Extent of 2.86.5 Ha (Patta Land) of S.F.Nos. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu by Tmt. V. Punitha - under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” – **ToR issued along with Public Hearing-** preparation of EIA report – Regarding.

- Ref:**
1. Online proposal No. SIA/FN/MIN/430138/2023 dated.21.05.2023.
 2. Your application submitted for Terms of Reference dated:17.06.2023.
 3. Minutes of the 407th SEAC meeting held on 07.09.2023.
 4. Minutes of the 430th SEAC meeting held on 14.12.2023
 4. Minutes of the 687th SEIAA meeting held on 09.01.2024.

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


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The proponent, Tmt. V. Punitha has submitted an application for Terms of Reference (ToR) on 17.06.2023, for the Existing Multi Colour Granite Quarry lease over an Extent of 2.86.5 Ha (Patta Land) of S.F.Nos. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

The proposal was placed in the 430th meeting of SEAC held on 14.12.2023. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, Thiru. V. Punitha has applied for Terms of Reference for Existing Multi Colour Granite Quarry lease over an Extent of 2.86.5 Ha (Patta Land) of S.F.Nos. 482 of Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. Earlier, EC was accorded to the project proponent by DEIAA vide Lr.No.DEIAA-NMK-TN/F.No.259/Mines/02/ EC No. 2/2017 dated. 24.11.2017 for a period of 5 years from the date of execution of mining lease. EC was accorded for the quantity of 30,025m³ of multi-colour granite up to a depth of 18m.
4. The proponent has submitted a Certified Compliance Report obtained from IRO of MoEF&CC vide E.P./12.1/2022-23/SEIAA/155/TN/1200 dated.15.11.2022 for the EC obtained earlier.
5. Now, based on MoEF&CC O.M dated.24.04.2023, the proponent has submitted the application at SEIAA-TN for re-appraisal of EC granted by DEIAA.
6. Earlier, the proposal was placed for appraisal in the 407th meeting of SEAC held on 07.09.2023

Based on the details furnished by the Project Proponent, the SEAC directed the PP to submit the details of last date of mining carried out at the project site validated by the concerned AD (Mines), Department of Geology & Mining. On receipt of the details sought the SEAC will deliberate further and decide on future course of action.

7. The proponent vide letter dated.10.10.2023, furnished a reply to the details sought by SEAC in it's 407th meeting.

8. In view of the above, the proposal is again placed in this 430th SEAC meeting.

Based on the presentation made by the proponent, SEAC decided to recommend the proposal for Terms of Reference (TOR) with Public Hearing subject to the following additional TORs & ToRs in Annexure of this minutes, in addition to the standard terms of reference for EIA study for


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non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

2. The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.
3. The PP shall prepare a conceptual working plan accommodating the remedial actions such as inclusion of haul road accessibility keeping the benches intact, based on the studies carried out to assess the slope stability of the working benches to be constructed and existing quarry wall. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and slope stability action plan during the time of appraisal for obtaining the EC.
4. The PP shall undertake Hydrogeology study considering nearby existing wells, Aquifers, Ground water & surface water levels etc within the radius of 1km.

ANNEXURE I

1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:
 - (i) Original pit dimension
 - (ii) Quantity achieved Vs EC Approved Quantity
 - (iii) Balance Quantity as per Mineable Reserve calculated.
 - (iv) Mined out Depth as on date Vs EC Permitted depth
 - (v) Details of illegal/illicit mining
 - (vi) Violation in the quarry during the past working.
 - (vii) Quantity of material mined out outside the mine lease area
 - (viii) Condition of Safety zone/benches
 - (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.
3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with


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indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.

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


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12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
14. Quantity of minerals mined out.
 - Highest production achieved in any one year
 - Detail of approved depth of mining.
 - Actual depth of the mining achieved earlier.
 - Name of the person already mined in that leases area.
 - If EC and CTO already obtained, the copy of the same shall be submitted.
 - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.
19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along


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with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.

21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
28. Impact on local transport infrastructure due to the Project should be indicated.


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29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.


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38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	வில்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathi	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathi	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punnai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சரக்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon sweitenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவுளி.
18	<i>Creteva adansonii</i>	Mavalingum	மாவிளங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உசா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உசா
21	<i>Diospyro sebenum</i>	Karungali	கருங்காலி
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகனை
23	<i>Ficus amplissima</i>	Kallitchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்புலரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Lannea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	விலா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	அரம்பா. பிசின்பட்டை
32	<i>Madhuca longifolia</i>	Iluppai	இலுப்பை
33	<i>Manilkara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	ஈச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்


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40	<i>Premna mollissima</i>	Munnai	முன்னை
41	<i>Premna serratifolia</i>	Narumunnai	நறு முன்னை
42	<i>Premna tomentosa</i>	Malaipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வன்னி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vennangu, Tada	வெண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Puthranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Marupungaru, Soapukai	மணிப்புங்கன் சோப்புக்காய்
50	<i>Saraca asoca</i>	Asoca	அரிசாகா
51	<i>Streblus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தான் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தாண்டிரி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsuratrifoliata</i>	valsura	வால்கரா
60	<i>Wrightia tinctoria</i>	Veppalai	வெப்பாலை
61	<i>Pithecellobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

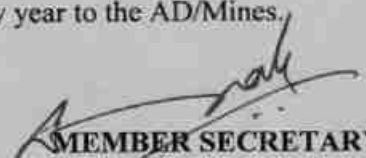
Discussion by SEIAA and the Remarks:-

The subject was placed in the 687th authority meeting held on 09.01.2024. The authority noted that the subject was appraised in the 430th SEAC meeting held on 14.12.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the conditions mentioned in 'Annexure B' of this minutes.

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.


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4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

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

Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.


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

Forests

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

Water Environment

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


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

Energy

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

Climate Change

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

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in &


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around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.

Others

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

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.


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- 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.


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- 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


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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


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- 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.


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- 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.


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- 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.


MEMBER SECRETARY
SEIAA-TN

7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.


MEMBER SECRETARY
SEIAA-TN

27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

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


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SEIAA-TN

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

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


MEMBER SECRETARY
SEIAA-TN

Copy to:

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

From,
Thiru. V.Sasikumar, M.Sc.,
Assistant Director,
Dept.of Geology and Mining,
Namakkal District.

To,
Tmt.V.Punitha
W/o. P.Velmani.
Nethaji Nagar,
Narasingapuram Post,
Attur Taluk, Salem District.

Roc.No. 165 / Mines / 2022 dated: 22.04.2022.

Sir,

Sub: Mines & Minerals – Namakkal District – Multi-Colour Granite quarry – Lease granted to Tmt.V.Punitha – in S.F.No 482 over an extent of 2.86.5 hect in Nadanthai Village, Paramathi-Velur Taluk – Requested for details of production quantity – to apply Environment Clearance – reg.

- Ref: 1. G.O.(3D) No.27 Industries (MMB-2) Department dated 29.11.2017.
2. Tmt.V.Punitha requested letter dated: 20.04.2022.

A Multi-Colour Granite quarry lease has been granted to Tmt.V.Punitha in S.F.No. 482 over an extent of 2.86.5 hect in Nadanthai Villages, Paramathi-Velur Taluk, Namakkal District for a period of 20 years from 03.01.2018 to 02.01.2038.

In the ref. 2nd cited, the lessee has requested to furnish the details of all mines / quarries located within 500mts radius from the lease area for obtaining Environmental Clearance from SEIAA.

In this regard, it is informed that at present the following existing / abandoned quarries are located within 500 mts radial distance from the periphery of the lease area.

Abandoned / Lease Expired Quarry

Sl.No.	Name and address	G.O.No and Date	Village & Taluk	S.F.No.	Extent (in Hects)	Period of lease
1.	J.A.Richard	G.O.No.(3D) No.7 Industries Dept dated: 20.03.1995	Nadanthai Village, Paramathi-Velur Taluk	493/1A (P) & 515/2(P)	1.76.0	10 Years Lease Expired
2.	Gem Granites	G.O.No.(3D) No.9 Industries Dept dated: 17.01.1994	Nadanthai Village, Paramathi-Velur Taluk	483/2	4.05.0	10 Years Lease Expired


Existing Quarry

Sl.No.	Name and address	G.O.No and Date	Village & Taluk	S.F.No.	Extent (in Hects)	Period of lease
1.	M/s. M.M.Exports, No.77-E, Upstairs, Kaveri Avenue, MDS Nagart, Salem - 636 007.	G.O.No.(3D) No.71 Industries (MMB.2) Dept dated: 30.11.2016	Nadanthai Village, Paramathi-Velur Taluk	483/2A	2.75.5	20 Years 05.01.2017 to 04.01.2037
2.	M/s. M.M.Exports, No.77-E, Upstairs, Kaveri Avenue, MDS Nagart, Salem - 636 007.	G.O.(3D) No.70 Industries (MMB-2) Department dated 30.11.2016	Nadanthai Village, Paramathi-Velur Taluk	492/2	2.73.0	20 Years 05.01.2017 to 04.01.2037
3.	L.Selvi, W/o. Loganathan, No.3B, 3 rd Cross, Power House Colony, Krishnagiri Town, Krishnagiri District.	G.O.(3D) No.23 Industries (MMB-2) Department dated 15.02.2016	Nadanthai Village, Paramathi-Velur Taluk	494/1 494/2	4.40.5	20 Years 25.02.2016 to 24.02.2036
4.	P.Velmani, Nethaji Nagar, Narasingapura m Post, Attur Taluk, Salem District.	G.O. (3D) No. 26, Industries (MMB-2) Department, dated: 19.10.2015	Nadanthai Irrukkur Village, Paramathi-Velur Taluk	456 & 25/1	4.34.0	20 Years 02.12.2015 to 01.12.2035
5.	Tmt.V.Punitha W/o. P.Velmani. Nethaji Nagar, Narasingapura m Post, Attur Taluk, Salem District.	G.O.No.(3D) No.27 Industries (MMB.2) Dept dated: 29.11.2017	Nadanthai Village, Paramathi-Velur	482	2.86.5	20 Years 03.01.2018 to 02.01.2038 SOM Submitted.

Proposed Quarry

Sl.No.	Name and address	G.O.No and Date	Village & Taluk	S.F.No.	Extent (in Hects)	Period of lease
Nil						

Further the total extent of the lease area situated within the radius of 500m is not exceeding 25.00.0 hectares. Hence, this proposal may kindly be considered for the Environmental clearance. Further, it is submitted that, no other quarry will be proposed within 500 mt radius from the periphery of the site exceeding 25.00.0 hectares within the lease period of this application.


 Assistant Director,
 Geology and Mining,
 Namakkal.

From,
S. Poornavel, M.Sc.,
Assistant Director,
Dept.of Geology and Mining,
Namakkal District.

To,
Tmt.V.Punitha
W/o. P.Velmani.
Nethaji Nagar,
Narasingapuram Post,
Attur Taluk, Salem District.

Roc.No. 165 / Mines / 2022 dated: 07.10.2022.

Sir,

Sub: Mines & Minerals – Namakkal District – Multi-Colour Granite quarry – Lease granted to Tmt.V.Punitha – in S.F.No 482 over an extent of 2.86.5 hect in Nadanthai Village, Paramathi-Velur Taluk – to apply Environment Clearance – Requested certain particulars - Reg.

- Ref: 1. G.O.(3D) No.27 Industries (MMB-2) Department dated 29.11.2017.
2. Tmt.V.Punitha requested letter dated: 30.09.2022.

In the reference 2nd cited, you have requested to furnish certain particulars in respect of Multi-Colour Granite quarry lease granted in S.F.No. 482 over an extent of 2.86.5 hect in Nadanthai Village, Paramathi-Velur Taluk, Namakkal District.

As per the Scheme of Mining submitted by the lessee, the existing quarry pit dimensions of the subject field is as follows.

Existing Pit Details							
Depth NoS	Surface R.L	Pit R.L	Area in Sq.m	Total Depth in (M)	Granite Depth in(M)	Weathered Depth in(M)	Topsoil Depth in (M)
Depth 1	180	176	1141	4	1	1	2
Depth 2	180	175	812	5	2	1	2
Depth 3	180	170	1117	10	7	1	2
Depth 4	180	167	2428	13	10	1	2
Depth 5	180	163	435	17	14	1	2

S. Poornavel
Assistant Director,
Geology and Mining,
Namakkal.

RG
07/10/22

சீரணி

நாமக்கல் மாவட்டம், பரமத்திவேலூர் வட்டம்
 பிடந்தை கிராமம் சீரணி 482 ஆம் 2.86.5 ஏக்கர்
 சீரணிப்பணம் நிறைவேற்ற கிராமண்பே சீரணித் தொழிலாளர்களைப்
 பற்றி உட்காணும். அண்மையில் சீரணித் தொழிலாளர்களைப்
 கிராமண்பே சீரணித் தொழிலாளர்களை 300 மீ சீரணிப்பணம்
 ஏற்றுக் கொள்ள முன்முடிவு எடுத்தோம், ஆகையினால்,
 சீரணித் தொழிலாளர்களை உட்காணும் இன்னை ஏற்றுக்
 கொள்ளும்படி உட்காணும்.

பா. சீரணி
 சீரணித் தொழிலாளர்கள்
 23, நடந்தை
 பரமத்தி - வேலூர் வட்டம்,
 நாமக்கல் மாவட்டம்.

**TOPOGRAPHICAL VIEW OF NADANTHAI MULTI-COLOUR GRANITE
QUARRY LEASE APPLIED AREA**




Name of the Lessee : **Tmt. V. Punitha,**
Address : W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

LOCATION OF THE AREA:

Extent : 2.86.5 Ha
S.F.No. : 482
Village : Nadanthai
Taluk : Paramathivelur
District : Namakkal
State : Tamilnadu

Signature of the Lessee


(V. Punitha)


அரசியல் அதிகாரி
23, நடந்தை
Attestation
புரட்சி - வெள்ளை வட்டம்.
(Village Administrative Officer)
நாமக்கல் மாவட்டம்

COMMISSIONERATE OF GEOLOGY AND MINING

From
Thiru J.Jayakanthan IAS.,
Commissioner,
Department of Geology and Mining,
Guindy, Chennai-32.

To
Tmt V.Punitha,
W/o P.Velmani,
No.109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District.

Rc.No.4016/MM4/2022 dated: 29.08.2022

Sir,

Sub: Mines and Minerals - Minor mineral - Multi Colour Granite - Namakkal - Paramathi- Velur taluk - Nadanthai village - over an extent of 2.86.5 ha of Patta lands - S.F.Nos.482 - Quarry lease granted to Tmt V.Punitha, W/o P.Velmani - Submission of 1st Scheme of Mining for the period 2023-24 to 2027-28 - Recommended and forwarded by the Assistant Director (G&M), Namakkal - Approval accorded.

- Ref: 1. Mining plan approved by the Commissioner of Geology and Mining in letter No.5162/MM5/2016 dated: 10.07.2017.
2. G.O. (3D) No.27, Industries (MMB.2) Department, dated 29.11.2017.
3. First Scheme of mining submitted by the lessee at district office on 20.06.2022.
4. The Assistant Director (G&M), Namakkal District Lr.Rc.No.631/Mines/2022, dated: 24.06.2022.

-*****-

Kind attention is invited to the references cited.

2) The lessee Tmt V.Punitha has submitted first Scheme of Mining for approval in the reference 3rd cited for the quarry lease granted under G.O. (3D) No.27, Industries (MMB.2) Department, dated 29.11.2017 for quarrying Multi Colour Granite over an extent of 2.86.5 ha of Patta lands in S.F.Nos.482 of Nadanthai village, Paramathi - Velur taluk, Namakkal district. The period of quarry lease is from 03.01.2018 to 02.01.2038.

3) The Assistant Director (G&M), Namakkal district in the reference 4th cited has forwarded the first scheme of Mining

geological plan, geomorphological and reserve details furnished in the scheme of mining plan are verified with the ground realities and found correct. The lessee has complied with the terms and conditions stipulated in the lease deed and lease granting Government order. There is no violation in the subject quarry and there is no litigation in the subject area. Finally, the Assistant Director (G&M), Namakkal recommended the first scheme of mining for approval.

4) Based on the recommendation of the Assistant Director (G&M), Namakkal district and in exercise of the powers conferred under Rule, 18(4) of Granite Conservation and Development Rules, 1999 read with G.O. (Ms) No.87, Industries (MMC.1) Department dated 22.02.2001, the first Scheme of Mining for the period 2023-24 to 2027-28 submitted by Tmt V.Punitha is approved subject to the following conditions in addition to the conditions stipulated in Government Order under reference 2nd cited:

- i. This first Scheme of Mining 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 first Scheme of Mining (including progressive mine closure 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 law including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1986, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- iii. This first Scheme of Mining including progressive mine closure plan is approved without prejudice to any other

order or direction from any court of competent jurisdiction.

- iv. Provisions of the Mines Act, 1952 and the Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required under Mines Act, 1952 shall be complied with.
- v. Provisions made under Mines and Minerals (Development & Regulation) Act, 1957, MMDR Amendment Act, 2015 and Granite Conservation and Development Rules, 1999 made there under shall be complied with.
- vi. This approval of first Scheme of Mining is restricted to the mining lease area only. The mining lease area is as shown on the statutory plan under Granite Conservation and Development Rules, 1999. The Commissionerate of Geology and Mining does not take any responsibility regarding correctness of the boundaries of the lease shown on the ground with reference to the lease map and other plans furnished by the lessee.
- vii. 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.
- viii. Relaxation to be obtained under Rule 106(2)(b) of Metalliferous Mines Regulations, 1961 from the Director of Mines Safety, if necessary.
- ix. The lessee should obtain environmental clearance from the appropriate authority.
- x. This first Scheme of Mining is approved for the proposal contained therein and is applicable from the date of

- approval of the document for the quarrying activities to be carried out within the leasehold area.
- xii. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Assistant Director (G&M), Namakkal district.
 - xiii. The quarry labourers shall be registered with the Labour Board and shall be enrolled under the Insurance Scheme.
 - xiv. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
 - xv. The applicant should comply with the additional conditions stipulated in the Government of India, Ministry of Mines, Order No. 11/02/2020, dated: 14.01.2020 issued as per the Order of the Hon'ble Supreme Court of India, dated: 08.01.2020 that states, "The Mining lease holders shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna, etc.

Encl: First Scheme of Mining.

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

[Signature] 29/8/22
Deputy Director

Copy to:

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

K4
29/8/22

- 2 The Director of Mines Safety,
Lapis Lagoon, AA Block,
New No.05, (Old No.46), 2nd street,
Shanthi Colony, Anna Nagar,
Chennai - 40.
- 3 The District Collector,
Namakkal.



**SCHEME OF QUARRYING ALONG WITH
PROGRESSIVE QUARRY CLOSURE PLAN FOR
NADANTHAI MULTI COLOUR GRANITE**

(Under Rule 18 (2) of Granite Conservation and Development Rules, 1999)

Lease Period: 03.01.2018 to 02.01.2038

Patta Land/ Scheme Period 2023-24 to 2027-28

IN

LOCATION OF QUARRY LEASE AREA

EXTENT	: 2.86.5 Ha
S.F.No.	: 482
VILLAGE	: NADANTHAI
TALUK	: PARAMATHIVELUR
DISTRICT	: NAMAKKAL
STATE	: TAMIL NADU.

FOR

APPLICANT / LESSEE

TMT. V. PUNITHA,

W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

PREPARED BY

DR. P. THANGARAJU, M.Sc., Ph.D.,

Qualified Person

No.17, Advaita Ashram Road,
Alagapuram, Salem District,
Tamil Nadu - 636 004.

Cell: +91 94433 56539, 94422 78601

E-mail: infogeoexploration@gmail.com



V. Punitha,
W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

CONSENT LETTER FROM LESSEE

The Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Nadanthai Multi colour Granite Quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State, has been prepared by

Dr.P. Thangaraju, M.Sc., Ph.D.,
Qualified Person

I request the Director, Department of Geology and Mining, Chennai to make further correspondence regarding the modification of the Scheme of quarrying with the said Qualified Person at his following address.

Dr.P. Thangaraju, M.Sc., Ph.D.,
No.17, Advaita Ashram Road,
Alagapuram, Salem - 636 004.
Cell: +91 94422 78601, 94433 56539.

I hereby undertake that all the modifications, if any made in the Scheme of Quarrying 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.

Signature of the lessee

(V. Punitha)

Place: Salem

Date: 09.05.2022



V. Punitha,
W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

DECLARATION OF MINE OWNER

The Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Nadanthai Multi colour Granite Quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State has been prepared in full consultation with me by

Dr.P. Thangaraju, M.Sc., Ph.D.,
Qualified Person

I have understood its contents and agree to implement the same in accordance with Laws applicable to Mines.

Signature of the lessee

(V. Punitha)

Place: Salem

Date: 09.05.2022



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that I, **Dr.P. Thangaraju, M.Sc., Ph.D.**, having an office at No.17, Advaita Ashram Road, Alagapuram, Salem – 636 004, am a Post Graduate in Geology (Madras University) from Madras University, Chennai and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Mining plans as "(I)(a) a degree in mining engineering or a post-graduate degree in geology granted by a university established" and (I)(b) "Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree". Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I prepare this Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Nadanthai Multi colour Granite Quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State for **Tmt. V. Punitha**, W/o. P. Velmani, No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person


Dr.P. Thangaraju, M.Sc., Ph.D.,

Place : Salem

Date : 23.05.2022



Dr. P. THANGARAJU, M.Sc., Ph.D.,
No.17, Advaita Ashram Road,
Alagapuram,
Salem - 636 004.
Mobile No. : +91 94433 56539, 94422 78601.

CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Granite Conservation and Development Rules, 1999 as amended in Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Nadanthai Multi colour Granite Quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State has been prepared for

Tmt. V. Punitha,
W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

Whenever specific permissions/exemptions/ relaxations and approvals are required, the lessee will approach the concerned authorities of Director of Geology and Mining, Government of Tamil Nadu, Guindy, Chennai- 600 032 for such permissions/ exemptions/ relaxations and approvals.

It is also certified that information furnished in the above Scheme of Quarrying are true and correct to the best of my knowledge.

Signature of the Qualified Person


Dr.P. Thangaraju, M.Sc., Ph.D.,

Place : Salem

Date : 23.05.2022



Dr. P. THANGARAJU, M.Sc., Ph.D.,
No.17, Advaita Ashram Road,
Alagapuram,
Salem – 636 004.
Mobile No. : +91 94433 56539, 94422 78601.

CERTIFICATE FROM THE QUALIFIED PERSON

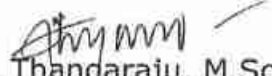
Certified that the Provisions of Mines Act, Rules and Regulations made there under have been observed in the preparation of Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Nadanthai Multi colour Granite Quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State has been prepared for

Tmt. V. Punitha,
W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District

Whenever specific permissions/exemptions/ relaxations and approvals are required, the lessee will approach the concerned authorities of the Director of Mines Safety, No. 5, IInd Street, Block – AA, Anna Nagar, Chennai, Tamil Nadu for such permissions/ exemptions /relaxations and approvals.

It is also certified that information furnished in the Scheme of Quarrying are true and correct to the best of my knowledge.

Signature of the Qualified Person


Dr.P. Thangaraju, M.Sc., Ph.D.,

Place : Salem

Date : 23.05.2022



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SCHEME OF QUARRYING ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR NADANTHAI MULTI COLOUR GRANITE QUARRY

Lease Period = 03.01.2018 to 02.01.2038

Scheme Period = 2023-24 to 2027-28

(Prepared Under Rule 18(2) of Granite Conservation and Development Rules, 1999)

1.0 INTRODUCTION:

The present Scheme of Quarrying is prepared in respect of Nadanthai Multi Colour Granite quarry belongs to **Tmt. V. Punitha**, W/o. P. Velmani residing at No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District, Tamil Nadu. for over an extent 2.86.5 hectares of patta land in S.F.No. 482 in Nadanthai Village, Paramathi velur Taluk, Namakkal District, Tamil Nadu State.

This scheme of Quarrying is prepared with a view of optimum exploitation of deposit by systematic quarrying with proper bench dimensions and safety measures, to enable the Multi Colour Granite deposit on a long run with consistent Multi Colour Granite to waste ratio and with a view to maintain uniform cost of Quarrying, profit margin, conservation and proper dumping of waste/rejects with minimum damage to the environment and society.

The lessee for the past five years has vast experience in safe and systematic quarrying, Trading and export of granite blocks.

1.1 Particulars of Approval of Mining Plan and Date of Commencement of Mining Operation:

The mining plan was prepared in respect of Multi colour granite quarry and the same was approved by the Commissioner, Department of Geology and Mining, Guindy, Chennai vide **letter No.5162/MM5/2016 dated 10.07.2017** (Annexure No. VIII). As per direction issued in the precise area communication letter the lessee has obtained Prior Environmental Clearance from the District Level Environment Impact Assessment Authority, Namakkal District, Tamil Nadu vide letter No. **DEIAA-NMK-TN/F.No.259/Mines/02/EC.No. 2 / 2017 dated: 24.11.2017.**

The quarry lease was granted vide **G.O.(3D)No.27, Industries (MMB.2) Department Dated: 29.11.2017** for a period of twenty years (Refer Annexure No. I). The quarry lease deed has **executed on 03.01.2018** and the lease period is **valid upto 02.01.2038**(Annexure No. IX). The quarry operation has commenced on 24.01.2018. The mining plan period is valid upto 02.01.2023.

Now, the first scheme of Quarrying has prepared and submitted for the period of **2023-24 to 2027-28 (Five years).**

**1.2 Detail of lease particulars are given as under:**

Table - 1

G.O. No.	Extent (Ha.)	Date of Execution	Period of lease	Valid Upto
G.O.(3D) No.27 Dated: 29.11.2017	2.86.5	03.01.2018	20 Years	02.01.2038

1.3 Proposed and achieved Production particulars from the commencement of quarry operations are given below:

Table - 2

Year	PROPOSED				
	ROM (m ³)	Production @ 50% (m ³)	Mineral Reject @50% (m ³)	Weathered Rock in m ³	Topsoil in m ³
2018 - 19	12075	6037.5	6037.5	2675	7006
2019 - 20	12075	6037.5	6037.5	2461	5198
2020 - 21	11850	5925	5925	963	2034
2021 - 22	11875	5937.5	5937.5	-	-
2022 - 23	12175	6087.5	6087.5	-	-
Total	60050	30025	30025	6099	14238

Table - 2A

Achieved (Excavation Carried Out during First Five years)									
Year	ROM (m ³)	Production (m ³)	Recovery (%)	Despatch in m ³	Stock in m ³	Mineral Reject in m ³ (A)	Weathered Rock in m ³ (B)	Total Waste in m ³ (A+B)	Topsoil in m ³
2018 - 19	7700	1575.177	20	1575.177	0	6124.823	1160	7284.823	2684
2019 - 20	12345	4270.497	35	3195.196	1075.301	8074.503	2070	10144.503	2395
2020 - 21	8440	2722.702	32	2722.702	1075.301	5717.298	1240	6957.298	2380
2021 - 22	9575	3133.706	33	3592.923	616.084	6441.294	-	6441.294	1481
2022 - 23 (Upto 23.05.2022)	810	279.127	34	279.127	616.084	530.873	-	530.873	
Total	38870	11981.209	31	11365.125	616.084	26888.791	4470	31358.791	8940

Recovery anticipated @ 50% but during operation the achieved recovery percentage is about 20% to 35% (Average 31%) due to highly weathered joints and fractures on top layer of the granite formation. When the excavation goes to deeper, the massive granite formation will be encountered also the lessee has proposed new innovative machineries and equipment with technically highly qualified personnel the recovery enhancement may be possible. There are about 59 unsold dimensional blocks stacked within the lease area which may have a gross measurement of 616.084m³. These blocks when being approved by the buyer's overseas, the same will be dressed into desired dimensions size and will be despatch for sale. If any defect found during buyer's overseas it can be considered as reject.

In the interest of quarrying, the lessee worked out continuously and tried his maximum effort to market. The lessee was keen in carrying out the quarrying operations in a scientific and systematic manner to win the Multi Colour Granite in all possible means.



1.4.0 REVIEW OF MINING PLAN:

1.4.1	Name of the Quarry	: Nadanthai Multi Colour Granite Quarry
	Name of Lessee	: Tmt. V. Punitha,
	Address	: W/o. Velmani, No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District,
	State	: Tamil Nadu.
	E-mail	: dharsanaastones@gmail.com
	Mobile	: +91 98434 70959.

1.4.2 REVIEW OF COMPLIANCE POSITION OF SALIENT FEATURES OF MINING PLAN:

All the condition stipulated in the G.O. and lease deed was maintained and mitigated during the course of quarrying operations.

1.5.0 REVIEW OF IMPORTANT CHAPTERS OF MINING PLAN:

1.5.1 EXPLORATION:

As far as Multi Colour granite deposits are concerned, the only practical method is the systematic geological mapping and delineation of commercial Multi Colour granite bodies with in the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Such an exploration study has already been carried out during the course of quarry operations, the same has been validated by the RQP and his team members during preparation of mining plan.

Even though the depth persistence of the Multi Colour Granite stone may be beyond 28m depth from the Petrogenetic character of the rock, only 28m depth persistent has been taken as economically viable depth to calculate categories of proved, probable, and possible reserves during the mining plan period.

The recovery of saleable Multi-colour Granite stones has been taken as 50% and if the recovery percentage is good or bad, it may enhance or decrease.

Based on the valuable geological information from these organizations estimation of geological resources and mineable reserves was arrived at considering the waste and market potentiality. Future exploration was not proposed.

1.5.2 MINE DEVELOPMENT

During the mining plan period the production and development has proposed on the Western side and progressed towards East with total dimension of (L) 113m x (W) 63m x (D) 18m (2m Topsoil + 1m weathered rock + 15m Multi-colour Granite).

The production and development for the first five years are as under.

**PROPOSAL GIVEN THE MINING PLAN:**

Table - 3

Year	PROPOSED				
	ROM (m ³)	Production @ 50% (m ³)	Mineral Reject @50% (m ³)	Weathered Rock in m ³	Topsoil in m ³
2018 - 19	12075	6037.5	6037.5	2675	7006
2019 - 20	12075	6037.5	6037.5	2461	5198
2020 - 21	11850	5925	5925	963	2034
2021 - 22	11875	5937.5	5937.5	-	-
2022 - 23	12175	6087.5	6087.5	-	-
Total	60050	30025	30025	6099	14238

Table - 3A

Achieved (Excavation Carried Out during First Five years)									
Year	ROM (m ³)	Production (m ³)	Recovery (%)	Despatch in m ³	Stock in m ³	Mineral Reject in m ³ (A)	Weathered Rock in m ³ (B)	Total Waste in m ³ (A+B)	Topsoil in m ³
2018 - 19	7700	1575.177	20	1575.177	0	6124.823	1160	7284.823	2684
2019 - 20	12345	4270.497	35	3195.196	1075.301	8074.503	2070	10144.503	2395
2020 - 21	8440	2722.702	32	2722.702	1075.301	5717.298	1240	6957.298	2380
2021 - 22	9575	3133.706	33	3592.923	616.084	6441.294	-	6441.294	1481
2022 - 23 (Upto 23.05.2022)	810	279.127	34	279.127	616.084	530.873	-	530.873	
Total	38870	11981.209	31	11365.125	616.084	26888.791	4470	31358.791	8940

Table - 3B

Pit and their Formation wise Existing Quarry Pit Volume								
Pit No.	Existing R.L. (m)	Pit R.L. (m)	Area (m ²)	Depth (m)	Topsoil 2m (m ³)	Weathered 1m (m ³)	Granite (m ³)	Total Volume (m ³)
Pit-1	180	176	330	4	660	330	330	1320
Pit-2	180	175	155	5	310	155	310	775
Pit-3	180	170	1120	10	2240	1120	7840	11200
Pit-4	180	167	2430	13	4860	2430	24300	31590
Pit-5	180	163	435	17	870	435	6090	7395
Total					8940	4470	38870	52280

Table - 4

Excavation Details				
Total Excavation (m ³)	Despatch (m ³)	Stock (m ³)	Waste Dump (3 Dumps including Mineral Reject + Topsoil + Weathered rock) (m ³)	Waste utilized for Quarry road purpose (m ³)
52280	11365.125	616.084	40150	149

Recovery anticipated @ 50%, achieved @ 31% average.

There was change in the proposed and actual production and Recovery percentage during the approved mining plan period. The production and recovery percentage was decreased due to market recession also weathered joints and fractures in the top layer of the granite formation.



At present the lessee has been working in the massive granite formation, the sheet rock is having good recovery due to very hard and massive in the lease area hence, when the excavation goes to deeper the recovery enhancement may possible. Anyhow, as per proposed in the approved mining plan we have considered an average recovery of 50% during the present scheme period, it may enhance.

In the interest of quarrying, the lessee worked out continuously and tried his maximum effort to market. The lessee was keen in carrying out the quarrying operations in a scientific and systematic manner to win the Multi Colour Granite in all possible means.

1.5.3 REVIEW OF MINING DEVELOPMENT:

During the approved mining plan period the production and development was proposed on the Western side and progressed towards Eastern side with total dimension of (L) 113m x (W) 63m x (D) 18m, during the Mining plan period the Development and Production has carried in the center portion and progressed towards Northern side. At present there are five different depth of pits exists within the lease area. The maximum dimensions of the present pits are given table below (Please refer Plate No. III).

Table - 5

Pit No.	Existing R.L. (m)	Pit R.L. (m)	Area(m ²)	Total Depth (m)	Topsoil Thickness (m)	Weathered Thickness (m)	Granite (m)
Pit-1	180	176	330	4	2	1	1
Pit-2	180	175	155	5	2	1	2
Pit-3	180	170	1120	10	2	1	7
Pit-4	180	167	2430	13	2	1	10
Pit-5	180	163	435	17	2	1	14

The lessee has much conservation of the Multi Colour granite, invested a huge amount and his resources to win the Multi Colour granite from the lease area. The lessee has been carried out all possible ways and best effort to develop and exploit the Multi Colour granite continuously.

1.6.0 AFFORESTATION PROGRAMME:

Program of Afforestation as given in the first five years of the mining plan period is given as under. The safety distance along the Northeast and Eastern side lease boundary has to be utilized for Afforestation. Appropriate species will be planted in a phased manner as described below.

Table - 6

Year	No. of tress proposed to be planted	Name of the species	Area in m ²	Survival rate expected in %	No. of trees expected to be grown
2018 - 19	30	Neem	390	80	24
2019 - 20	30		390	80	24
2020 - 21	30		390	80	24
2021 - 22	30		390	80	24
2022 - 23	30		390	80	24

Total number of trees planted during the approved mining plan period is 150 numbers around the quarry with the survival rate of 80%. The afforestation program carried out during mining plan period is affected by the failure of monsoon and water scarcity. The lessee ensures to compensate the afforestation during the present scheme period.

1.7. LAND RECLAMATION AND REHABILITATION:

Due to nature of occurrence of the granite body in this quarry is beyond the workable limits. During the approved mining plan period the quantum of waste is proposed about 36,124m³ (Granite Waste 30,025m³ + Weathered rock 6,099m³). The same has proposed to dump on the Western side with maximum dimension of (Length) 121m x (Width) 41m x (Height) 7.3m. During the past five years excavated wastes are dumped with three dumps and their dimension and direction is given table below (Refer Plate No. III):

Table - 7

Dump No	Length (m)	Width (m)	Height (m)	Direction
Dump - 1	140	25	3	South
Dump - 2	48	42	13.1	SE
Dump - 3	30	27	4	East

During the approved mining plan period 28m depth has been envisaged as workable depth for safe and systematic quarrying operations but, now the quarry attained a maximum depth of 17m in a portion of the area. The quarry is an active hence, no reclamation has carried out and immediate backfilling does not arise. When the quarry reaches the ultimate pit limit or at the end of life of quarry the quarried out waste will be backfilled.

1.8 CONTROL OF DUST, NOISE AND VIBRATION:

The quarrying operation has carried out by mechanized means HEMM were deployed. Hence, the effects due to dust, noise and vibration were minimal and well within the prescribed limits during the course of quarry operation besides the Ambient quality of Air respect of dust concentration, respirable dust, SO₂, NO₂ were tested periodically for every season around 1km radius for core and buffer zones as per the guidance of TNPCB. The dust prone areas of the Mine are blasting site, Loading, Hauling and dumping. All such areas were closely monitored as per the guidelines.

The quarry operation has carried out by mechanized method with small dia drilling and low intense blasting. Dressing carried out manually with portable compressor and Jack Hammers. Hence, the effects due to dust (only development and bench formation), noise and vibration were minimal.

NOISE:

The ambient Noise Level ranges must be <80dB. As the compressors are, keep at high levels, the impact of noise to the workers is less. Expanding Chemical used for cracking the rough blocks and therefore noise of blasting was minimal.

VIBRATION:

Blasting induced ground vibration is the only source of vibration in Mining area. Since chemicals @ 1kg for 3 feet being used for 8 hours retention time for cracking the solid rock along the line of drilling. Minimal vibration has observed in this quarry.

**1.9.0 SIGNIFICANT FEATURES:**

Being an individual lessee who is much concerned above the environment, the lessee closely monitored the environmental factors systematically without degrading the land, water and air. Related tests carried out to show the actual performance of mine on environmental issues which would be complying in the present scheme period.

PART - I**2.0 PROPOSAL UNDER SCHEME OF QUARRYING FOR THE NEXT FIVE YEARS****2.1 NAME OF THE APPLICANT WITH ADDRESS**

Name of Lessee : Tmt. V. Punitha
 Address : No. 109, Narasinghapuram Post,
 Nethaji Nagar, Attur Taluk,
 Salem District,
 State : Tamil Nadu.
 E-mail : dharsanaastones@gmail.com
 Mobile : +91 98434 70959
 Aadhaar No. : 8482 9275 9684 (Refer Annexure No. X)

2.2 NAME AND ADDRESS OF THE QUALIFIED PERSON WHO PREPARED THE SCHEME OF MINING

Name : Dr. P. Thangaraju, M.Sc., Ph.D.,
 Qualified Person (As per Rule 15(I)(a) and (b) of MCR 2016)
 Address : No.17, Advaitha Ashram Road,
 Alagapuram,
 Salem District,
 Tamil Nadu – 636 004.
 Telephone(Office) : 0427- 2431989
 Mobile : 94422 78601, 94433 56539.
 E-mail id : infogeoexploration@gmail.com

(Refer Annexure No. XI and XII)

2.3 DETAILS OF LEASE PARTICULARS ARE GIVEN AS UNDER

Table – 8

G.O. No.	Extent (Hects)	Date of Execution	Period of lease	Date of expiry
G.O.(3D) No.27 Dated: 29.11.2017	2.86.5	03.01.2018	20 Years	02.01.2038

The quarry lease has granted vide G.O.(3D) No.27, Industries (MMB.2) Department Dated 29.11.2017 for a period of twenty years. The quarry lease was executed on 03.01.2018 and the lease period is valid upto 02.01.2038.

2.4 DETAILS OF THE AREA

- The area is marked in the Geological Survey of India, Topo sheet no. 58-E/16.
- The details of the land covered by the area is given below
- There is no change in the extent as mentioned in the approved mining plan.

Table - 9

District and State	Taluk	Village	S.F.No.	Area in Ha.	Patta No	Classification
Namakkal and Tamil Nadu	Paramathi Velur	Nadanthai	482	2.86.5	5543	Patta Land
Total				2.86.5		

It is patta land, jointly registered in the name of the applicant (Tmt. V. Punitha, W/o. Velmani) and Thiru. P. Velmani, vide patta no. 5543 (Refer Annexure IV to VI). The lessee has obtained consent from joint pattadhar for quarrying operations (Refer Annexure VII)

The area lies between the Latitudes of 11°10'53.4595"N to 11°10'59.4554"N and Longitudes of 77°58'07.0660"E to 77°58'15.4169"E on WGS datum-1984. (Plate No. I & I-A).

3.0 EXPLORATION AND RESERVES

3.1. Physiography

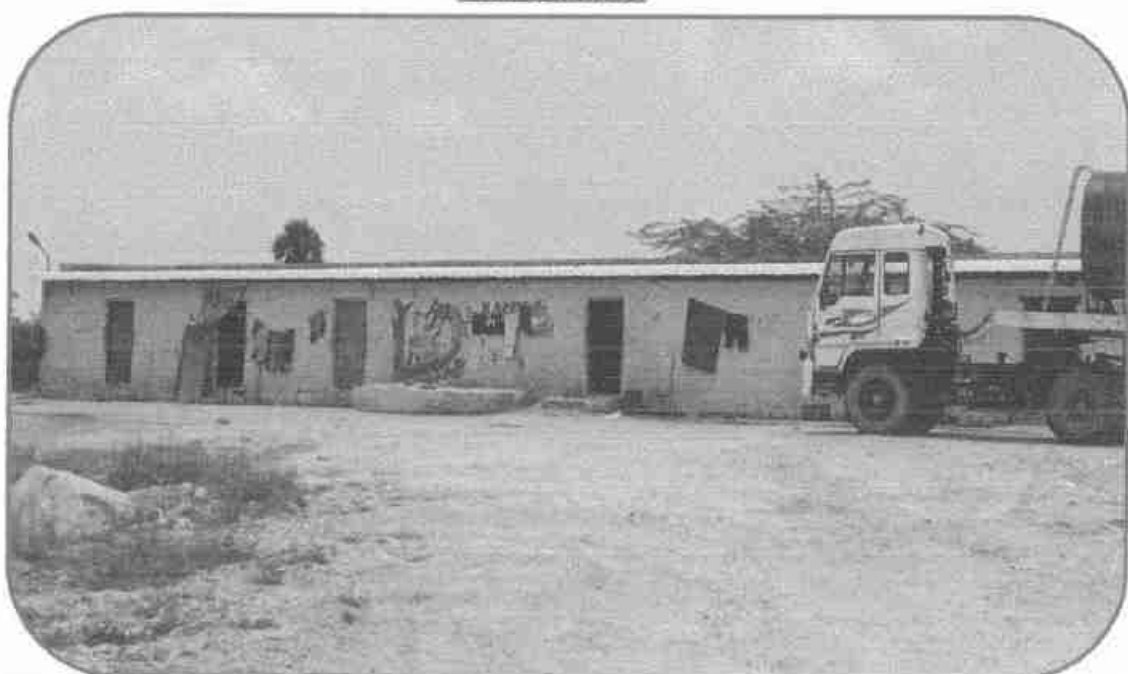
The area exhibits slightly undulated terrain. The gradient is gentle towards east and altitude of the area varies between 182m to 179m above MSL. The Multi Colour granite is clearly visible right from surface outcrops and the area is almost covered with 2m thickness of topsoil and 1m thickness of weathered rock. The area receives rainfall 793mm/annum and the ground water occurs at a depth of 68mtr in summer and 64m at rainy season. The Multi-colour granite is medium to coarse grained with quartz, Plagioclase feldspar and Calcite are the primary minerals, Hornblende, Garnet and other mafic minerals are secondary constituents. This Multi-colour granite is widely used for slabs, Tiles and Monuments after cutting and polishing.

Topographical view of Nadanthai Multi Colour Granite Quarry Lease Area





Site Services





Stock Blocks



3.1.1 Geology of the area.

This area forms a part of peninsular gneiss the most wide spread group of rocks in many parts of Tamil Nadu. The southern domain of Tamilnadu is characterized by the khondalite group of rocks (with subordinate amounts of Charnockite) and marked by the absence of BMQ and dolerite dyke systems. The rock formation is popularly known as Granite sillimanite gneiss essentially made up of a supra crustal assemblages of quartz and Feldspar as major constituents (\pm Sillimanite \pm graphite \pm garnet \pm magnetite), closely inter banded with calc - silicate rocks and dolomite, as well as Garnetiferous gneiss or schist, occurring within a vast area of biotite gneiss (\pm garnet). The lease applied area comprises Garnetiferous Biotite-Sillimanite Gneiss popularly termed as "IVORY WHITE/ IVORY GOLD".



The main rock type encountered in this area is Garnetiferous Biotite-Sillimanite Gneiss (Leptynite) Garnets are embedded in sequence Patten in the entire formation. The color of the rock is white – pale pink. The general trend of the rock formation is $N30^{\circ}W - S30^{\circ}E$ with dipping towards $20^{\circ}SW$. The top soil is covered 2m.avg in thickness and 1m weathered rock and followed by fresh granite mass. The color formation is leucocratic with pale pink base and the gneissic structure with alternate bands of pale pink and light grey veins, which may find a good market for Dimensional granite stones.

The rock type is leucocratic euhedral, fine to medium grained, equigranular and well developed gneissic banding of alternate layers of dark and light mineral is the specialty of this area which is the indicative of flow pattern of the rock mass in this NE – SW (i.e., the cutting direction of the multicolor granite). Some slender pegmatite veins are intruded in a crisscross fashion which is likely to be reduced at deeper levels. However the other geological parameters such as shear, joints concentration of melanocratic (pyroxene) minerals traversing of pegmatite veins and hard solid relic patches of xenoliths are the controlling recovery factor which decides the fate of the quarry. Well-developed strike and dip joints observed at the surface level which is likely to decrease in deep seated condition. Taking in to consideration of the above geological factors, over burden, inter burden wastage during quarrying, other flaw and flower patches etc, the average recovery percentage has been computed as 50% upto 28m depth from the general ground level.

STRUCTURAL SETTINGS OF NAMAKKAL

The general geological sequence of the rock types in the investigated area is:-

Order of super position:-

AGE	ROCK TYPE
Pleistocene to Recent	Soil
-----Unconformity-----	
Archaean to Proterozoic	Pegmatites, Granite Gneiss, Peninsular Gneissic Complex-II. Hornblende Biotite Gneiss Charnockite, Khondalite, Quartzite,

The physical attitude of the Multi Colour granite deposit of this area is given below:-

Strike Direction	-	$N30^{\circ}W - S30^{\circ}E$
Dip direction	-	$20^{\circ} SW$

3.2 DETAILS OF EXPLORATION

3.2.1. ALREADY CARRIED OUT

As far as Multi colour Granite deposits are concerned, the only practical method is the systematic geological mapping and delineation of commercial Multi colour Granite bodies within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.

Such an exploration study has already been conducted in this area during the course of quarrying operations.



Based on the valuable geological information and by the field experience and the quarry already attained a maximum depth of 17m, the estimation of geological resources, mineable reserve is arrived at considering to waste and market potential.

3.2.2. PROPOSED STUDY TO BE CARRIED OUT

Even though the depth persistence of the Multi Colour Granite stone may be beyond 28m below from the ground level from the Petrogenetic character of the rock, only 28m depth persistent has been taken as economically viable depth to calculate categories of proved, probable, and possible reserves.

The recovery of saleable Multi colour Granite stones has been taken as about 50% and if the recovery percentage is good, it may enhance.

No definite programs for future exploration have been drawn. The quarrying activities for the proposed scheme period with deep cut as envisaged in the scheme of quarrying may render additional data as may be required for future planning.

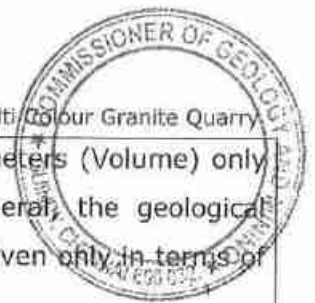
3.3 METHOD OF ESTIMATION OF RESERVES:

The geological plan demarcating the commercially viable Multi Colour granite body has been prepared in 1:1000 scale (Plate No. IV). Totally three sections have been drawn, one along the strike direction as (X-Y) length wise and other two cross sections are drawn perpendicular to strike as (A-B and C-D) width wise which is suitably chosen to cover the maximum area in the scale 1:1000. (Refer Plate No. IV).

The cross sectional area for the proved depth persistence of Multi Colour has been worked out for each section. The cross sectional area multiplied by its length of influence on the longer axis gives the volume (insitu) in the cross sectional area. The sum total of the insitu reserves available within the individual cross sectional area gives the Geological Resources of the lease area.

The Multi Colour granite recovery percentage has been calculated upto 50% in the present scheme may decrease of joints and fractures in deeper level. High efficient technology machineries, quarry masters, Market demand significantly determine the recovery percentage of granite quarries. The estimated recovery is based on today market scenario and the same recovery has been considered as normative recovery. When the market demands, the lessee may take necessary steps to deploy a quarry masters with latest innovative machineries technology. So the recovery enhancement may raise to the peak production resulting in 80%. During the operation the method of quarry, deployment of men and machineries will not have any negative impact on the Environment. It is worthening the recovery anticipate the normative production has been scientifically converted into commercial production resulting in the decrease dump of waste inside the quarry. Due to the micro fractures, flaws, patches, xenoliths, required dimension, dressing, etc., the recovery in the granite could not be 100% of the R.O.M.

From the total Geological insitu Reserves, the quantity of saleable Multi Colour granite stones and quantity of Multi Colour granite rejects and waste generation are computed by applying recovery factor as 50% by its volume upto 28m depth.



As the salable Multi Colour Granite stone are in terms of cubic meters (Volume) only and not in terms of tonnage as in the case of major industrial mineral, the geological resources, mineable reserves and quantum of waste generated etc, are given only in terms of cubic meters.

The details of estimation of geological resources and mineable reserves with reference to the geological plan & cross section and Conceptual Plan & Section as shown in (Plate No. IV & IX).

3.4 GEOLOGICAL RESOURCES AND GRADE(RE-ASSESSED ON 23.05.2022):

Table - 10

Geological Resource					
Total Geological Resources As per Approved Mining Plan (A)	ROM (m³)	Recoverable Reserves @ 50% (m³)	Granite Rejects @ 50% (m³)	Weathered Rock (m³)	Topsoil (m³)
	719000	359500	359500	28760	57520
Total Depletion has taken from the production achieved @ 31% and taken from excavation carried out during the first five years (B)	38870	11981.209	26888.791	4470	8940
Total Available Geological Resources during the present scheme period (A - B)	ROM (m³)	Recoverable Reserves @ 50% (m³)	Rejects @ 50% (m³)	Weathered Rock (m³)	Topsoil (m³)
	680130	340065	340065	24290	48580

Total Available Geological Reserves in ROM = 6,80,130m³

Total Recoverable Reserves @ 50% = 3,40,065m³

Granite Waste @ 50% = 3,40,065m³

Weathered Rock (WR) = 24,290m³

Topsoil = 48,580m³

Total waste (Granite Waste + WR) = 3,64,355m³

Granite waste ratio: = 1:1.1

***The Total Geological resources are calculated based on the last approved Geological resources and after depleted the excavation carried out during the previous approved scheme period.**

The geological resources are computed based on the geological cross sections up to the economically workable depth of 28m (2m topsoil + 1m Weathered rock + 25m Multi Colour granite) below from the general ground level at the rate of 50% recovery yields 3,40,065m³ and 6,80,130m³ of ROM.

**3.5 MINEABLE RESERVES: (REASSESSED ON 18.05.2022)**

Table - 11

Total Minable Reserve As per Approved Mining Plan (A)	ROM (m ³)	Recoverable Reserves @ 50% (m ³)	Granite Rejects @ 50% (m ³)	Weathered Rock (m ³)	Topsoil (m ³)
		261925	130963	130963	15403
Total Depletion has taken from the production achieved during the past five years @ 31% (B)	38870	11981.209	26888.791	4470	8940
Total Available Mineable Reserves during the present scheme period (A - B)	ROM (m ³)	Recoverable Reserves @ 50% (m ³)	Rejects @ 50% (m ³)	Weathered Rock (m ³)	Topsoil
	223055	111527.5	111527.5	10933	24998

Total Available Mineable Reserves in ROM = 2,23,055 m³

Total Recoverable Reserves @ 50% = 1,11,527.5m³

Granite Waste @ 50% = 1,11,527.5m³

Weathered Rock (WR) = 10,933m³

Topsoil = 24,998m³

Total waste (Granite Waste + WR) = 122460.5m³

Granite waste ratio: = 1:1.1

***The Total Mineable reserves are calculated based on the last approved mineable reserves and after depleted the excavation carried out during the previous approved scheme period.**

The Mineable reserves have been computed as 1,11,527.5m³ at the rate of 50% recovery and 2,23,055m³ of ROM. The mineable reserves are calculated after leaving the mineral locked up area under safety distance, bench loss and existing quarry pit. Hence the remaining area is taken for calculation of mineable reserves. Proved reserves are considered up to 28m (2m topsoil + 1m Weathered rock + 25m Multi Colour granite) below from the existing ground profile (Refer Plate No. IV).

The Multi Colour granite body occurring in this area exhibits more or less uniform colour and texture. If any variation occurs during mining, such as cracks, joints, patches, colour variations etc, the defective area will be avoided. The formation is uniform and no gradational change is noticed except some shears, cracks and slender pegmatite veins.



4.0 CONCEPTUAL MINING PLAN:

Conceptual Mining plan is prepared with an object of long-term systematic development of benches, lay outs, selection of permanent ultimate pit limit, depth of Mining and ultimate pit, selection of sites for construction of infrastructure etc.

The ultimate pit size is designed based on certain practical parameters such as economical depth of Mining, safety zones, permissible area etc. The ultimate pit dimensions of the quarry are given below.

Table - 12

Ultimate Pit Dimensions (Maximum)		
Length (m)	Width (m)	Depth (m)
156	142	28

However, during extraction of blocks each bench will be of 5mts height & width, vertical slope for proper dimensional cutting. The quantum of excavation is estimated to be 2,58,986m³ (ROM 2,23,055m³ + Weathered rock 10,933m³ + Topsoil 24,998m³) to a depth of 28m from the ground level. The generation of total waste is estimated about 1,22,460.5m³ and marketable Multi Colour Granite and Country Rock as 1,11,527.5m³.

During this scheme period, excavated waste (30,711m³) will be proposed to dump with two different dimension, one within the Southern side with maximum dimension of (L)140m x (W)25m x (H)3m and another dump proposed on Southeastern portion with maximum dimension of (L)72m x (W)40m x (H)20.95m, which will be act as temporary waste dump.

After expiry of lease period if the mineral reserves available and Market persist, the lessee may apply a renewal of quarry lease as to develop and conserve mineral reserves. If permission is granted for removal of waste, the waste material will be supplied to needy crusher for building and road construction from concerned authorities after paying the seniorage fee and obtained necessary clearance and approval from concerned department for handling the waste. When the entire mineral reserves will be completely exhausted if permission not obtained for handling of waste from the concerned authority, backfilling will be carried out nearly existing ground profile and spread out the preserved topsoil to facilitate afforestation in the backfilled area. The quarry area will be fenced with barbed wire fencing, also safety bund to be construct around the quarry to prevent inadvertent entry of public and cattle (Please refer plate No. III and IX).

**5.0 MINING**

No change in the method of Mining. The same open cast semi mechanized Mining with 5 mtr vertical bench with a bench width of 5 mtr has been followed.

Under the regulation 106 (2) (b) of the Metallurgical Mines Regulation 1961, in all open cast Mining, the bench height should not exceed 5 mtr and bench width should not be less than bench height. The slope of the bench should not exceed 60° from horizontal.

But as far as the Mining of granite dimensional stones are concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom possible due to various inherent petro genetic & mining difficulties. Hence, the lessee has obtained relaxation to the provisions of the above regulation from the Director of Mines Safety, Chennai for which necessary provision is available with the Regulation 106 (2) (b).

The production of Multi Colour Granite dimensional stone in this quarry involves the following method typical for Multi Colour granite stone mining in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent sheet rock is carefully removed by avoiding any kind of damage in the form of cracks adopting the method of diamond wire cutting along the horizontal as well as two vertical sides along the width direction and the third vertical face behind the front face.

This liberation of huge volume of granite body from the parent sheet rock is called primary cutting. The Blocks splitted above are toppled and removed from the pit to the dressing yard, by using hydraulic cranes.

Removing the defective portion and dressing into the dimensional blocks are done manually using feather, wedges, and chiseling respectively by the labours that are skilled in this work.

The defect free, dimensional stone of different sizes is marketed in domestic and international market by the well experienced marketing personals of the lessee.

The waste material generated during quarry activity includes rock fragments of different sizes and waste chips during dressing of the blocks.

The excavated waste materials are proposed to dump in the respective places earmarked for the purpose, which will be act as temporary waste dump. (Refer Plate No. VI and IX).

**5.1 YEAR WISE DEVELOPMENT AND PRODUCTION FOR THE NEXT FIVE YEARS:**

Total Length : 85m
 Total Width : 102m
 Maximum Depth : 28m

Table - 13

Section	Year	Bench	Length (m)	Width (m)	Depth (m)	ROM (m ³)	Recovery 50% (m ³)	Granite Waste 50% (m ³)	Weathered	Topsoil	
XY-AB	2023-24	I	62	16	2	-	-	-	-	1984	
		II	56	13	1	-	-	-	728	-	
		III	54	12	2	1296	648	648	-	-	
		III	65	26	3	5070	2535	2535	-	-	
		IV	57	22	3	3762	1881	1881	-	-	
		IV	26	37	2	1924	962	962	-	-	
			Total				12052	6026	6026	728	1984
	2024-25	IV	42	37	2	3108	1554	1554	-	-	
		V	27.3	82	4	8954	4477	4477	-	-	
		Total				12062	6031	6031			
	2025-26	V	27.7	82	4	9086	4543	4543	-	-	
		V	31	88	1	2728	1364	1364	-	-	
		Total				11814	5907	5907			
	2026-27	V	24	88	1	2112	1056	1056	-	-	
		VI	32.5	60	5	9750	4875	4875	-	-	
		Total				11862	5931	5931			
	2027-28	VI	12.5	60	5	3750	1875	1875	-	-	
		VII	33.7	50	5	8425	4213	4213	-	-	
		Total				12175	6088	6088			
	Grand Total						59965	29983	29983	728	1984

Total Proposed ROM	=	59,965m ³
Total Recoverable Reserves @ 50%	=	29,983m ³
Granite Waste @ 50%	=	29,983m ³
Weathered Rock (WR)	=	728m ³
Total Waste (Granite Waste + WR)	=	30,711m ³
Topsoil	=	1,984m ³
Granite waste ratio:	=	1:1.0

Estimated Life of the quarry

Mineable ROM	=	2,23,055m ³
Mineable Reserves @ 50%	=	1,11,527.5m ³
Average production per year @ 50%	=	29,983/5 years = 5,997m ³
Estimated Life of the Quarry	=	19 years



The year wise quantum of work proposed and the details of estimation of production quantity and generation of waste are furnished with reference to Year wise Development and Production plan. The proposed volume of production is lesser than the proposed in the approved mining plan. Hence, there will not be any substantial change in the Method of quarrying, Drilling, Blasting, Wire saw cutting, Men and machinery deployment, Transportation and Handling of waste in the present scheme period (Plate No.V). The average annual production for the next five years is 5,997m³ at the rate of 50% recovery. More details of the year wise production parameter explained with bench length, width and height in Plate No. V.

5.2 PROPOSED RATE OF PRODUCTION WHEN THE QUARRY IS FULLY DEVELOPED

The proposed rate of production when the quarry is fully developed is 5,997m³ per annum @ 50% Recovery. The production schedule for the subsequent five year has drawn mainly in consideration of reserves position, market demand, men, machinery development and the cost of production.

5.3 MINEABLE RESERVES AND ANTICIPATED LIFE OF QUARRY

The Multi Colour granite deep seated in nature as they have formed by basic intrusions from depth as Multi Colour granite. The depth persistence of the Multi Colour granite will be beyond the economically workable depth. The method of extraction of rock mass from Multi Colour granite sheet rock is highly expensive at greater depth.

An optimum depth of 28m has been established as economically viable depth at present scenario. Eventually this depth is the optimum depth for safe and scientific quarrying.

The Mineable Reserves are calculated by excluding the mining loss due to formation of benches with suitable height & width, ultimate depth of quarry, the Mineral Reserve held up within the safety distances all along the lease boundary.

The Mineable Reserves @ 50% for this Multi Colour Granite quarry is thus arrived as 1,11,527.5m³ and 2,23,055m³ of ROM for an assumed depth of 28mtr below from the surface. The average rate of production of Multi-Colour Granite from this quarry is 5,997m³ per year and Mineable recoverable reserves 1,11,527.5m³ considering 50% recovery for the entire life of the quarry. The details of estimation of year wise development and production plan and sections are shown in the plate No.V.

Based on the above, and taking into consideration of the available Mineable Reserves, **the life of quarry will be about 19 years** at 50% recovery, if the quarry is being worked out continuously with an average annual production of 5,997m³. This calculation is based on the plan approved by Director of Mines Safety leaving Benches and Safety barriers. If the annual production increases considerably and consistently a modified scheme will be prepared under Granite Conservation and Development Rules-1999 the same will be submitted to the relevant authorities for subsequent clearance and approval.

**5.4 EXTENT OF MECHANIZATION**

The following machineries are utilized on rental basis by the lessee for development and production work at this quarry.

I. DRILLING MACHINE

Table - 14

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Compressor	1	-	400 psi	Atlas Copco	Diesel Drive
2	Jack hammer	4	32	1.2m to 6m	Atlas Copco	Compressed air
3	Diesel Generator	1	-	125kva	Kirloskar	Diesel
4	Diamond Wire saw	2	-	20m ³ /day	Optima	Diesel Generator
5	Wagon Drill	1	30-35	20hp	VKTORY	Diesel drive

II. LOADING EQUIPMENT

Table - 15

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Crawler Crane	1	855	Tata P&H	Diesel Drive
2	Excavator	2	300	Tata Hitachi	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT**a) Table - 16**

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Tippers	2	10 tonns	Tata	Diesel Drive

b) Transport from the quarry head to destination

Transport from quarry head to destination is done by trucks or trailers.

c). Miscellaneous:

Apart from the above, the following tools and tackles are required for quarry operation.

A. For operation

The operation of granite quarry requires the following loose tools material and have to be kept sufficiently in stock for non - interruption of the quarry work.

1. Drill rods - 0.5 m, 0.75m, 1.65m, 2.25m, 3m, 5.5m, upto 9m.
2. Steel Alloy chains of sufficient length of 12mm, 16mm, 18mm, etc. sizes.
3. 'D' shackles to link the chain lengths.
4. Rubber hose of required length.
5. Hose clamps to link the compressor delivery hoses.
6. Feather and wedges of 6" and 12" dia sizes utilize for splitting the block from the mother rock. This is an important tool in the operation of a quarry.
7. Crow bars.
8. Spades.
9. Sludge Hammer
10. Iron Pans
11. Pitcher Hammer
12. Chisels.
13. Consumables, such as diesel, Hydraulic oil, grease, abrasive wheels, welding machines etc.
14. Stock of essential spare parts of machinery.
15. Explosive as per the licensed quantity
16. Besides diamond wire saw equipment with accessories are required to liberate the rock from to parent body rapidly with minimum damage.



Splitting the sheet rock by Diamond wire sawing which increases substantial recovery potential. Hence it is proposed to follow "Diamond wire saw cutting" for best recovery.

The above machineries are adequate to meet out the simultaneous development and production schedule drawn out in this scheme period.

6.0 BLASTING

a. Broad Blasting Parameters:

In general for granite quarrying primary (deep hole drill) blasting is not practiced, only secondary blasting is practiced coupled with jackhammer drilling (30-35mm dia). These blasting are carried out for splitting the blocks from parent sheet mass.

The granite industry needs blocks for about 3m x 2m x 2m for International buyers hence small blocks blasting pattern is not followed. The blasting pattern depends upon the texture of the rocks in the case of granite quarrying which in-turn depends upon the bedding plane, presence of fractures, fissures and cracks hence it is difficult to decide the definite particular pattern of holes in each blast.

Now-a-days Diamond wire saws are used for splitting the blocks from parent sheet mass. It is a new innovative Eco-friendly splitting technique without involving blasting. This is increase the recovery percentage of granite blocks and reduces from induce fissures due to blasting.

Hence, it is difficult to pronounce a definite pattern of holes with regard to spacing, burden and depth. Hence, only blasting is deployed for secondary fragmentation for handling the wastes and not for production.

b. Type and use of explosives

In granite quarries, only heaving effect is required and not the shattering effect. The aim is to recovery as large a block as possible.

Hence only low intense explosives like D-Cord and Gelatin sticks are used.

In granite quarrying it is very difficult to prescribe the charge/ hole as it depends upon the various factors like type of rock, texture, planes of weakness, required size of block, etc.

c) Storage of explosives:

Authorized explosive dealers supply the explosive at site as per the day's requirement. Hence question of storage of explosives does not arise at present.

However, the lessee has been advised to install one portable magazine of 'M' type at the earliest possible opportunity.

Splitting within the sheet rock is affected by diamond wire sawing which increases substantial recovery potential. Hence it is proposed to follow diamond wire saw cutting for better recovery of granite dimensional stone.

During future development of quarrying, removal of over burden will be done by blasting with explosives in small dia holes drilled by Jackhammer.

The explosive that will be used are D-Cord and Gelatin sticks that are indicated below.

D Cord - 5mg

Gelatin Sticks .



7.0 MINE DRAINAGE

The water table in this area is 68m as observed in nearby wells. Working expected to well above the water table. If water is encountered due to rain water seepage, the same will be drained out by 5HP motor pumps and the drained out water will be utilized for Green belt.

8.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE

a) Topsoil:

No topsoil will be generated during this scheme period.

b) Granite waste and Land chosen for disposal of waste:

Total waste produced during this scheme period will be around 30,711m³ (Granite Waste + Weathered rock). The total waste material will be proposed to dump with two different dimension, one on the Southern side with maximum dimension of (L)140m x (W)25m x (H)3m and another dump proposed on Southeastern portion with maximum dimension of (L)72m x (W)40m x (H)20.95m, which will be act as temporary waste dumps. The waste management plan with reference to the quantum of waste generated is shown in quarry layout and afforestation plan (Plate No.VI).

c) Manner of disposal of waste:

As and when there is accumulation of waste, the same is loaded into the tipper by loading machines and dumped in the respective places ear-marked for the purpose.

The waste management plan with reference to the quantum of waste generated is shown in Quarry layout and Afforestation plan (Plate No.VI).

There is no slurry anticipated in this quarry operations and the granite waste does not produce any toxic effluent in the form of Solid, liquid or gas.

9.0 USE OF THE GRANITE STONE

The quarried out granite blocks are exported as raw blocks and also processed as value added products such as slabs, tiles, fancy items, Monuments, precision surface plates for engineering application.

The export market for Multi-Colour Granite blocks are European Countries, North America, Middle East & Far East besides catering domestic demand.

10.0 QUALITY CONTROL

The Multi-Colour granite deposit occurring in this mine shows uniform quality throughout and hence mined and marketed as a single variety.

The excavated blocks will be carefully examined for any natural defects such as joints, cracks, xenoliths growth etc., and such defects is removed manually using feather and wedges and the blocks are then shaped into perfect rectangular dimensional stone blocks by chiseling. Different price for each quality material have been fixed and the entire production quantity is marketed accordingly.

11.0 SURFACE TRANSPORT

The mode of transport of the Multi Colour granite blocks produced and marketed is by road to various customer destinations and Multi Colour granite processing units located at different parts of the country. The Multi Colour granite blocks approved for export market are

shipped from Thoothukudi Port to various countries and if required the blocks may be shifted to Chennai Port which depend upon the exporter's destination from time to time.

12.0 SITE SERVICES

The simple methods adopted and the limited scale of activities involved in Multi Colour granite dimensional stone quarrying does not require high-tension electric power supply or huge workshop facilities. The quarry operation is restricted to one general shift during daytime only. Machinery repair works are attended at Paramathivelur (9km-SE). Minor repairs can be rectified at the quarry site itself by the Lessee's experienced personnel.

Packaged drinking water is available from the approved water vendors in Paramathivelur also potable water from the community wells can be transported to the work site through tanker placed on tippers. The quarry office, first-aid room, store room, rest shed, toilet etc., are already constructed as semi - permanent structures in southwestern side within the lease area (Plate No - III).

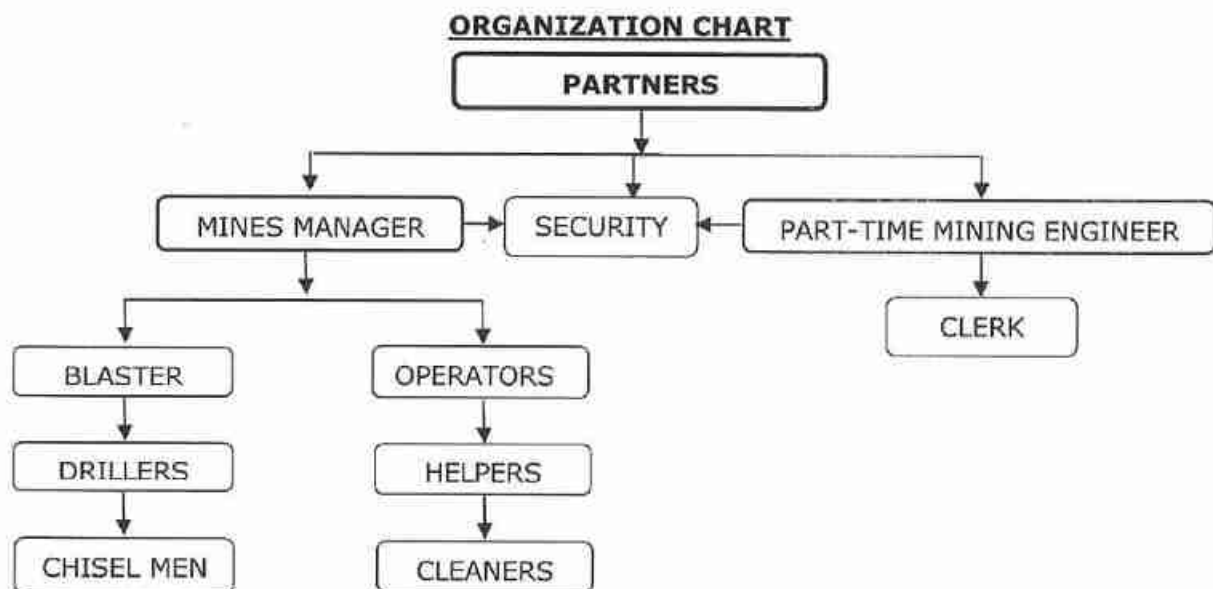
13.0 EMPLOYMENT POTENTIAL

The following manpower is proposed for the Multi Colour granite quarry to carry out the day-to-day Mining activities aimed at the proposed production target and also to comply with the statutory provisions of the metalliferous mines regulations, 1961.

- | | | | |
|----|--|---|---|
| 1. | Mines manager (with valid statutory qualification) | : | 1 |
| 2. | Mines foreman (with valid statutory qualification) | : | 1 |
| 3. | Machinery operators (Certified) | : | 5 |

WORKERS:

- | | | | |
|--------------|----------------------------|---|-------------|
| a. | Skilled labour and Drivers | : | 6 |
| b. | Semi-skilled | : | 12 |
| c. | Unskilled | : | 8 |
| Total | | | : 33 |





The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the scheme of quarrying and also to comply with the statutory provisions of the Mines Safety Regulations.

14.0 ENVIRONMENTAL MANAGEMENT PLAN

14.1 BASELINE INFORMATION

The following observations are made for environmental management plan.

I. EXISTING LAND USE PATTERNS:

The area exhibits slightly undulating terrain. The gradient is gentle towards East and altitude of the area varies between 182m to 179m above MSL. It is a dry barren land and the area having existing quarry pit and rocky outcrops. Except quarry operation the land did not utilize any specific purpose. Agricultural activities are carried out by utilizing well water around the area (lift irrigation-seasonal vegetation is mostly practiced). The region experiences semi-humid climate and there is scanty growth of vegetation in and around the area.

Existing Land use pattern

Table - 17

Description	Present Area (Ha.)	Area utilized in %
Area under Quarry	0.44.6	15.6
Waste dump	0.74.0	25.8
Infrastructure	Nil*	-
Roads	0.02.0	0.7
Green Belt	Nil	-
Stocking Blocks	1.65.9	57.9
Grand Total	2.86.5	100

*Infrastructure is already constructed over the existing waste dump situated on the southwestern portion of the lease area (Refer Plate No. III).

II. WATER REGIME:

Ground water occurrence in this area is 68m depth from below ground level. The quarry operation well above the water table, hence the quarry operation will not be affected by the ground water in any manner. There is no major water body like lake, river or reservoir located within 50m radius of the area.

III. FLORA AND FAUNA:

The area contain mainly Neem, Palm, Cocos nucifera, Calotropis, Cactus, Prosopis Juliflora and thorny bushes are observed around the area and Cow, goat, squirrel, Crow, Dog faunas are found in around the area. No plants of botanical interest or animals of zoological interest are recorded within 500m radius.

IV. CLIMATIC CONDITIONS:

The prevailing climatic condition experienced in the quarry lease hold, the area is semi arid with maximum temperature up to 42°C in summer and it drops down to 23°C during winter seasons. The area receives 793mm rainfall per annum.

**V. HUMAN SETTLEMENT:**

There is no approved habitation situated within 300m radius of the area and few villages are located within 5km radius of the quarry lease area. The approximate distance, direction and population are given below.

Table - 18

S.No	Name of the Village	Direction	Approximate Distance	Approximate population
1.	Nadanthai	NE	2km	2,900
2.	Vasanthapuram	NE	3km	5,500
3.	Sirapalli	NW	2km	1,400
4.	Kabilakkurichi	SW	3km	3,800

Basic human welfare amenities such as health center, schools, communication facilities, commercial centers etc., are available at Paramathivelur which is located about 8km on the Southeast side of the lease area.

VI. PUBLIC BUILDINGS, MONUMENTS AND PLACES OF WORSHIPS:

There is no Public building, Archaeological or Historical Monument situated within 500m radius.

Table - 19

Particulars	Location	Approximate aerial Distance and Direction from the lease applied area.
Nearest Post Office	Vasanthapuram	4km - NE
Nearest School	Vasanthapuram	4km - NE
Nearest Dispensary	Vasanthapuram	4km - NE
Nearest Police Station	Paramathivelur	9km - SE
Nearest Hospital	Paramathivelur	9km - SE
Nearest Town	Paramathivelur	9km - SE
Nearest NH	Salem - Paramathivelur (NH-44)	7km - SE
Nearest SH	Tiruchengode - Paramathi (SH-86)	3km - NE
Nearest D.S.P. Office	Namakkal	22km - NE
Nearest Railway Station	Namakkal	22km - NE
Nearest Airport	Trichy	89km - SE
Nearest Seaport	Kochi	231km - SW
District Head Quarters	Namakkal	22km - NE

VII. WEATHER THE AREA FALLS UNDER NOTIFIED AREA UNDER WATER ACT, 1974.

The area falls under notified area under water Act, 1974.

14.2 ENVIRONMENT IMPACT ASSESSMENT STATEMENT

The Scheme of quarrying has proposed for a small production of Multi Colour granite dimensional stone without involving deep hole drilling and heavy blasting. Such limited Mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned.



Table - 20

S. No.	Salient Features at Presently bounded by the quarry site	Prescribed safety distance	If any present within the prescribed limit, it's actual distance and direction from the site																				
1.	Railways, Highways, Tank, Lake, Odai, Canal, Stream, River and Reservoir	50m	None of the above situated within 50m radius of the area.																				
2.	Village Road	10m	There is a cart track passing in North and east side of lease area so necessary safety distance of 10m has been maintained.																				
3.	Habitation / Village	300m	There is no approved habitation situated within 300m radius of the area.																				
4.	Adjacent Land Patta/ Govt.	7.5m / 10m	<table border="1"> <thead> <tr> <th>Direction</th> <th>S.F.No.</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>481</td> <td>Patta land</td> <td>10m to cart track</td> </tr> <tr> <td>East</td> <td>460 and 483</td> <td>Patta land</td> <td>10m to cart track</td> </tr> <tr> <td>South</td> <td>483</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>West</td> <td>493 and 515</td> <td>Patta land</td> <td>50m to EB line</td> </tr> </tbody> </table> <p>(Please Refer Plate No. II).</p>	Direction	S.F.No.	Classification	Safety Distance	North	481	Patta land	10m to cart track	East	460 and 483	Patta land	10m to cart track	South	483	Patta land	7.5m	West	493 and 515	Patta land	50m to EB line
Direction	S.F.No.	Classification	Safety Distance																				
North	481	Patta land	10m to cart track																				
East	460 and 483	Patta land	10m to cart track																				
South	483	Patta land	7.5m																				
West	493 and 515	Patta land	50m to EB line																				
5.	Housing area, EB line (HT & LT Line)	50m	There is a EB (LT) line passing on the western side of lease area, so necessary safety distance of 50m has been maintained or there is no HT or Housing area located within 50m radius.																				
6.	Boundaries of the permitted area	7.5m	<p>North - S.F.No. 481 East - S.F.Nos. 460 and 483 South - S.F.No. 483 West - S.F.Nos. 493 and 515 (Please refer Plate No. II).</p>																				
7.	Public building, Archaeological or Historical Monument	500m	There is no Public building, Archaeological or Historical Monument situated within 500m radius of the area.																				
8.	Reserve forest	1Km	There is no Reserved Forest situated within 1km radius of the area.																				
9.	Protected area / ECO sensitive area/State or International border	10Km	There is no Wildlife sanctuary/ Eco-Sensitive zone/ Critically polluted area/ HACA/ CRZ, State or National border located within 10km radius of the area.																				



The Financial Estimation for Quarry operations and Environment Management Plan (EMP).

Table - 21

A. Operational Cost

S.No.	Description	Approximate Cost (Rs.)
1.	Land Cost (As per Govt. Guideline value at present) 2.86.5Ha x Rs. 4,97,000/Ha = Rs. 14,23,905/- Total Rs. 14,24,000/-	14,24,000
2.	Labour Shed, Office, Workshop (Already Constructed)	3,00,000
3.	Sanitary Facility (Already Constructed)	1,00,000
4.	First aid Room, Accessories and Safety kits	1,00,000
5.	Excavator (2 Nos.)	1,12,00,000
6.	Crawler Crane (1 No.)	75,00,000
7.	Diesel Generator (1 No.)	7,50,000
8.	Compressor with loose tools (1 No)	9,00,000
9.	Tipper (2 No.)	50,00,000
10.	Diamond Wire Saw (2 Nos.)	8,00,000
11.	Jack Hammer (4 Nos.)	4,00,000
12.	Wagon Drill (1 No)	50,00,000
13.	Drinking Water Facility and Water sprinkling	2,00,000
14.	Fencing (590m length x Rs. 300/- per meter)	1,77,000
15.	Garland drain (380m length x Rs. 300/- per meter)	1,14,000
16.	Green belt development under safety zone during this scheme period (220 sapling x Rs. 100/- per sapling)	22,000
Total Machineries for Operational Cost		3,39,87,000

B. Proposed financial estimate / budget for (EMP) Environmental Management Plan:

Budget Provision for this Scheme period

S. No.	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year	Total Charges For this scheme period
1	Ambient air quality monitoring	6500	4	26000	52000	2,60,000
2	Noise level monitoring	250	4	1000	2000	10,000
3	Ground vibration monitoring	1000	2	2000	4000	20,000
4	Water sampling and analysis	9000	1	9000	18000	90,000
Total EMP Cost/ year					76,000	3,80,000

The EMP cost for this scheme period would be around **Rs. 3,80,000/-**



Total Cost of the Project including EMP Cost	
Description	Cost (Rs.)
A. Operational Cost	3,39,87,000
B. EMP Cost	3,80,000
Total Project Cost (A+B)	3,43,67,000
C. The lessee Indents to involve corporate Environment responsibilities (CER) activity like Water purifier, Bed, Cot, Fan and Sanitary facilities to the Vasanthapuram Dispensary and Water purifier, Fan and Sanitary facilities to the Govt. School at 2.0% from the total project cost. The cost would be around Rs.6,88,000/-	6,88,000
Total Cost (A+B+C)	3,50,55,000

The total project cost would be around three crore fifty lakh and fifty five thousand only.

14.3 PROPOSAL FOR WASTE MANAGEMENT

The waste in the quarry includes rock fragments, rubbles generated as waste during production work.

Total waste produced during this scheme period will be around 30,711m³ (Granite Waste + Weathered rock). The total waste material will be proposed to dump with two different dimension, one on the Southern side with maximum dimension of (L)140m x (W)25m x (H)3m and another dump proposed on Southeastern portion with maximum dimension of (L)72m x (W)40m x (H)20.95m, which will be act as temporary waste dumps.

The waste management plan with reference to the quantum of waste generated is shown in quarry layout and afforestation plan (Plate No. VI).

14.4 PROPOSAL FOR RECLAMATION OF LAND AFFECTED BY MINING ACTIVITIES DURING & AT THE END OF MINING

Due to nature of occurrence of Multi Colour granite, the depth persistence of the granite body in this quarry is beyond the workable limits. In the proposed Scheme of quarrying only 28m depth has been envisaged as workable depth for safe & economic quarrying. If the mineral reserves available and Market persist, the lessee may apply a renewal of quarry lease as to develop and conserve mineral reserves. If permission is granted for removal of waste, the waste material will be supplied to needy crusher for building and road construction from concerned authorities after paying the seniorage fee and obtained necessary clearance and approval from concerned department for handling the waste. When the entire mineral reserves completely exhausted if permission not obtained from the concerned authority for handling of waste, backfilling will be carried out nearly existing ground profile and spread out the preserved topsoil to facilitate afforestation in the backfilled area (Refer plate No. IX).



14.5 PHASED PROGRAMME OF PLANTING TREES

The safety distance along the Northern side lease boundary has to be utilized for subsequent Afforestation. Appropriate species of local trees will be planted in a phased manner as described below.

Table - 22

Year	No. of trees proposed to be planted	Area to be covered in m ²	Name of the species to be plant	Survival rate expected in %	No. of trees expected to be grown
2023-24	44	390	Neem, Casuarina, Pongamia pinnata, Tamarind etc.,	80	35
2024-25	44	390		80	35
2025-26	44	390		80	35
2026-27	44	390		80	35
2027-28	44	390		80	35

Nearly 1,950m² area is proposed for afforestation by planting 220 Nos. of trees during every year and expected growth is around 175 Nos. of trees at a survival rate of 80%. The afforestation plan is shown in Plate No.VI.

14.6 MEASURES FOR DUST SUPPRESSION:

As the Multi Colour granite stones are mined as undamaged dimensional stones without involving deep hole drilling and heavy blasting, fragmentation and generation of lumps, fines or dust is very limited. This quantum of Mining activity will not cause the dust detrimental to the health of the persons employed. Nevertheless, water will be sprinkle for the suppression air borne dust from mine approach roads, waste dumps on regular intervals using water tankers. Drilling of blast holes of 32mm dia will be always under wet conditions to prevent flying of dusts. In the unloading points, water will be sprinkle through tippers to suppress dust. The drillers are provided with respirators in accordance with the Mines Safety Regulations.

14.7 MEASURES TO MINIMIZE GROUND VIBRATION DUE TO BLASTING AND CHECK NOISE POLLUTION

Shallow holes of 32 mm diameter to be drilled and conventional low explosives such as D-Cord and Gelatin Sticks will be used for removal of over burden. Hence, ground vibration and noise pollution will be minimal and restricted with the quarry workings. The blasting will be taking up at appointed timing and with sufficient caution to the public under the advice of qualified and competent personnel. The noise produced by diamond wire saw cutting will be negligible.

14.8 STABILIZATION AND VEGETATION OF DUMPS

As the waste generation in the mine includes hard rock fragments of considerable size and irregular shape with varying angularity, the temporary waste dump will be stable on its own even at higher slopes of the sides. However, excavated and preserved topsoil will be spread out over and sides of the inactive waste dump and tree saplings will be carried out for increasing the stability also to prevent erosion during rainy season.



15.0 PROGRESSIVE QUARRY CLOSURE PLAN

15.1 Introduction

The Progressive Quarry Closure Plan for Nadanthai Multi Colour Granite quarry over an extent of 2.86.5 hectares of patta lands in S.F.No. 482 in Nadanthai Village, Paramathivelur Taluk, Namakkal District, Tamil Nadu State has been prepared for **Tmt. V. Punitha**, W/o. P. Velmani residing at No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District, Tamil Nadu.

15.2 Present Land use pattern:

Land Use Table - 23

Description	Present area in (Ha)
Area under Quarry	0.44.6
Dumps	0.74.0
Infrastructure	Nil
Roads	0.02.0
Green Belt	Nil
Stocking Blocks	1.65.9
Grand Total	2.86.5

15.3 Mineral Processing Operations:

The quarried out Rough granite blocks are marketed by road to various customer destinations and granite processing units located at different parts of the country. The Multi colour Granite blocks approved for export market are shipped from Kochi Port to various countries and if required the blocks may be shifted from Chennai Port which depend upon the exporter's destination from time to time. No Mineral processing is involved within the quarry lease area.

15.4 Reasons for closure:

The mineral is not going to be exhausted during the proposed scheme period hence, immediate closure is not planned due to sufficient reserves are available for the entire life of quarry. Hence, the reason for closure will be discussed an ensuing scheme period or in Final Mine Closure Plan.

15.5 Statutory obligations:

All the conditions stipulated in the G.O. and lease deed was fulfilled and maintained during the course of quarry operations.



15.6 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Dr.P. Thangaraju, M.Sc., Ph.D.,

Qualified Person

No.17, Advaita Ashram Road,

Alagapuram, Salem-636 004.

Cell: +91 94433 56539, 94422 78601

The lessee will himself implement the closure plan; no outside agency will be involved.

15.7 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:

In the previous approved mining plan is discussed for Reclamation and Rehabilitation will be carried out only when the working area reaches its ultimate pit limit or at the end of life of quarry. The multicolour granite mineral reserves are available for the entire life of quarry. The entire quarry working area is an active, so the lessee has not taken any action for progressive quarry closure. Hence, review of implementation of progressive quarry closure does not arise at present. However, if any work done for progressive quarry closure during this scheme period, it will be discuss an ensuing Scheme period.

15.8 Closure Plan:

(i) Mined Out Land:

At the end of this scheme period the quarry operation to be carried out only 0.83.8ha out of 1.89.4ha of total mineable area. When the remaining reserves will be completely exhausted, the mine closure plan will be prepared and submitted to the competent authority to obtain approval and the same will be implemented. The quarry area already fenced with metal sheet fencing also safety bund will be constructed around the quarry to prevent inadvertent entry of public and cattle.

Land use pattern

Table - 24

Description	Present Area (Ha.)	Area required during this Scheme period(Ha)	Area at the end of life of quarry (Ha)
Area under Quarry	0.44.6	0.39.2	1.89.4
Waste dump	0.74.0	Nil	Backfilling
Infrastructure	Nil*	Nil*	Nil*
Roads	0.02.0	0.01.0	0.03.0
Green Belt	Nil	0.19.5	0.67.5
Stocking Blocks	1.65.9	1.06.2	0.26.6
Total	2.86.5	1.65.9	2.86.5



(ii) Water quality management:

Following control measures will be adopted for controlling water pollution:-

- Garland drain will be Constructed around the quarry area to prevent surface run off rain water entering to the pit.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

(iii) Air Quality Management:

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. All personnel protective equipment like Nose-mask, earplug/ muffs will be provided to the Workers. For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

(iv) Top Soil and Waste Management:

There is 1984m³ of topsoil will be generated during this scheme period, the same will be preserved all along the safety zone and utilized for construction of bund and afforestation .

Total waste produced during this scheme period will be around 30,711m³ (Granite Waste + Weathered rock). The total waste material will be proposed to dump with two different dimension, one on the Southern side with maximum dimension of (L)140m x (W)25m x (H)3m and another dump proposed on Southeastern portion with maximum dimension of (L)72m x (W)40m x (H)20.95m, which will be act as temporary waste dumps. When the quarry reaches its ultimate pit limit or at the end of life of quarry, quarried out waste will be backfilled and separately preserved topsoil will be spread out over the backfilled area also plantation carried out in the backfilled area.

(v) Disposal of mining machinery:

All the Machineries are purchased by fresh condition and the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all machineries will be utilized in another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.



(vi) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the working personnel.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries. Sufficient caution and sign boards will be kept in and around the quarry to induct public for awareness.
- Blasting will be carried out in a specific time after giving sufficient caution to the public such as danger signs shall be displayed near the excavations and siren alarm signal will be provide before small amount of blasting time for precautionary action of accident. (blasting is carried out only for secondary fragments and not to liberate the Granite body from the parent rock mass).
- Security guards will be posted to prevent inadvertent entry of public.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

(vii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of Lessee to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959



and other laws applicable to mine will be strictly complied with.

- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.

(viii) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent an inadvertent entry to the lease area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:

Quarry roads and approach roads,

Fencing on approach roads,

Checking and maintenance of machines and equipment,

Drinking water arrangements,

Mine office, first aid stations etc.

- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the quarry shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, quarry operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.,



(ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of twenty years. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(x) Time Scheduling For Abandonment:

The lease area has enormous potential for continuance of operations even after the expiry of the lease period. The details of time schedule of all abandonment will be given at the time of final quarry closure plan.

(xi) Abandonment Cost:

As at present quarry operation is not going to be closed so abandonment cost could not be assessed. However, based on the progressive quarry closure activities during this scheme period, the cost is assessed as given below:

Table - 25

ACTIVITY	YEAR					RATE	AMOUNT (Rs.)	
	2023-24	2024-25	2025-26	2026-27	2027-28			
Plantation (In Nos.)	44	44	44	44	44			
Plantation (Safety zone) Cost	4,400	4,400	4,400	4,400	4,400	@100 Rs Per sapling	22,000/-	
Fencing (In Mtrs) 590 Mtrs	1,77,000	-	-	-	-	@300 Rs Per Meter	1,77,000/-	
Garland drain (In Mtrs) 380 Mtrs	1,14,000	-	-	-	-	@300 Rs Per Meter	1,14,000/-	
TOTAL								3,13,000/-

16.0 MINERAL CONSERVATION AND DEVELOPMENT

The scheme of quarrying proposed has fully covered the aspects of granite conservation and Development Rules, 1999 with a future plan to extend the proposed working of the quarry to the maximum possible workable depth of the deposit. Extreme care is taken to ensure proper supervision of quality control of the granite dimensional stone aimed at the recovery of the maximum saleable quality and quantity of Multi Colour granite dimensional stones suitable for full utilization of the consumers.

Care is been taken for each process just to safeguard the material quarried in an economical and efficient manner by adopting systematic and scientific quarrying with consultation and supervision of well experienced quarry persons.



17.0 STATUTORY PROVISIONS

The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied with, so that the safety of the mine, machinery and person will be ensured.

Permission, relaxation or exemption wherever required for the safe and scientific Mining of the deposit will be obtained from the Department of Mines Safety, Chennai. Any violation pointed out by the inspecting authorities shall be rectifying as per the guidelines of the department.

Certified that this Scheme of Mining has been prepared in accordance with the Mines Act, Rules & Regulations and orders made there under and in conformity with the provisions sub rule (13) of Rule 19A of Tamil Nadu Minor Mineral Concession Rules, 1959 and Rule 12, 13 & 16 of Granite Conservation and Development rules June 1999.

Prepared By

[Signature]
Dr.P.Thangaraju, M.Sc., Ph.D.,
Qualified Person.

Place: Salem

Date: 23.05.2022

DONATE RED
SPREAD GREEN
SAVE BLUE

[Signature]
COMMISSIONER
COMMISSIONERATE OF GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032.

ky
1/8/22

This Scheme of mining Plan is approved
Subject to the Conditions / Stipulation
indicated in the Mining Plan Approval
Letter No. 4016/MMS/2022 Dated 29.05.22



ABSTRACT

Mines and Quarries - Minor Mineral - Multi Colour Granite - Namakkal District, Paramathi- Velur Taluk and Nadanthai Village over an extent of 2.86.5 heccts in patta land S.F. No. 482 - Quarry Lease Application of Tmt V. Punitha - Grant of quarry lease - Sanctioned - Orders - Issued.

Industries (MMB.2) Department

G.O. (3D).No.27

Dated: 29.11.2017

தேவநிளம்பி கார்த்திகை 13

திருவள்ளூர் ஆண்டு 2048

Read:

1. From Tmt. V.Punitha Quarry Lease Application dated: 29.06.2016.
 2. From the District Collector, Namakkal, Letter Roc. No. 457 / Mines/2016), dated 29.07.2016.
 3. From the Commissioner of Geology and Mining, Chennai, File No.5162/MM5/2016, dated. 24.03.2017.
 - 4) Government Letter No.4336 / MMB.2 / 2017, dated 24.05.2017.
- Read also:**
- 5) From the Commissioner of Geology and Mining Letter No. 5162/MM5/2016, dated 10.07.2017
 - 6) From the Chairperson - District Level Environment Impact Assessment Authority, Namakkal, letter No. DEIAA- NMK-1 Tamil Nadu / F.No.259/ Mines / 02 / EC.No.2 / 2017, dated 24.11.2017.

ORDER:

In her reference first read above, Tmt. V. Punitha has applied for grant of lease for quarrying Multi Colour Granite over an extent of 2.86.5 hectares of patta land in S.F. S.F. No. 482 of Nadanthai Village, Paramathi-Velur Taluk, Namakkal District for a period of 20 years under rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. In their reference second and third read above, the Collector of Namakkal District and the Commissioner of Geology and Mining have recommended and forwarded the application of Tmt. V. Punitha to the Government for passing orders.

3. Based on the reports of the District Collector, Namakkal and the Commissioner of Geology and Mining, the Government have examined the quarry lease application of the applicant company and communicated the area recommended by the Commissioner of Geology and Mining as precise area and requested the applicant company in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Commissioner of Geology and Mining and to produce environmental clearance from the District Level Environment

(p.t.o.)



Impact Assessment Authority. The Commissioner of Geology and Mining in his reference 5th read above has approved the mining plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 subject to the condition that the applicant company shall obtain the Environmental Clearance as per the orders of the Hon'ble Supreme Court of India Order dated: 27.2.2012 in I.A. No.12-13/2011 in SLP (C) No.19629/2009 and as per the Office Memorandum No.L11011/47/ 2011-1A II(M), dated: 18.5.2012 of Ministry of Environment and Forest, Government of India. The District Level Environment Impact Assessment Authority in their reference 6th read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

4. The Government after careful examination have decided to grant lease to quarry Multi Colour granite to Tmt. V. Punitha in the above patta lands. Accordingly, in exercise of the powers conferred under Rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959, the Governor of Tamil Nadu hereby grant quarry lease to Tmt. V. Punitha for quarrying Multi Colour Granite over an extent of 2.86.5 hectares of patta land in S.F. No. 482 of Nadanthai Village, Paramathi - Velur Taluk, Namakkal District for a period of twenty years, subject to the conditions specified in the annexure to this order and also the following special conditions along with all the conditions imposed by the District Level Environment Impact Assessment Authority in the reference 6th read above:

- (i) A safety distance of 7.5 mts should be left out for the adjacent patta lands.
- (ii) A safety distance of 10.0 meters should be left out for the East - west trending patta cart tract passing in the Northern side of the applied area and North - South trending patta cart tract in the eastern side of the applied area.
- (iii) A safety distance of 50 mts should be left out for the low tension power line passing south west corner of the applied area.
- (iv) No hindrance shall be caused to the adjacent pattadars lands while quarrying and transportation of granite.
- (v) Blasting of rocks and transportation of vehicles carrying granite should not be carried out from 6 p.m. to 6 a.m.
- (vi) The conditions mentioned in G.O.(Ms)No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
- (vii) 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 mts with a distance between two pillars shall not be more than 3 mts.
 - The applicant shall incorporate the DGPs readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan and submit in C.D.
- (viii) Environment Clearance should be obtained from the competent Authority as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959.
- (ix) ~~The lessee shall strictly adhere to the statutory and safety requirements.~~
- (x) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.



Annexure

G.O (3D) No.27, Industries (MMB.2) Department, Dated:29.11.2017

1. The applicant shall execute an agreement within one month from the date of receipt of the Government order.
2. The date of commencement of the period of lease shall be the date on which the agreement is executed.
3. The applicant shall pay seigniorage or dead rent whichever is more in respect of the actual quantity of granite removed at the rate prescribed from time to time in Appendix-II of the Tamil Nadu Minor Mineral Concession Rules, 1959.
4. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
5. The applicant should also allow any officer authorized by the District Collector or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.
6. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view, the proper safety of the labour conservation of minerals and preservation of environment ecology.
7. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.
8. No quarrying activities connected there to shall be done before the execution of the agreement and registration is at the cost of the applicant.
9. No hindrance shall be caused to the adjoining pattadars or public.
10. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.
11. The terms and conditions are also subject to such further modifications, deletion and additions alternation as may be ordered by the Government to be included in the agreement to be executed for this purpose.

- (xi) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (xii) The lease grantee shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
- (xiii) The District Collector, Namakkal shall obtain a sworn-in-affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that they are complied with. Further, the lessee / firm will furnish a declaration in the lease deed agreement as per the Government Letter No.12789/MMB.2/ 2002-7, Dated: 9.1.2003 stating that the lessee / firm will mine only in the lease hold area and will not undertake any quarrying activity in the adjoining poramboke land. Further, the lessee / firm will fence the lease hold area separating it from the adjoining poramboke land. If any illegal mining is undertaken, the lessee / firm will be held responsible for those activities and will be subjected to the action taken by the Government in this regard.

5. The Collector of Namakkal District is requested to take necessary further action for the execution of agreement in the prescribed form and communicate the date of execution of agreement to the Government and Commissioner of Geology and Mining.

6. The District Collector, Namakkal is also directed to verify and furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 4 above have been complied with, duly incorporated in the lease agreement and send it to the Government. The District Collector, Namakkal is also instructed to include all the conditions imposed by District Level Environment Impact Assessment Authority in the reference 6th read above.

(BY ORDER OF THE GOVERNOR)

**ATULYA MISRA
PRINCIPAL SECRETARY TO GOVERNMENT**

To

✓ Mmt.V.Punitha
W/o. P. Velmani
109, Narasinghapuram Post, Nethaji Nagar,
Attur Taluk, Salem District.
The Commissioner of Geology and Mining,
Guindy, Chennai - 600 032.
The District Collector, Namakkal.

Copy to:-

Special Personal Assistant to Hon'ble Minister
for Industries, Chennai - 600 009.
Industries (OP.II) Department, Chennai - 600 009.
SF/SC.

//Forwarded / By Order//


SECTION OFFICER.



12. The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District Collector, Director of Geology and Mining and maintain it all time at the quarry site.
13. No quarrying shall be done within a distance of 7.5 metres of the boundaries of the permitted area.
14. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.
15. The lessee shall strictly adhere to the statutory and safety requirements.
16. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
17. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
18. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision, 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 Minerals Concession Rules, 1959.
19. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

ATULYA MISRA
PRINCIPAL SECRETARY TO GOVERNMENT

// True Copy//


29/11/12
SECTION OFFICER

மாவட்டம். சேலம்.

சென்னை

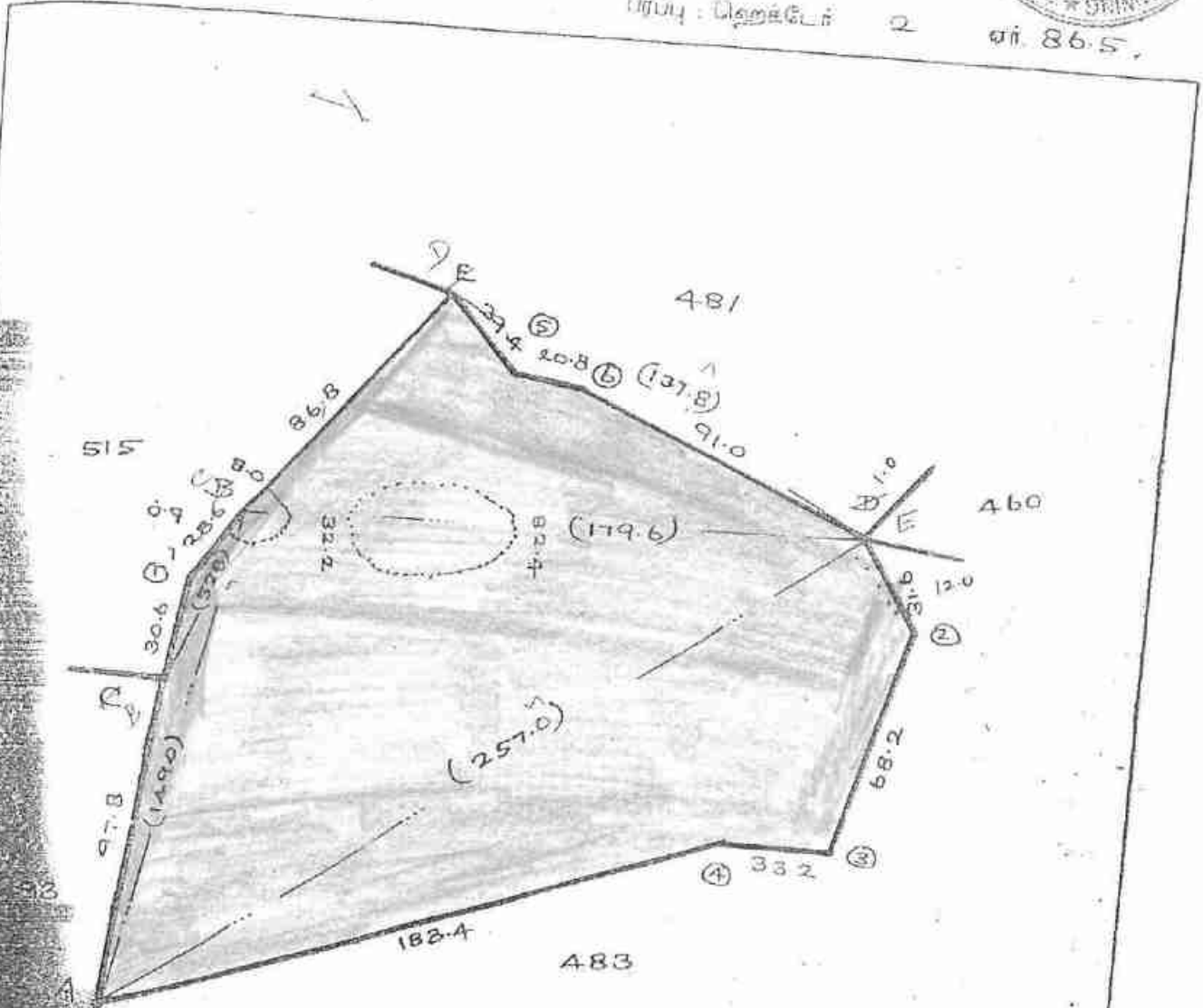
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கிராமம் {
பெயர் {



460 எண். 482.

பரப்பு : செக்டர்கள் 2 ச. 86.5.



1. கிராமநிகழ்ச்சி
 ஜா. ராஜா
 கிராம நிகழ்ச்சி அலுவலர்
 23, நடந்தை
 பரமத்தி - வேலூர் வட்டம்,
 நாமக்கல் மாவட்டம்.

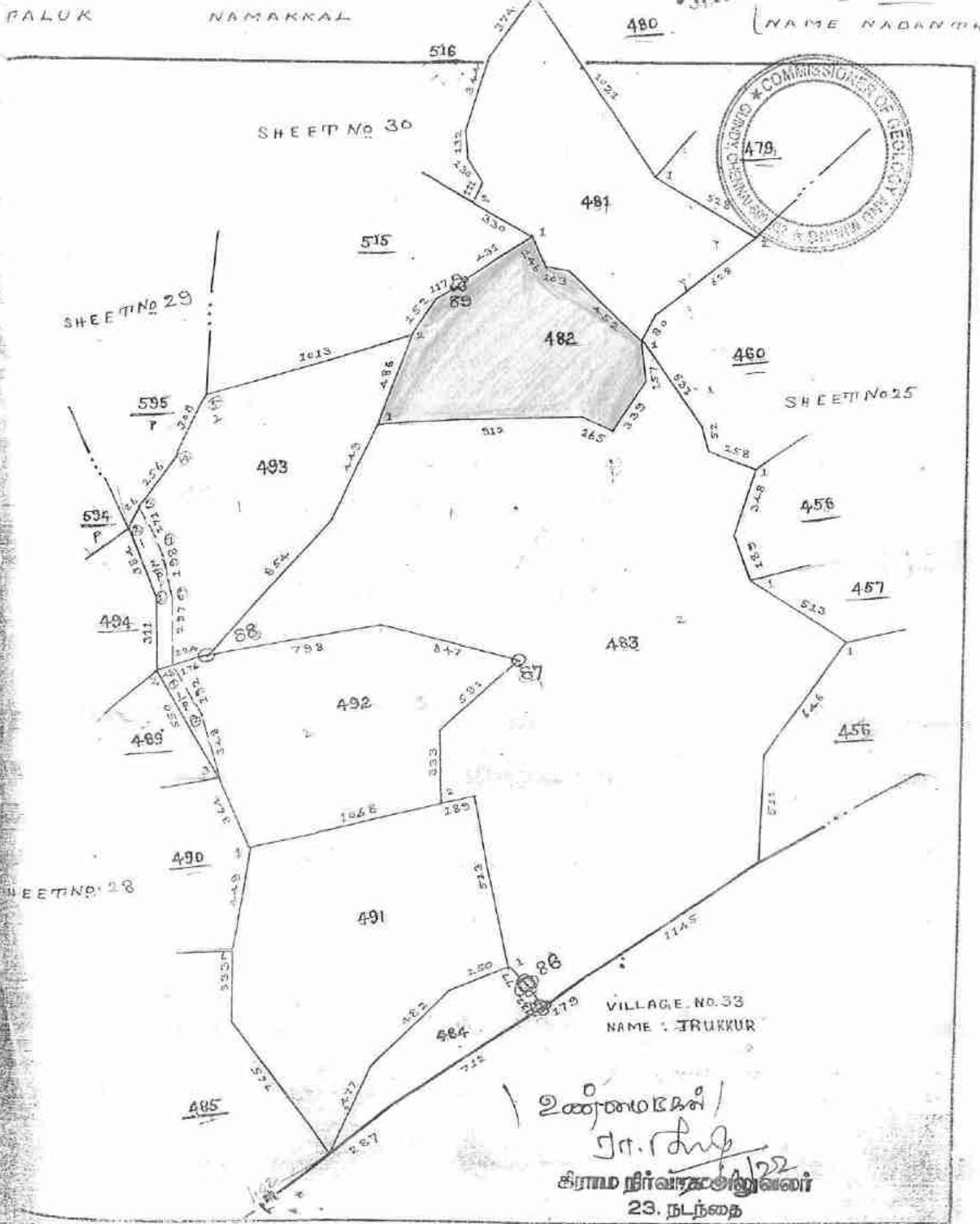
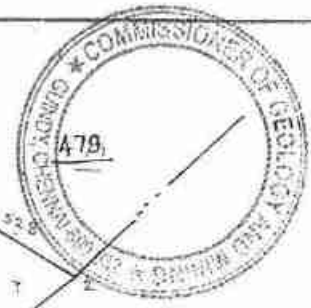
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		257.0		
		82.2		
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		C		
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		77.4		
		A		
	82			

SHEET No 30

SHEET No 29

SHEET No 25



VILLAGE NO. 33
NAME : TRUKKUR

உணர்ச்சி
 ஜா. சி. சி.
 கிராம நிர்வாக அலுவலர்
 23, நடந்தை

பரமத்தி - வேலூர் வட்டம்,
 நாமக்கல் மாவட்டம்.

LEASE AREA



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு



மாவட்டம் : நாமக்கல்

மாவட்டம் : பரமத்தி வேலூர்

வருவாய் விராமம் : நடந்தை

பட்டா எண் : 5543

உரிமையாளர்கள் பெயர்

- | | | | | |
|----|--------------|-------|---------|---|
| 1. | பழனிகவுண்டர் | தந்தை | வேல்மணி | - |
| 2. | வேல்மணி | கணவன் | புனிதா | - |

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பாப்பு	தீர்வை	பாப்பு	தீர்வை	பாப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
482	-	2 - 86.50	3.54	--	--	--	--	2016/0103 /09/012938--- -- 02-04-2016
		2 - 86.50	3.54					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் பின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தரங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 09/04/023/05543/60377 என்ற குறிப்பு எண்ணை உள்விடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 20-04-2022 ஆன்று 01:35:54 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode பயன்பாடு மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.

For Common e-Service Center,

Authorized Signatory
20220420 15:15:15



5/23/22, 1:28 PM

வட்டாட்சியர் அலுவலக இணைய சேவை - அ-பதிவேடு விவரங்கள் பார்வையிட



அ-பதிவேடு விவரங்கள்

மாவட்டம் : நாமக்கல்

வட்டம் : பரமத்தி வேலூர்

கிராமம் : நடந்தை

1. புல எண்	482	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	-	10. மண் தரம்	10
3. பழைய புல உட்பிரிவு எண்	482	11. திறவை (சூ - ஹெ)	1.24
4. பகுதி	-	12. பரப்பு (ஹெக்டேர்) - ஏர்	2 - 86.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த திறவை (சூ - பை)	3.54
6. நிலத்தின் வகை	புஞ்சை	14. மட்டா எண்	5543
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. சூரு போகமா	-	16. பெயர்	1.வேல்மணி 2.புனிதா

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை நாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 50377 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



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477	6	477	ர	4	...	8-3	10	1 24	0 43-0	0 53	89 க. குப்புண்டர் கவுண்டர்.
	7	477	ர	4	...	8-3	10	1 24	0 47-0	0 58	48 ம. பெரியசாமி.
	8	477	ர	4	...	8-3	10	1 24	0 93-0	1 14	148 வி. செங்கோட கவுண்டர்.
	9	477	ர	4	...	8-3	10	1 24	0 61-0	0 76	809 தி. பெருமாள் நாயக்கர் (1), வி. செங்கோட கவுண்டர் (2) & தி. பழனியப்பன் (3).
	10	477	ர	4	...	8-3	10	1 24	0 57-5	0 72	674 தி. பழனியப்பன் (1), வி. தமையி (2).
	11	477	ர	4	...	8-3	10	1 24	0 97-0	1 19	310 தி. பெருமாள் நாயக்கர்.
	12	477	ர	4	...	8-3	10	1 24	0 40-0	0 50	498 வி. தமையி.
	13	477	ர	4	...	8-3	10	1 24	0 36-0	0 45	252 தி. பழனியப்பன்.
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	...	478	ர	4	...	8-2	7	3 09	0 39-0	1 20	310 தி. பெருமாள் நாயக்கர்.
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	1	480-1	ர	4	...	8-3	10	1 24	1 81-5	2 24	200 ஒ. சிண்டு என். தி. தண்டா கவுண்டர்.
	2	-2	ர	4	...	8-3	10	1 24	3 69-0	4 56	877 ச. வீரப்ப கவுண்டர் (1), பெ. பழனியப்பன் (2), ம. பெரியசாமி (3), வி. செங்கோட கவுண்டர் (4).
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	481		ர	4	...	8-3	10	1 24	3 66-0	4 52	200 ஒ. சிண்டு தண்டா கவுண்டர்.
	482		ர	4	...	8-3	10	1 24	2 86-5	3 54	417 மு. ரங்கசாமி நாயக்கர்.
	483-1		ர	4	...	8-3	10	1 24	4 05-5	5 01	675 தி. மாசிமுத்து (1), தி. சி. முகம் (2).

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 திரு. சி. சி. சி.
 திராம நாயக்கர் சி. சி. சி.
 23, நடந்தை
 பரமத்தி - வேலூர் வட்டம்.



தமிழ்நாடு TAMIL NADU 29AB 638896

1784
17.6.2016

P. Velmani
உருமணி

தி. சூர் பூமிநாத், ச.ந.க.ச.
சு.ந.க.ச. நெ 8125/01/2005
மு.ந.க.ச. அலுவலகம், மதுரை
11, ச.க.ம.க. சாலை, மதுரை - 625 00.

CONSENT & NO OBJECTION GIVEN BY P.VELMANI

I, P.VELMANI, Son of Palani Gounder, 109, Narasingapuram Post, Nethaji Nagar, Attur Taluk, Salem District (Came down to Madurai), do hereby solemnly affirm and sincerely state as follows;

- 1) I am the deponent herein.
- 2) I hereby declare that myself and Mrs.V.Punitha, My wife jointly purchased the under mentioned property shown in the schedule through registered sale deed vide Doc No 839/2015 dated 14.03.2016 at Sub- Registrar Office, Paramathi.

P. Velmani





3) I hereby declare except myself and Mrs.V.Punitha purchased the property and no other is involved regarding the property.

4) I hereby declare that Mrs.V.Punitha, applied for leasing quarry operations. I have no objection for application of lease in the schedule mentioned property and I fully consent to her for the same.

All the information and particulars furnished above are true to the best of my knowledge and belief and I signed at Madurai on 17th June 2016.

SCHEDULE OF PROPERTY

District	Taluk	Village	Survey No	Area in Classification Hectares
Namakkal	Paramathi-Velur Taluk	Nadanthai	482	2.86.50
			Total Extent	2.86.50



P. Velmani
Deponent

Identified by:

S. Ajay Kumar
S. P. Sankaranarayanan

D.No: 16, Ayyalurkottai P.S.
K.K. Nagar,
MADURAI.



Solemnly affirmed and signed

before me at Madurai on 17.6.16

K. Chandrasehar
K. CHANDRASEHAR, M.A.
Advocate & Notary Public
11/5, Ahimsapuram West Street,
Sellur, Madurai-625002



DEPARTMENT OF GEOLOGY AND MINING

From
Dr. R.Palaniswamy, I.A.S.,
Commissioner of Geology and Mining,
Industrial Estate,
Guindy, Chennai - 600 032.

To
The Principal Secretary to
Government,
Industries Department,
Secretariat,
Chennai-600 009

Lr.No. 5162/MM5/2016 dated 10.07.2017

Sir,

Sub: Mines and Quarries – Multicolour granite – Namakkal District – Paramathi-Velur Taluk – Nadanthai Village - S.F.No.482 – over an extent of 2.86.5 hecets. of patta land – Quarry lease application preferred by Tmt.V.Punitha – precise area communicated by the Government - Approved Mining Plan called for – Mining Plan submitted for approval – approval accorded – Approved Mining Plan forwarded to Government - Reg.

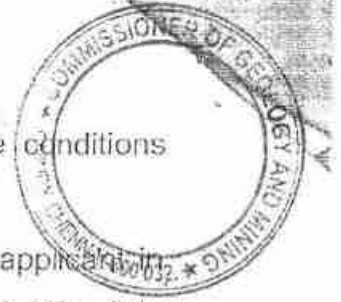
- Ref: 1) Quarry lease application preferred by Thiru. Tmt.V.Punitha, dated 29.06.2016
2) District Collector, Namakkal letter Roc.No457/ Mines/2016, dated;29.07.2016
3) This office recommendations made in File No. 5162/MM5/2016, dated;24.03.2017
4) Government letter No.4336/MMB-2/2017-1 dated 24.05.2017.
5) Tmt.V.Punitha letter dated nil received date 31.05.2017 in the O/o. Assistant Director (G&M), Namakkal.
6) Assistant Director (G&M), Namakkal letter No. Roc.No.457/Mines/2016, dated;01.06.2017.

-pppp-

Kind attention is invited to the references cited.

2) The Government in the reference 4th cited have communicated the precise area to Tmt.V.Punitha with a direction to produce an Approved Mining Plan in respect of the area applied for grant of quarry lease for quarrying Multicolour Granite over an extent of 2.86.5 hecets. of patta lands in S.F.Nos.482 of Nadanthai Village, Paramathi-Velur, Namakkal District within a period of 3 months as per sub-rule (13) of Rule 19-A of Tamil Nadu

Minor Mineral Concession Rules, 1959 by incorporating the conditions stipulated in the Government letter dated 24.05.2017.



3) In response to the precise area communicated, the applicant in the reference 5th cited has submitted 6 copies of draft mining plan duly prepared by the Recognized Qualified Person for approval.

4) The Assistant Director of Geology and Mining, Namakkal in the reference 6th cited has forwarded the draft mining plan for approval stating that the mining plan has been verified with reference to field conditions and the details such as Geological Reserves, Mineable Reserves, year wise production and development program have been incorporated in the draft mining plan. She has further reported that the mineable reserves in the draft mining plan has been estimated as 1,30,963 cu.mtrs. for a depth persistence of 28 mts. with a recovery of 50%.

5) The draft mining plan submitted in respect of the precise area communicated and the report of the Assistant Director of Geology and Mining, Namakkal have been examined with reference to the provisions of Rule 12, 13 and 15 of Granite Conservation and Development Rules, 1999 and the followings are observed:-

- i) All the conditions stipulated in the Government letter No.4336/MMB-2/2017-1 Dept dated 24.05.2017 have been incorporated in the mining plan.
- ii) The required safety distance of 7.5 meters has been provided to the adjacent patta lands and the same has been demarcated in the mining plan.
- iii) The DGPS readings for the entire boundary pillars of the area have been incorporated and shown in the mining plan.
- iv) The total quantity of mineable reserves has been estimated as 130,963 cu.m with a recovery of 50% for a depth persistence of 28 mts.
- v) The total quantity of recoverable reserves of granite for the first 5 years has been estimated as 30,025 cbm with

a average annual production of 6005M³ for a depth persistence of 18 mtrs. with a recovery of 50%.



6) In the light of the above, in exercise of the powers conferred under Rules 12,13 and 15 of Granite Conservation and Development Rules, 1999 read with G.O.Ms.No.87, Industries (MMC1) Department dated 22.2.2001, I hereby approve the mining plan subject to the following conditions:-

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
- ii) 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) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- iv) The applicant should obtain Environment Clearance from the Competent Authority as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959.
- v) The conditions mentioned in G.O (Ms) No.79 Industries (MMC1) Department dated 06.04.2015 should be complied with.
- vi) The applicant should fence the lease granted area with barbed wire before the execution of lease deed and the pillar post shall be firmly grounded with concrete foundation of height not less than 2mts with a distance between two pillars shall not be more than 3mts.
- vii) The lessee shall strictly adhere to the statutory and safety requirements.
- viii) Waste materials generated during quarrying operations shall be dumped within the lease applied area earmarked for this purpose.
- ix) The applicant should leave a safety distance of 7.5 meters to the adjacent patta lands and should not cause any hindrance to the pattadars while quarrying and transportation of granite.



- x) A safety distance of 10 meters should be left out for the East-West trending patta cart tract passing in the Northern side of the applied area and North-South trending patta cart tract in the eastern side of the applied area.
- xi) A safety distance of 50 meters should be left out for the low tension power line passing south west corner of the applied area.
- xii) Blasting of rocks and transportation of vehicles carrying granite should not be carried out from 6 PM to 6 AM.
- xiii) The proposed area for quarrying should be demarcated by using DGPS before executing the lease deed.
- xiv) Quarrying operations shall be carried out as per the Approved Mining Plan.
- xv) The production of granite shall be done as per the Approved Mining Plan
- xvi) Scheme of mining along with the progressive mine closure plan shall be submitted within the time stipulated in the rules.
- xvii) The District Collector, Namakkal 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 12789/MMB2/2002-7, Industries Department, dated 09.01.2003 are complied with.

A copy of the Approved Mining Plan is sent herewith for further necessary action.

Encl: Approved mining plan.

Sd/- R. Palaniswamy,
Commissioner of Geology and Mining

Forwarded / By Order


Joint Director

- 1) Mrs.V.Punitha,
W/o.P.Velmani
109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District. 5/12
11/7/12
- 2) The District Collector, Namakkal (with AMP)
- 3) The Directorate of Mines Safety,
Chennai-40 (with AMP).



தமிழ்நாடு தமில்நாடு TAMILNADU

3446
27.12.2017

V. Punitha
Salem - Attur

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பி. ஆர். பூமிநாத், பி.எ.ஓ.
ஆர்.ஓ.சி. நர் 9125194/2005
முத்திரைத்தாள் விநியோகம்
18, உலகம் கோடு, மதுரை - 625 002

Appendix - IV

AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT

1. Sanctioned in G.O.(3D) No.27 Industries (MMB-2) Department dated 29.11.2017 for a period of twenty years
2. LR.No.DEIAA, TN/F.No.259 / Mines / 02 / EC.No: 2 / 2017 dated: 24.11.2017
3. LR.No.TNPCB.F.1243NML/RS/DEE/TNPCB/NML/A&W/2017 dated: 14.12.2017

4. Anticipated Seigniorage Fee

(1). Multi-Colour Granite 6005cbm X 20 = 120100 m ³ X 2321/-	= Rs. 27,87,52,100/-
(2). Security Deposit	= Rs. 40,000/-
(3). Area Assessment 2.86.5 X 300 (for 20 years)	= Rs. 17,190/-
Total	= Rs. 27,88,09,290/-

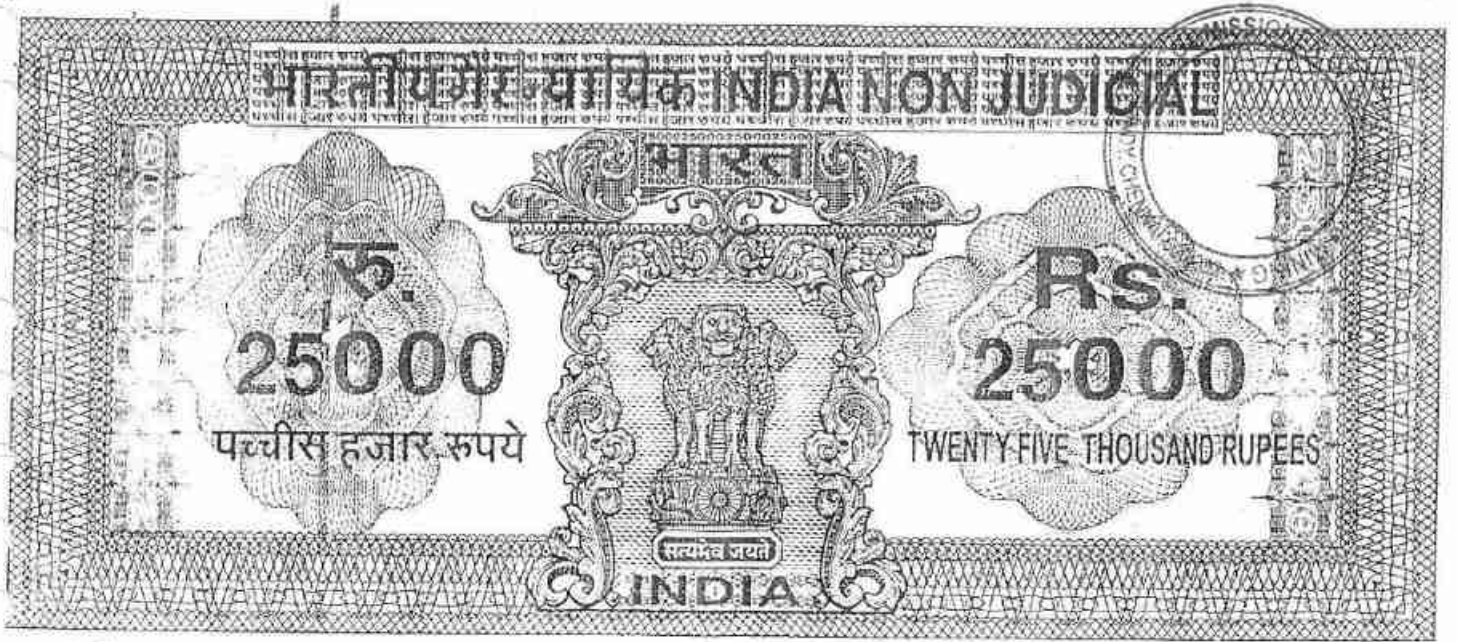
Agreement made this 3rd day of JANUARY 2018 between Tmt.V.Punitha, W/o. Velmani, residing at No. 109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District (hereinafter referred to as "the registered holder / lessee" which term shall include in these presents where the context so admits include also his heirs, executors administrators, legal representatives and assigns) of the one part and the Governor of Tamil Nadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the other part.

P. Velmani
REGISTERED
HOLDER

V. Punitha
REGISTERED
HOLDER / LESSEE

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LESSOR
DISTRICT COLLECTOR
NAMAKKAL





தமிழ்நாடு தமில்நாடு TAMILNADU

D 201338

3447
27.12.2017

V. Punitha
Salem - Athur

மேல்க...
பி. ஆர் புகிதாத், பி.எஸ்.சி.
ஆர்.ஓ.சி. நிர 9125/B1/2005
முத்திரைத்தாய் கிராமம், சேலம்
பி.டி. போலஸ் கோடு, (தஞ்சை - 625 00)

121

WHEREAS the registered holder holds (amongst others) the lands described in the schedule hereunder written (hereinafter referred to as the said lands);

AND WHEREAS, the registered holder Tmt.V.Punitha has made application to the Collector of the District of Namakkal (hereinafter referred to as "the Collector) seeking grant of quarrying lease for quarrying Multi-Colour Granite in the said lands and to deposit mining waste in the said lands and has lodged with the Collector and accurate map or sketch of the said lands;

P. V. Mani

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V. Punitha

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HOLDER / LESSEE

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LESSOR
DISTRICT COLLECTOR
NAMAKKAL





தமிழ்நாடு தமில்நாடு TAMILNADU

3448
27.12.2017

V. Punitha
Salem - Attur

D 201339
ம. அ. முத்துமாரி
ம. ஆர். பூமிநாத், ம. சண்முகம்
ஆர். ஏ. சி. பிர் 9125/B1/2005
முத்திரைத்தாள் கமிஷனர்தரார்
நீர், பெணஸ் கோடு, முத்தூர்-623 001

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AND WHEREAS, the Government, have granted a quarrying lease to the Tmt.V.Punitha, W/o. Velmani, D.No.109, Narasinghapuram Post, Nethaji Nagar, Attur Taluk, Salem District vide G.O.(3D)No.27 Industries (MMB.2) Department dated 29.11.2017 and allowed them to commence quarrying operations for Multi-Colour Granite in the said lands and to deposit mining waste thereon in the schedule property by the registered holder for a period of twenty years from the date of execution of lease deed;

AND WHEREAS, the registered holder has deposited with the Collector, the sum of Rs.40,000/- as security against any loss or damage which may be incurred to the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations therein of the registered holder or by the deposit of mining waste thereon by the registered holder;

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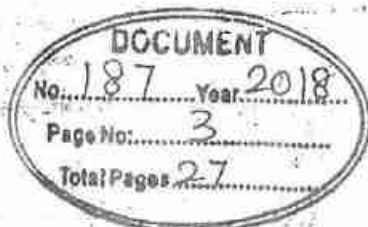
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D. ஆர். குமாரதாசு, தி. நாமக்கல்.
ஆர்.க.சி. நிர 9125/31/2005
குத்தியலாறு காவல் விரிப்புகார்ப்புள்ளி
திரு. சி.காமநாதன், மதுரை - 625 007

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NOW THESE PRESENTS WITNESS and the registered holder do the hereby agree with the Government in the manner following that is to say:-

1. The registered holder shall be at liberty at all times during the period of lease to carry on mining operations for Multi-Colour Granite for a period of twenty years from 03.01.2018 to 02.01.2038 in the said lands in a proper and workman like manner and to deposit mining waste on the said lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.
2. The registered holder shall and will on the 3rd day of January 2018 next and on the 3rd day of January every succeeding year during so long as he shall have carried on any such mining operations as aforesaid pay to the Collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage fee on the minor minerals at the rate specified in Appendix -II to the Tamil Nadu Minor Mineral Concession Rules 1959.

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DISTRICT COLLECTOR
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தமிழ்நாடு தமில்நாடு TAMILNADU

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ஆர். சி. நிர 9125/B.1/2005
மத்திய இரைக்கல் கமிஷனரின் அலுவலகம்
தி. சி. என். சி. நெல்லை - 625 02

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- The registered holder shall and will keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorized by the Director of Geology and Mining, TamilNadu from time to time and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such information and returns regarding all or any of the matter aforesaid as the Government shall, from time to time, require and direct.
- The registered holder shall and will at all times allow any officer authorized by the Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

P. Selvamani

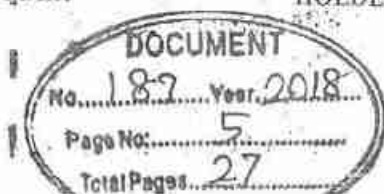
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Salem - Arthur

பி. ஆர் பூமிநாத்,
ஆர்.ஓ.சி. நிர 9125/B/2005
முத்திரைத்தாள் விநியோகம்
நிர், உயர்நிலை கோடு, மதுரை - 625 005
2017

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5. The registered holder shall forthwith send to the District Collector a report of any accident which may occur at or in the said lands and also of the discovery of any mineral other than Mult-Colour Granite.
6. It shall be lawful for the registered holder at any time to cease mining operations under these presents provided he shall pay to Collector for and on behalf of the Government land assessment, cess and seigniorage fee due to the Government and shall restore the said lands or fence or fill in abandoned pits and excavations therein if required by the Collector and upon his doing these presents shall cease and determine.
7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereof as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in and in case the registered holder shall fail or neglect to restore any such lands which he shall be required to restore to a state fit for cultivation or to so fence or fill in any such abandoned pit, or excavation which he shall be required to so fence, or fill in them and in any

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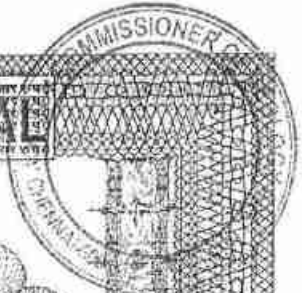
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भारतीय न्यायिक INDIA NON JUDICIAL



₹. 25000
पच्चीस हजार रुपये



Rs. 25000
TWENTY-FIVE THOUSAND RUPEES

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பி.ஆர் பூமிநாத், க.ச.சி.சி.
ஆர்.ஓ.சி. நிர 9125/83/2005
முத்திரைத்தாள் விற்பனைப்பரவா
187, பெயல் ரோடு, மதுரை - 625 001



8. such case, it shall be lawful for the Collector to so restore any such lands, or as the case may be, to so fence or fill in any such pits or excavations at the expense of the registered holder and to apply the said sum of Rs.17,190/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to civil court.
9. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.
10. The registered holder shall not assign lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector.

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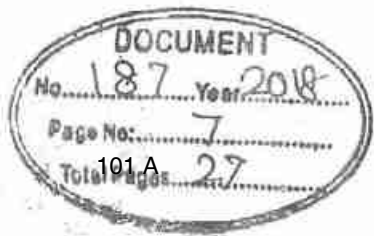
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DISTRICT COLLECTOR
NAMAKKAL





தமிழ்நாடு தமில்நாடு TAMILNADU

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27.12.2017

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Salem - Athur

ம.ஆர் முயிநாத், பி.என்.சி.
ஆர்.ஓ.சி. நிர 9125/B1(2005)
முத்திரைத்தாள் விநியோகப்பாளர்
நிர், பேலஸ் கோடு, மதுரை - 625 006



18/

11. If the registered holder does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person the registered holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the form set out in Appendix-IV to the Tamil Nadu Minor Mineral Concession Rules 1959.
12. All land assessment, cess and seigniorage fee payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act 1864 as if they were arrears of land revenue.
13. In the event of any breach by the registered holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage fee or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of Government and antecedent claim or breach of covenant or condition.
14. Any notice to be given to the registered holder may be addressed to his last known place of abode and where a notice has been so addressed it shall be deemed to have been duly served for the purpose of these presents.

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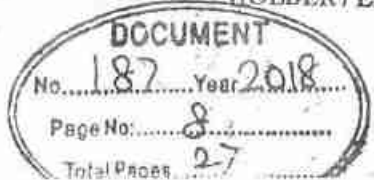
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M. Ar. Muthu
31.12.2018

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DISTRICT COLLECTOR
NAMAKKAL





15. Should any question or dispute arise regarding the agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the registered holder there under, the amount or payment of the seigniorage fee or area assessment made payable thereby, the matter in issue shall be decided by the Director of Geology and Mining. In case the registered holder / lessee is not satisfied with the decision of the Director of Geology and Mining, the matter shall be referred to the State Government for decision.
16. The registered holder shall abide by the conditions laid down in the payment of Wages Act 1936 (Central Act IV of 1936), the Mines Act 1952 (Central Act XXXV of 1952) and the Indian Explosives Act 1884 (Central Act IV of 1884).
17. The average quantity of Multi-Colour Granite that can be quarried from the leasehold area under this agreement is 120100 CBM for the entire lease period of twenty years.
18. For the purpose of calculation of stamp duty the following parameters are taken into account. The anticipated seigniorage fee for the total quantity of 120100 CBM of Multi-Colour Granite to be quarried and transported during the entire lease period of twenty years is (2321 X 120100) Rs.27,87,52,100/- (Rupees Twenty Seven Crores Eighty Seven Lakhs Fifty Two Thousand and One Hundred only) Area Assessment for the lease hold area for the entire lease period of 20 years is Rs.17,190/- (Rupees Seventeen Thousand One Hundred and Ninety only) and Security deposit deposited for this lease by the lessee is Rs.40,000/- (Rupees Twenty Thousand only).

Special Conditions:-

1. A safety distance of 7.5 meters should be provided to the adjoining patta lands.
2. A Safety distance of 10.0 meters should be left out for the East - West trending patta cart track passing in the Northern side of the applied area and North-South trending patta cart track in the eastern side of the applied area.
3. A safety distance of 50 mts should be left out for the low tension power line passing south west corner of the applied area.
4. No hindrance shall be caused to the adjacent patta lands while quarrying and transportation of granite.
5. Blasting of rocks and transportation of vehicles carrying granite should not be carried out from 6 A.M. to 6 P.M.
6. The conditions mentioned in G.O. (Ms). No.79, Industries (MMC-1) Department, dated: 06.04.2015 should be complied with.
7. The applicant firm should fence the lease granted area with Barbed wire fencing before the execution of the lease deed as follows:-
 - The pillar post shall be firmly grounded with concrete foundation of height not less than 2 mts and the distance between two pillars shall not be more than 3 mts.

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- 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.
8. Environment Clearance should be obtained from the competent Authority as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959.
 9. The lessee shall strictly adhere to the statutory and safety requirements.
 10. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
 11. Quarrying shall be done as per the approved mining plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
 12. The lease grantee shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
 13. The lessee should be followed the instructions issued in Government letter no. 12789 / MMB-2 / 2002-7 Industries department dated: 09.01.2003 stating that the lessee / firm will mine only in the lease hold area and will not undertake any quarrying activity in the adjoining poramboke lad. Further, the lessee / firm will fence the lease hold area separating it from the adjoining poramboke land. If any illegal mining is undertaken, the lessee / firm will be held responsible for those activities and will be subjected to the action taken by the Government in this regard.

Conditions:-

1. The date of commencement of the period of lease shall be the date on which the agreement is executed.
2. The applicant shall pay seigniorage fee or deed rent whichever is more in respect of the actual quantity of granite removed at the rate prescribed from time to time in Appendix II of the Tamil Nadu Minor Mineral Concession Rules, 1959.
3. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
4. The applicant should also allow any officer authorized by the District Collector or any officer authorized by him in this behalf or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.
5. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view the proper safety of the labour, conservation of minerals and preservation of environment and ecology.
6. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.



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7. No quarrying activities connected there shall be done before the execution of the agreement and registration it at the cost of the applicant.
8. No hindrance shall be caused to the adjoining pattadars of public.
9. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.
10. The terms and conditions are also subject to such further modifications, deletion and additions alteration as may be ordered by the Government to be included in the agreement to be executed for this purpose.
11. The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District collector, Director of Geology and Mining and maintain it all time at the quarry site.
12. No working shall be made within a distance of 7.5 meters of the boundaries of the permitted area.
13. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.
14. The lessee shall strictly adhere to the statutory and safety requirements.
15. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
16. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws or made by the Central Government, State Government or any other authority.
17. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision, Mines and Minerals (Development and Regulation) Amendment Act, 2015, or any other connected laws including Forest (conservation) Act, 1980, forest Conservation Rules, 1981 Environment Protection Act, 1986, Indian Explosives Act, 1884, (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Minerals Concession Rules, 1959.
18. That the mining plan is approved is without prejudice to any other order or direction from any court of competent jurisdiction.
19. The lessee firm shall strictly adhere the following conditions stipulated by the DEIAA, Namakkal, Tamil Nadu in the Consent Order No. TN / F.No. 259 / Mines / 02 / Ec.No. 2 / 2017 dated: 24.11.2017.

Conditions to be complied before commencing mining operations:-

1. The applicant has to obtain land use classification as industrial use before issue / renewal of mining lease.

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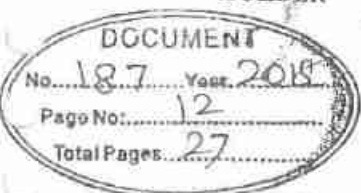


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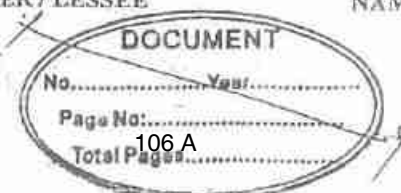
2. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10Km from the proposed project site.
3. The project proponent shall comply the conditions laid down in the Sub-Rule (5) of Rule 36 of Tamil Nadu Minor Minerals Concession Rules, 1959.
4. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat Union / Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
5. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
6. The proponent shall ensure that First Aid Box is available at site.
7. The excavation activity shall not alter the natural drainage pattern of the area.
8. The excavated pit shall be restored by the project proponent for useful purposes.
9. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
10. The quarrying operation shall be restricted between 7 A.M. and 5 P.M. -
11. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
12. A minimum distance of 15mts. From any civil structure shall be kept from the periphery of any excavation area.
13. Depth of quarrying shall be 2m above the ground water table / approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.

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15. Wet drilling method is to be adopted to control dust emission. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
18. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
19. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
20. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
21. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
22. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
23. Measures should be taken to comply with the provision laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dated: 11.01.2010 issued by the MoE & F, GoI to control noise to the prescribed levels.
24. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.



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25. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
26. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
27. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention / toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub / grass species on the slopes.
28. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
29. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
30. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
31. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
32. The lease holder shall undertake adequate measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector / mining officer shall ensure this.
33. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
34. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora / fauna environment, slurry water generated / disposed and method of disposal, involving a reputed academic institution.

REGISTERED
HOLDER

REGISTERED
HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR
NAMAKKAL



/15/

35. It shall be ensured that the total extent of nearby quarries (existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
36. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
37. Ground water quality monitoring should be conducted once in 6 Months.
38. Transportation of the quarried materials shall not cause any hindrance to the Village people Existing Village road.
39. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining, and Regional Director, MoEF, GOI.
40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
41. Bunds to be provided at the boundary of the project site.
42. The project proponent shall undertake plantation / afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
43. At least 10 Neem trees should be planted around the boundary of the quarry site.
44. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
45. The project proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.
46. The project proponent shall provide solar lighting system to the nearby villages.
47. The project proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
48. Rainwater shall be pumped out Via Settling Tank only
49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.

P. Velumani
REGISTERED
HOLDER

V. P. H.
REGISTERED
HOLDER / LESSEE

D. S. S.
LESSOR
DISTRICT COLLECTOR
NAMAKKAL



/16/

50. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining Plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
52. Safety equipment should be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railwar, reservoir, canal / odai.
54. The Assistant Director / Deputy Director, Department of Geology and Mining shall ensure that the proponent has engaged the blaster with valid blasting license/ certificate obtained from the competent authority before execution of mining lease.
55. The proponent shall furnish the baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
56. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
57. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
58. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
59. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
60. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and biodiversity, surrounding water bodies etc.
61. The Proponent shall provide Green Belt development at the rate of not less than 400 trees / Hectare. The trees saplings shall be not less than one meter height.

P. velmani
REGISTERED
HOLDER

V. Peritha
REGISTERED
HOLDER / LESSEE

J. Jeyaraj
LESSOR
DISTRICT COLLECTOR
NAMAKKAL



/17/

62. The Proponent has to carry out the Resistivity survey through authorized experts / institutes for Ground water table and based on the report, the Assistant / Deputy Director of Department of Geology and Mining shall ensure that the depth of mining shall be restricted as per the MMCR, 1959 before execution of the mining lease.

General Conditions:-

1. The proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
2. No change in mining technology and scope of working should be made without prior approval of the DEIAA, Namakkal.
3. No change in the calendar plan including excavation, quantum of mineral (Minor Mineral) should be made.
4. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
5. Effective safeguards shall be adopted against healthy risks on account of breeding of vectors in the water bodies created due to excavation of earth.
6. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
7. Mineral handling area shall be provided with adequate number of high efficiency dust extraction dust control arrangements. These should be properly maintained and operated.
8. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
9. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
10. All personnel shall be provided with protective respiratory devices including safety shoes, Masks, Gloves etc. Supervisory people should be provided with adequate training and information on safety and healthy aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
11. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.

N. No. 185
Page No. 17
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Velmani
REGISTERED
HOLDER

V. P. S. Pillai
REGISTERED
HOLDER / LESSEE

J. Srinivasan
LESSOR
DISTRICT COLLECTOR
NAMAKKAL



118/

12. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately
13. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
14. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
15. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearance from other statutory and administrative authorities.
16. This Environmental Clearance does not imply that the other statutory / administrative clearance shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
17. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
18. The above conditions will be enforced inter-alia, under the provisions of the Water(Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act, 1957 Nation Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India / Hon'ble High Court, Madras and any other Courts of Law relating to the subject matter.
19. Any other condition stipulated by other Statutory / Government authorities shall be complied
20. The proponent has to provide / maintain proper bench formation during mining operation.

In addition to the above conditions stipulated by the DEIAA the special conditions contain in the consent order of the Tamil Nadu Pollution Control Board granted in Consent Order granted in Proceedings No.F.1243/NML/RS/DEE/TNPCB/NML/A&W/2017 dated: 14.12.2017 should also be adhere during the entire lease period.

P. velumani
 REGISTERED
 HOLDER / LESSEE

V. Punitha
 REGISTERED
 HOLDER

[Signature]
 LESSOR
 DISTRICT COLLECTOR
 NAMAKKAL





- /19/
1. Name of the District : Namakkal
 2. Name of the Taluk : Paramathi-Velur
 3. Name of the Village : Nadanthai
 4. Name of the Sub Registration District : Paramathi
 5. Lease Period : 20 years

From 03 .01.2018 to 02 .01.2038.

SCHEDULE

Taluk	Village	S.F.No.	Extent (hect)	Boundaries	
Paramathi-Velur	Nadanthai	482	2.86.0	North	S.F.No. 481/2
				South	S.F.No. 483/1
				East	S.F.No. 483/2A
				West	S.F.No. 515/2 & 493/1A
Total			2.86.0		

IN WITNESS where of Tmt.V.Punitha, W/o. Velmani, No. 109, Narasingapuram Post, Nethaji Nagar, Attur Taluk, Salem District "the Registered holder / lessee" and Tmt.M.ASIA MARIAM, I.A.S., DISTRICT COLLECTOR of NAMAKKAL DISTRICT acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have here unto set their hands.

P. Velmani

REGISTERED
HOLDER

V. Punitha

REGISTERED
HOLDER / LESSEE

[Signature]

LESSOR
DISTRICT COLLECTOR
NAMAKKAL

Signed by the above named in the presence of witnesses

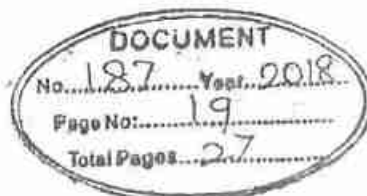
1. *[Signature]*
(R. Rajanar)
- Tripuranthipatti (P)*
- Paramarathipatti (P)*
- [Signature]*

2. சனாதிபதி
சிறீமதி. வெங்கடேசுவரி
2/75, காமராசர் தெரு, கோவை,
பேர்தலைமையகம்
கோவை-100001

Signed by the above named in the presence of witnesses

1. *[Signature]*
(R. Jayaram)
- ASSISTANT DIRECTOR
GEOLOGY & MINING
NAMAKKAL

2. *[Signature]*
SPL. REVENUE INSPECTOR
GEOLOGY & MINING
NAMAKKAL.





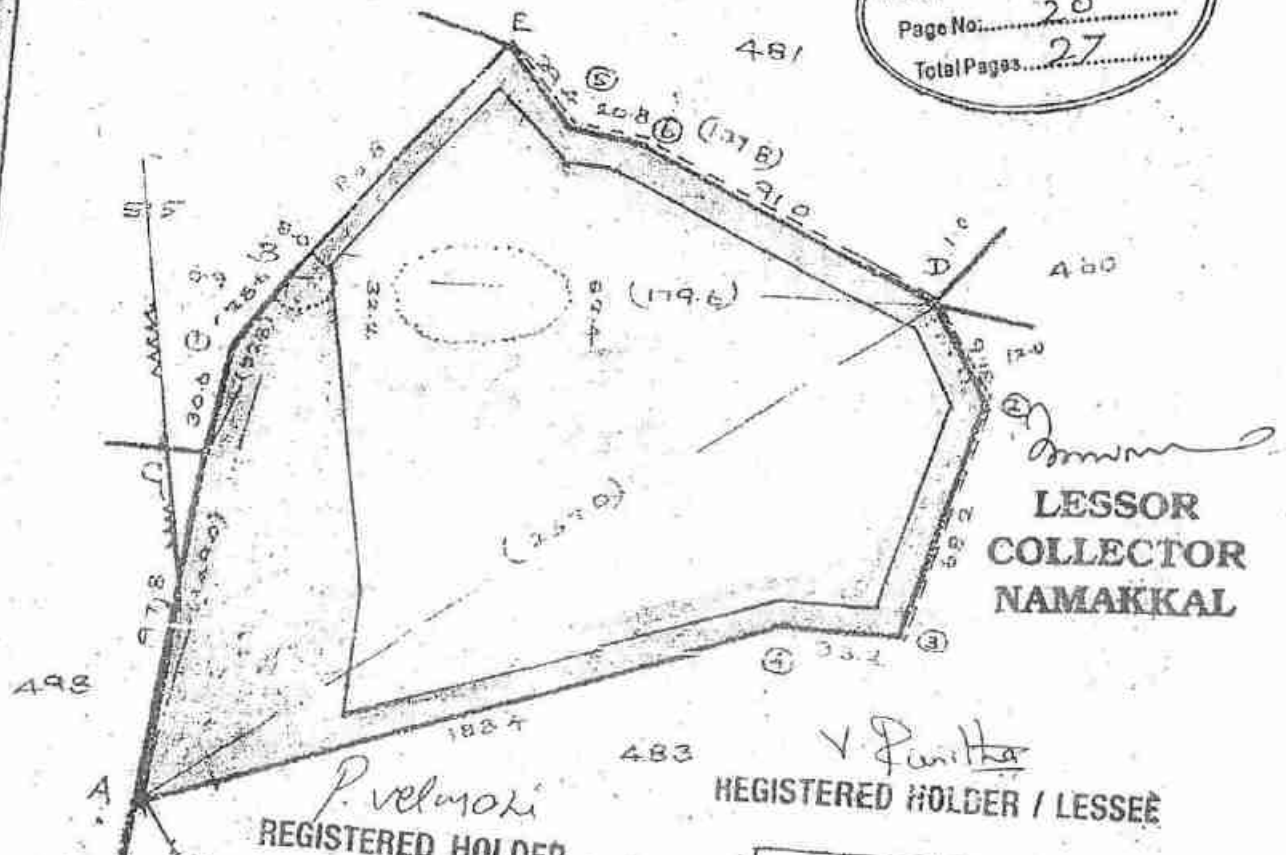
மாவட்டம்

வட்டம்

460 ஏக்கர்

பக்கம் 2 சரி 86-5

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**LESSOR
COLLECTOR
NAMAKKAL**

**P. Velumoli
REGISTERED HOLDER**

**V. Paritha
REGISTERED HOLDER / LESSEE**

**ASSISTANT DIRECTOR
GEOLOGY & MINING
NAMAKKAL**

- Lease applied area.
- Safety distance
- Carr track.

(2 மீட்டர் பாதி)

M. Deivanai
8/7/16
மாவட்ட நிலவரை அலுவலர்,
23, நடந்தை
புரமத்தி - வேலூர் வட்டம்,
நாமக்கல் மாவட்டம்.

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		46.8	2.0	
		27.6	10.4	
		E		
		A		
		257.0		
4	56.0	82.2		
3	73.8	54.8		
2	31.6	1.2		
		D		
		C		
		52.8		
		24.8	5.8	
		B		
		149.0		
C	8.2	17.4		
		A		



187/2018/BK1

CERTIFICATE UNDER SECTION 42 OF STAMP ACT

S.No. 30 of 2018

I hereby certify that a sum of Rs. 30,89,950/- (Rupees thirty lakh eighty nine thousand and eighty five only) on account of proper / deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Punitha residing at Navasinghavan.

Paramathi
Date: 24/01/2018


Signature of Paramathi & Collector
Under Section 41 of the Indian Stamp Act.



Presented in the Office of Paramathi of Paramathi and fee of Rs. 20405 paid between hours of 10 and 11 on 24/01/2018 by

Left Thumb



V. Punitha

Additions As per the recitals of the document.

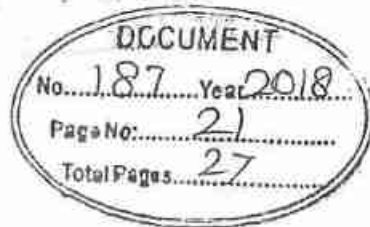
Execution Admitted by

Left Thumb



P. velmani

Additions As per the recitals of the document.





Execution Admitted by

Left Thumb



V. Puritha

Additions As per the recitals of the document

Claim Admitted by

I have satisfied my self as to the execution of the Instrument by Thiru Tmt.M.Asia mariyam,I.A.S, District Collector who is exempted from Personal Appearance under Section 88(1) of the Registration Act.

Prasanna
SUB REGISTRAR
PARAMATHI

Identified by

1 *R. Rajamani*

Name : Thayalan
DHAYALAN

S/o Rajamani

Lakshmanan street
K.Pudur Madurai North

2 *M. Manikandan*

Name : Manikandan

S/o Marappa Gounder

Nethaji street
Narachingapuram
Attur.tk, Salem.dl

24th day of January 2018

Prasanna
SUB REGISTRAR
PARAMATHI

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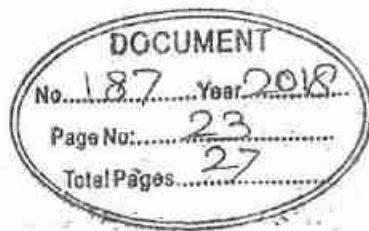




Registered as No 187 of 2018 of Book I

Date : 24/01/2018

Samp
சாம்பலாண்டி
பிரதமர்
சாம்பலாண்டி (முதல்நிலை)
படிப்பதி.





இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

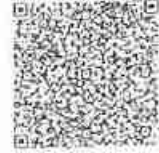
பதிவு அடையாளம் / Enrollment No 2040/80160/00402

To,
செல்வணி பழனி
Velmani Palani
S/O. Palani
P296
EAST 8TH STREET
K K NAGAR
Abovandan
Gandhi Nagar (ma) Madurai North Madurai
Tamil Nadu 625020.
9843470959

Ref: 342 / 30Y / 60289 / 60564 / P



SE372859137FT



உங்கள் ஆதார் எண் / Your Aadhaar No.:

5598 6622 7715

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய அரசாங்கம்
Government of India

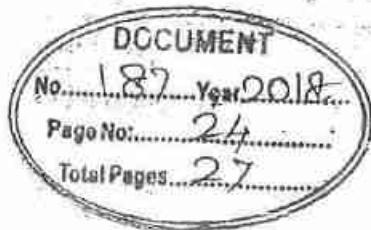


செல்வணி பழனி
Velmani Palani
பிறந்த நாள் / DOB: 13/11/1971
ஆண்பால் / Male



5598 6622 7715

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



P. velmani



Unique Identification Authority of India

Unique Identification Authority of India
Government of India

பதிவு அடையாளம் / Enrollment No 2040/80160/00405

To,
புனிதா வேல்மணி
Punitha Velmani
W/O: Velmani
P286
EAST 8TH STREET
K K NAGAR
Aivandan
Gandhi Nagar (ma), Madurai North Madurai
Tamil Nadu 625020
9843470959

Ref: 342 / 30Y / 60281 / 60564 / P



SE372859052FT



உங்கள் ஆதார் எண் / Your Aadhaar No. :

8482 9275 9684

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



புனிதா வேல்மணி
Punitha Velmani



புனிதா வேல்மணி
Punitha Velmani
பிறந்த நாள் / DOB: 02/06/1977
புணர்ச்சி / Female



8482 9275 9684

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியரிமைக்கு அல்ல .
- அடையாள சான்றை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும் .

INFORMATION

- Aadhaar is proof of identity, not of citizenship .
- To establish identity, authenticate online .

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும் .
- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும் .
- Aadhaar is valid throughout the country .
- Aadhaar will be helpful in availing Government and Non-Government services in future .

30Y / 50281



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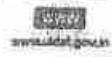
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வேல்மணி, பி.எ. கிழக்கு பவடி
நெரு, கே.கே.நகர்,
ஆளவந்தான், மதுரை, கர்நா
நகர், தமிழ் நாடு, 625020

Address: W/O: Velmani, P286,
EAST 8TH STREET, K K NAGAR,
Aivandan, Madurai, Gandhi
Nagar (ma), Tamil Nadu, 625020

8482 9275 9684



help@uidai.gov.in



V. Punitha

9843470959





சமூக அடையாள அட்டை
Social Security Card

பெயர் / Name
Dhayan Rajamani

பிறந்த நாள் / DOB: 15/06/1987

2385 0398 6387

ஆதார சாதாரண மனிதனின் அதிகாரம்

Unique Identification Authority of India

Address: 60, Rajaman Street,
 PHUR, Madurai North, K.
 Pudur, Madurai, Tamil Nadu,
 625007

2385 0398 6387

R.D.

7669979890

DOCUMENT

No. 187 Year 2018

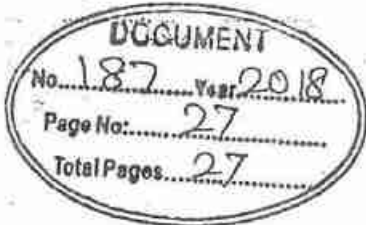
Page No. 26

Total Pages 27



M. R. I. V. /

9159770002





आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

V PUNITHA
JESUDHAS
02/06/1977
Permanent Account Number
CUJPP4572M

V. Punitha
Signature




इस कार्ड के खोने / पाने पर कृपया सूचित करें। लौटार
आयकर पैन सेवा कार्ड, एन एस डी एल
5 वीं फ्लोर, मंत्री स्टडींग, प्लॉट नं. 341, सर्वे नं. 997/8
मॉडल कॉलोनी, दीप बंगला चौक के पास,
पुणे - 411 016

*If this card is lost / someone's lost card is found
please inform / return to :*
Income Tax PAN Services Unit, NSDL
5th Floor, Mantri Sterling
Plot No. 341, Survey No. 997/8,
Model Colony, near Deep Bungalow Chowk,
Pune - 411 016

Tel: 91 20 2721 3080 / 91 20 2721 3081
e-mail: unit@nsdl.com



இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

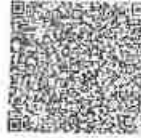
பதிவேட்டு எண்/ Enrolment No.: 2192/50004/45276

To
புனித சாமின
Punitha Sahila
W/O: Velmani
P286
EAST 8TH STREET
K K NAGAR
Alavandan
Gandhi Nagar (ma)
Madurai Tamil Nadu - 625020
9843470959

Download Date: 20/07/2018

Generation Date: 20/07/2018

Valid anytime
anywhere



உங்கள் ஆதார் எண் / Your Aadhaar No. :

8482 9275 9684

எனது ஆதார். எனது அடையாளம்



இந்திய அரசாங்கம்
Government of India



புனித சாமின
Punitha Sahila
பிறந்த நாள்/DOB: 02/06/1977
பெண்/FEMALE

8482 9275 9684

எனது ஆதார். எனது அடையாளம்



தகவல்

- ஆதார் அடையாளத்திற்கான சான்று, குடிபரிசீலனைக்கு அல்ல.
- அடையாள சான்ற ஆள்களை ஆதர்ப்புகளை மூலமாகப் பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.

- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.

- Aadhaar is valid throughout the country.

- Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய அரசாங்கம்
Unique Identification Authority of India

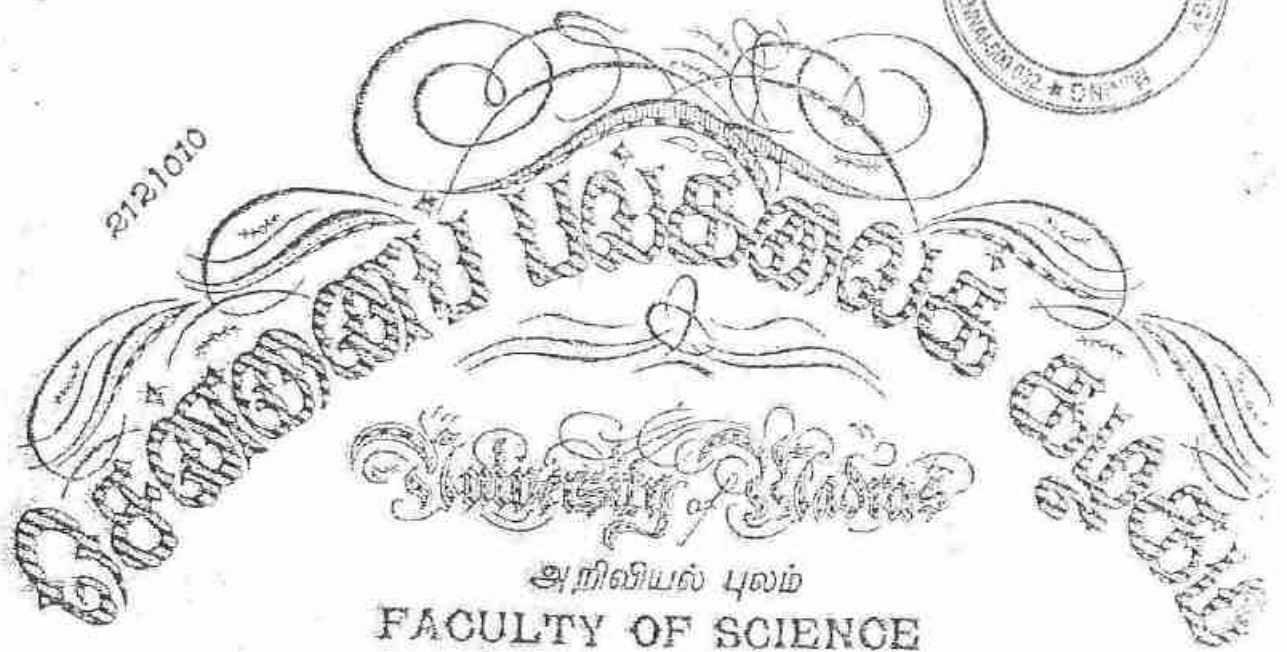
Address:
W/O: Velmani, P286, EAST 8TH
STREET, K K NAGAR, Alavandan,
Madurai,
Tamil Nadu - 625020

முகவரி:
கனலர் பெயர்: வேல்மனி, 286,
சுழக்கு 8வது தெரு, கே கே நகர்,
ஆளவந்தான், மதுரை,
தமிழ் நாடு - 625020

8482 9275 9684



2121010



சென்னைப் பல்கலைக் கழகப் பரீட்சை 1934

ஆண்டு..... இடம்..... மாற்றம்..... கல்விமலியல்..... தேர்வு.....
..... வி. தங்கராசு..... எல். ப. சாமி..... முதல்..... வகுப்பு.....
தேர்ச்சி இயற்றார் என்று அக்க தேர்வுகாரர்கள் சான்றிதழை அறிவியல் திணைஞர்
என்றும் M.L.L. தலை அலகுக்குப் பல்கலைக் கழக இடைக்காலப் பரீட்சை இயற்றினார்.

The Senate of the UNIVERSITY OF MADRAS hereby makes honour that..... P. Sranganatha.....
has been admitted to the Degree of Master of Science, he/she having been certified by duly appointed Examiners to be qualified to receive the same in..... Geology..... and was placed in the..... First..... Class, at the Examination held in April 1934.



Given under the seal of the University

செய்தலாகும், Chennai
சென்னை, Madras
25-01-1939

P. T. Srinivasan
General Secy
of U.




GOVERNMENT OF INDIA
 MINISTRY OF LABOUR AND REHABILITATION
 OFFICE OF THE DIRECTOR GENERAL OF MINES SAFETY

Certificate of Practical experience granted by the Manager to a Candidate for a Manager's / Surveyor's / Foreman's / Over man's / Sirdar's / Mate's / Short fire's / Blower's Certificate of competency (Restricted) examination under the Metalliferous Mines Regulations 1961.

I T.VENKATARAJAGOPALAN being the Mines Agent of M/S.LIMENAPH CHEMICALS, RAJAPALAYAM OF LIMESTONE PRODUCTS (Thenmali Limestone Mine) do hereby certify that Thiru P.THANGARAJU, son of S.PERIASAMY (whose signature is appended) worked as a Geologist in the above mine from 02.05.1994 to 30.12.1999. During his term of work aforesaid, he has obtained practical experience as detailed overleaf. The duties connected with his work have involved 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 candidate to be examined for Certificate of Competency.


 (Signature with date and official Seal)
 [T.VENKATARAJAGOPALAN]

Mines Agent:

P.O. : ARUKANGULAM

District : TIRUNELVELI

State : TAMILNADU

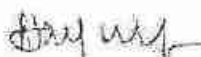

 (Signature of Candidate)

(State name of Mineral) : LIMESTONE

S.No	Particulars of practical Experience (a)	Place of Experience (b)	Period of practical experience(c)		Total Experience (c)		
			From	To	Yr.	Month	Day
01	As a Trainee in Drilling Operation	Seari Mechanised Opencast working	07.05.1994	13.07.1995	01	02	14
02	As a Trainee in Blasting Operation		16.07.1995	10.12.1996	01	04	25
03	Exploration		11.12.1996	31.01.1998	01	01	20
04	Surveying		01.02.1998	25.06.1998	00	04	25
05	Sampling Quality control and		26.06.1998	26.07.1998	01	01	24
06	Supervision in HEMM Operation		21.07.1999	30.12.1999	00	05	10
GRAND TOTAL					05	07	28
(Five Years Seven Months Twenty Eight Days Only)							

AVERAGE MONTHLY OUTPUT (D) / AVERAGE DAILY EMPLOYMENT (E) DURING THE ABOVE PERIOD IS GIVEN BELOW.

In below ground working	In open - cast working	In all
Nil	35	35
Nil		


Signature of Candidate

of **CHENNAI LIME STONE MINES**

Signature of Manager with Date (DD/MM/YY)
[VENKATARAJA GOPALAN]

Name of the Mine

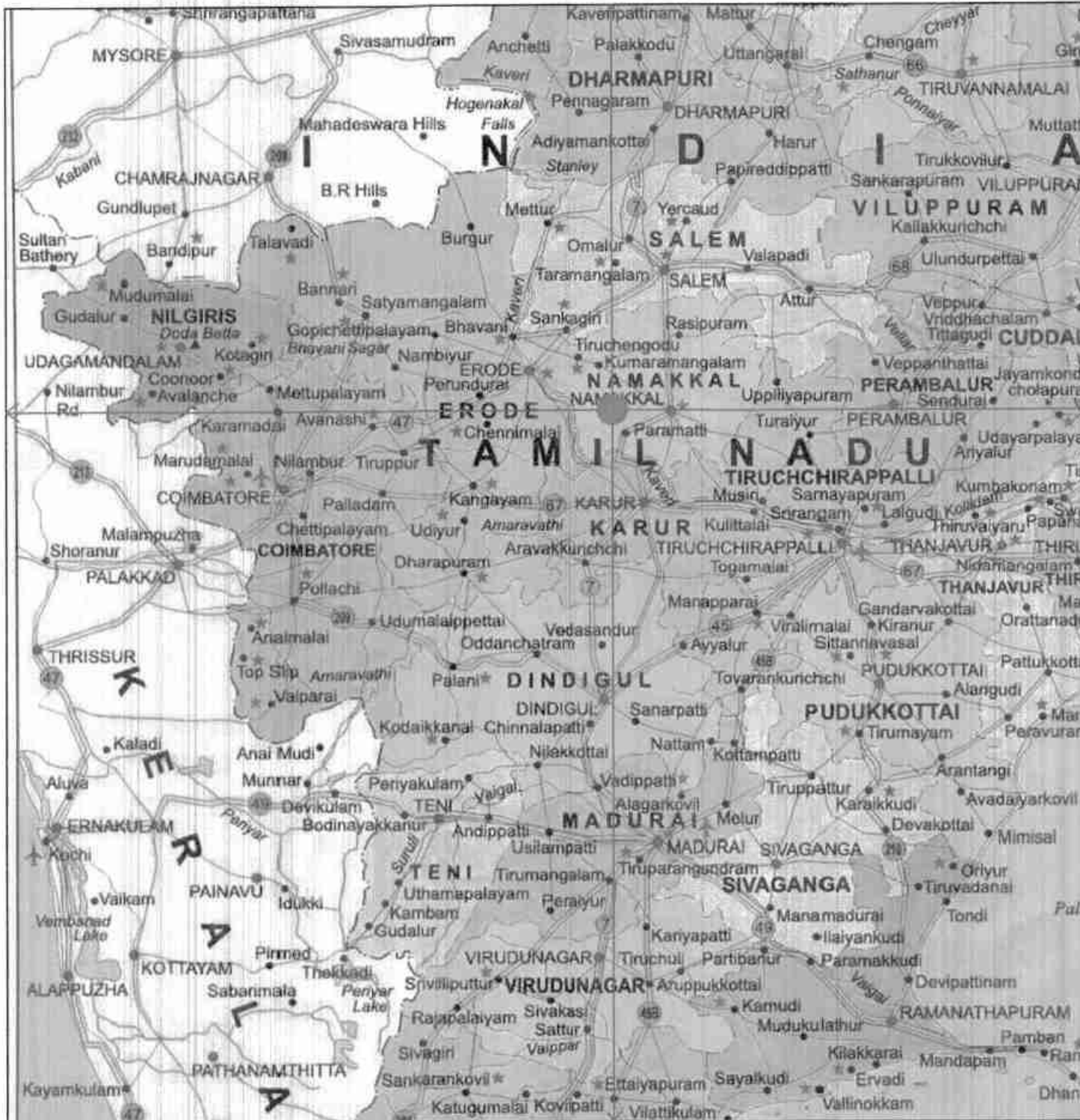
Instructions :-

01. State clearly the nature of duties.
02. State whether on surface, in open cast workings or below ground.
03. State specifically the period spent by the applicant in different mining operations, or surveying operations, as the case may be. If the employment has not been such as to involve continuous attendance of the applicant at the mine, it must be stated how many days a week he was employed at the mine, whether underground or above ground and in what capacity.
04. Delete if the mine is a Metalliferous mine.
05. Delete if the mine is a Coal mine.

11° 10' 59.4554"N



77° 58' 07.0660"E



77° 58' 15.4169"E

PLATE NO. I

DATE OF SURVEY: 11.05.2022

LESSEE:

Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,
SALEM DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,
STATE : TAMIL NADU.

INDEX

Q.L.AREA : ●

TOPO SHEET NO. : 58 - E/16

LATITUDE : 11° 10' 53.4595"N to 11° 10' 59.4554"N

LONGITUDE : 77° 58' 07.0660"E to 77° 58' 15.4169"E

LOCATION PLAN

NOT TO SCALE

PREPARED BY

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
FLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE AND THE PLAN AND SECTIONS ARE
PREPARED BASED ON LEASEMAP AUTHENTICATED
BY STATE GOVERNMENT

SRI. HANUMAJU, M.Sc, Ph.D.,
QUALIFIED PERSON

11° 10' 53.4595"N

LESSEE:

Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,
SALEM DISTRICT.



LOCATION OF QUARRY:

EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,
STATE : TAMIL NADU.

INDEX

CONVENTIONAL SYMBOLS	
Express Highway with toll with bridge with 2 lanes	
Roads, standard according to standards	
Roads, double-lane according to standards	
Unimproved road: Cart track, Road track with good Top soil	
Boundary wall track in land, unimproved, Canal	
Canal, masonry or rock built, with bank, with	
Flow dry with water channel, with bank & bank, with	
Submerged water, Canal, Sluice, Weir	
Water tank, pond, Tank, well, Spring, Water reservoir, etc.	
Electricity line or pole line, 220V, 110V, 240V	
Railway, broad gauge, double, single with railway yard, station	
Roadway, other gauge, double, single with railway yard, station	
Street, line or narrow, etc. Carriage way, road	
Canal with sub-irrigation, Rocky slopes, etc.	
Band, National (NH), State (SP), Government, State, Municipal	
Trees in flower, shrubs, forest, etc.	
High ground, temporary, Tank, Reservoir	
Trench, Canal, Check, Reservoir, etc. Tank, Canal, etc.	
Lighthouse, Lighted, Beacon, Light, navigational, etc.	
Sea, River, etc. etc. etc.	
Public buildings, etc. Police, Court, Station, etc. etc.	
Area, cultivated, wooded, etc. etc.	
Boundaries, etc. etc.	
etc. etc. etc. etc. etc. etc.	

KEY PLAN

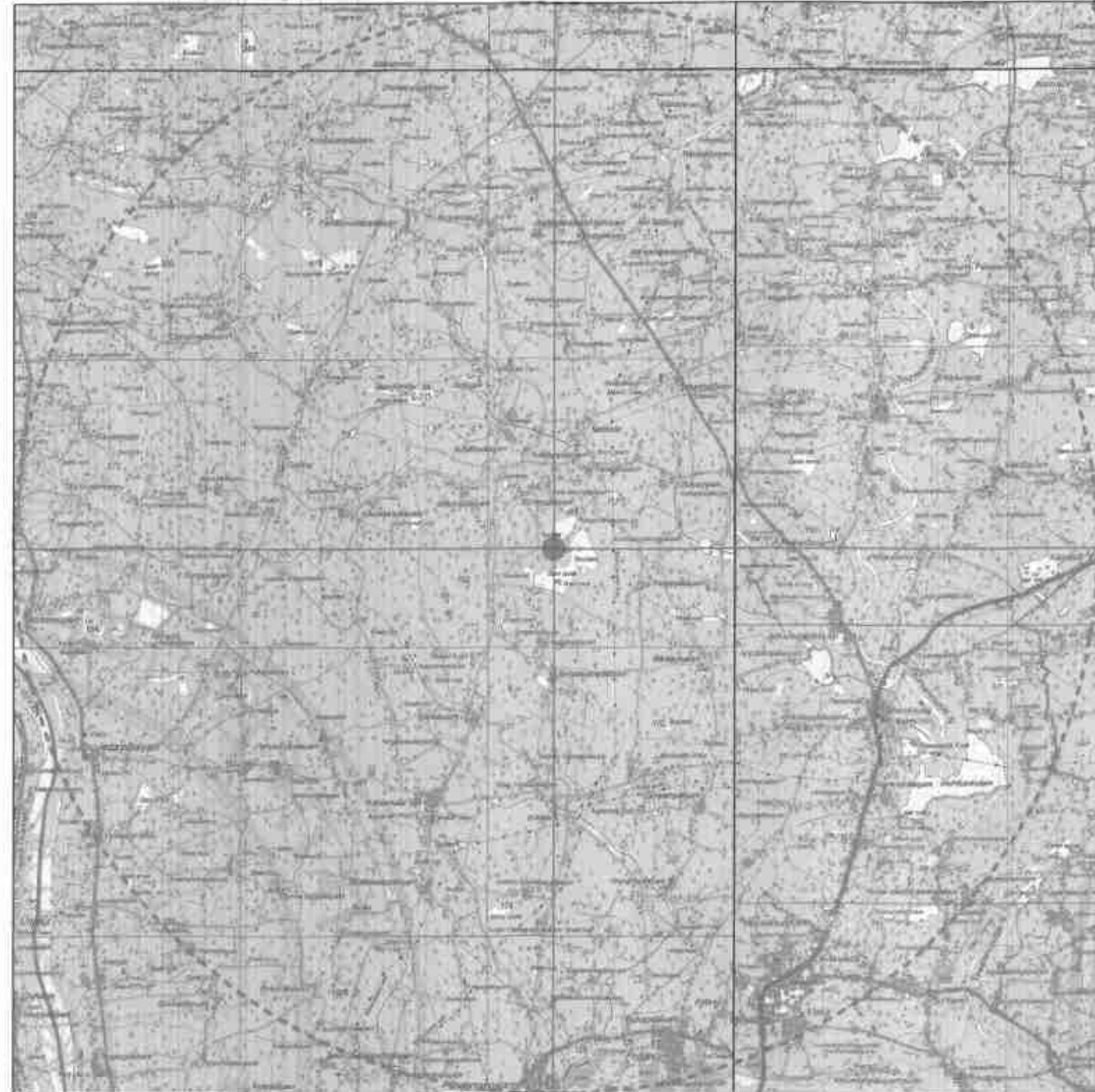
SCALE- 1:100000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

[Signature]
MANGARAJU, M.Sc, Ph.D.,
QUALIFIED PERSON

11° 16' 24.5932"N



77° 52' 37.7751"E

78° 03' 44.7013"E

11° 05' 28.3227"N

TOPO SHEET NO. : 58 - E/16
 LATITUDE : 11° 10' 53.4595"N to 11° 10' 59.4554"N
 LONGITUDE : 77° 58' 07.0660"E to 77° 58' 15.4169"E
 10KM RADIUS :
 Q.L.AREA :



PLATE NO. I-
DATE OF SURVEY: 14.05.2022

LESSEE:
Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,
SALEM DISTRICT.

LOCATION OF QUARRY:
EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,
STATE : TAMIL NADU.

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Q.L.BOUNDARY	
APPROACH ROAD	
MAJOR ROAD	
PANCHAYAT ROAD	

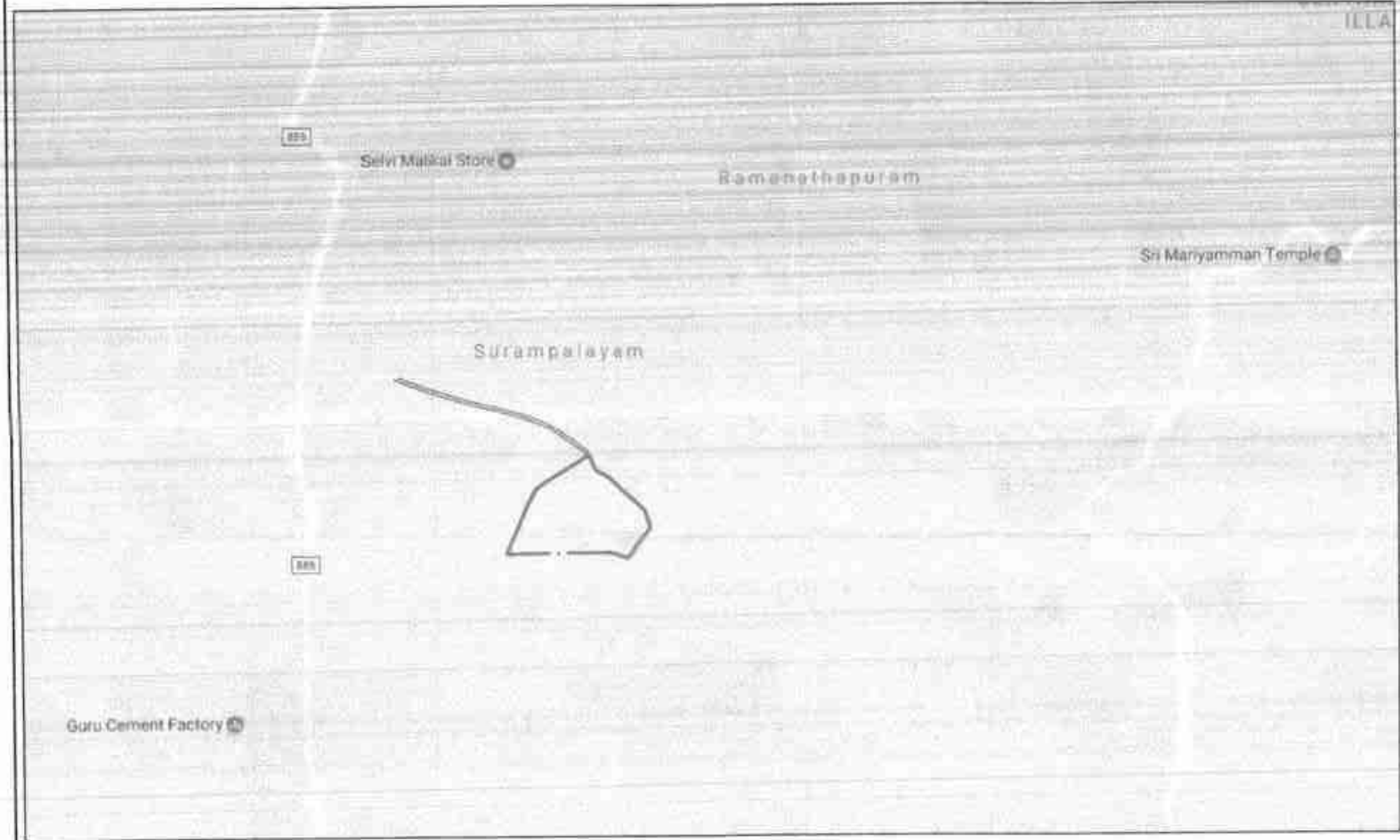
ROUTE MAP

Not to Scale

PREPARED BY:

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Dr.P.THANGARAJU,M.SC,Ph.D.,
QUALIFIED PERSON



LAND USE PATTERN

DESCRIPTION	AREA IN PERCENTAGE (%)
TREES	20
ROAD	15
AGRICULTURAL LAND	50
EXISTING QUARRY	05
HABITATION	10

OCTOBER TO DECEMBER



PLATE NO: I-C

DATE OF SURVEY: 11.05.2022

1Km Radius

500m Radius

Q.L.Area :

TOPO SHEET NO. : 50 E/16

LATITUDE : 11° 10' 52.4595" N to 11° 10' 59.4554" N

LONGITUDE : 77° 58' 07.0690" E to 77° 58' 15.4169" E



LESSEE:

Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,
SALEM DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,
STATE : TAMIL NADU.

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APPROACH ROAD	
WIND DIRECTION	
TREES	
SEASONAL AGRICULTURE LAND	
PANCHAYAT ROAD	
ADJACENT QUARRY PIT	
CART TRACK	
HABITATION	
POWER LINE	
ODAI	

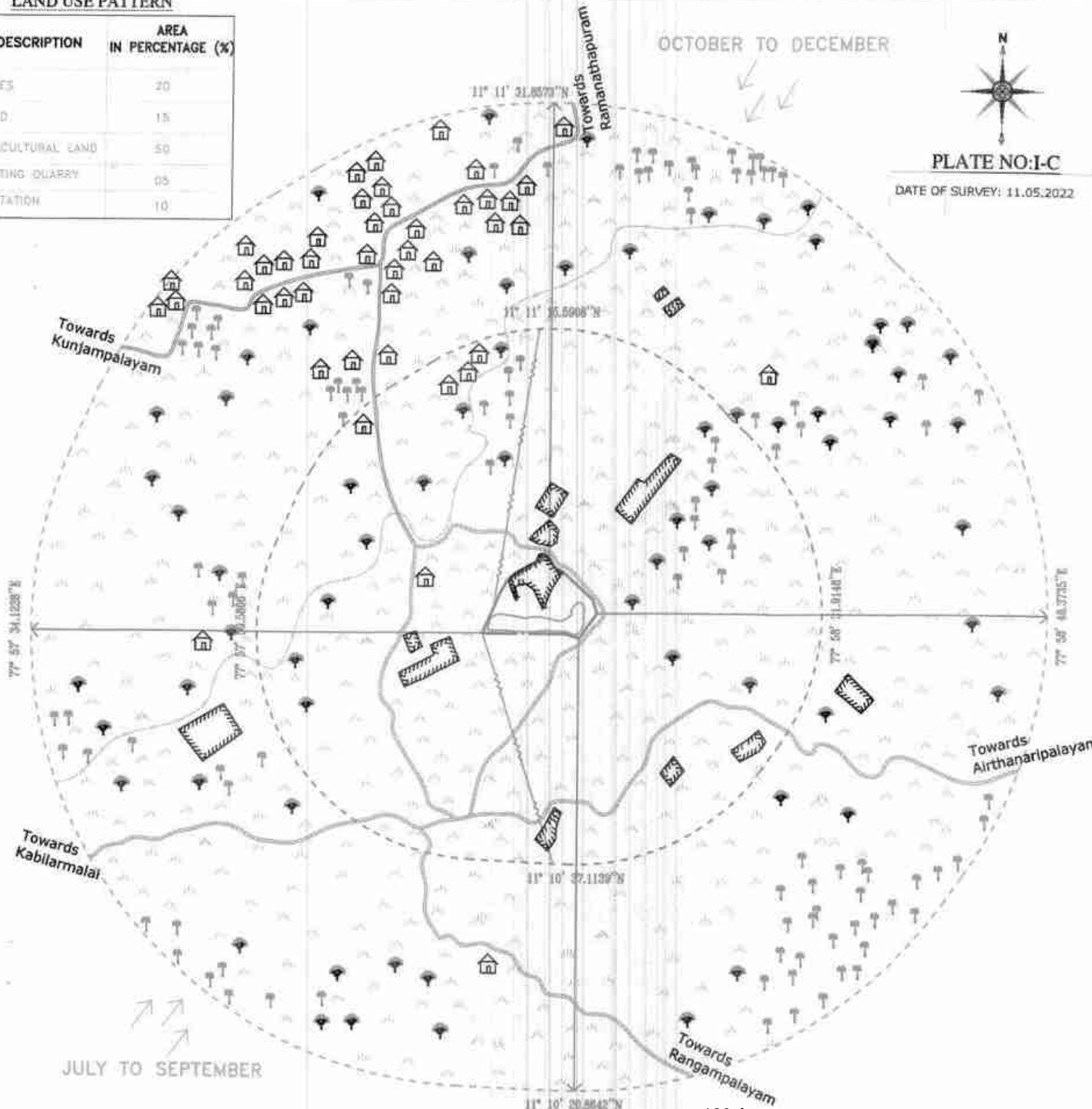
ENVIRONMENTAL & LANDUSE PLAN

SCALE- 1:10,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON LEASEMAP AUTHENTICATED BY STATE GOVERNMENT

Thyrum
DR.P.THANIRAJU,M.Sc,Ph.D.,
QUALIFIED PERSON



JULY TO SEPTEMBER



PLATE NO.I-D

DATE OF SURVEY: 11.05.2022

LESSEE:

Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,
SALEM DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,
STATE : TAMIL NADU.

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Q.L BOUNDARY



500m RADIUS

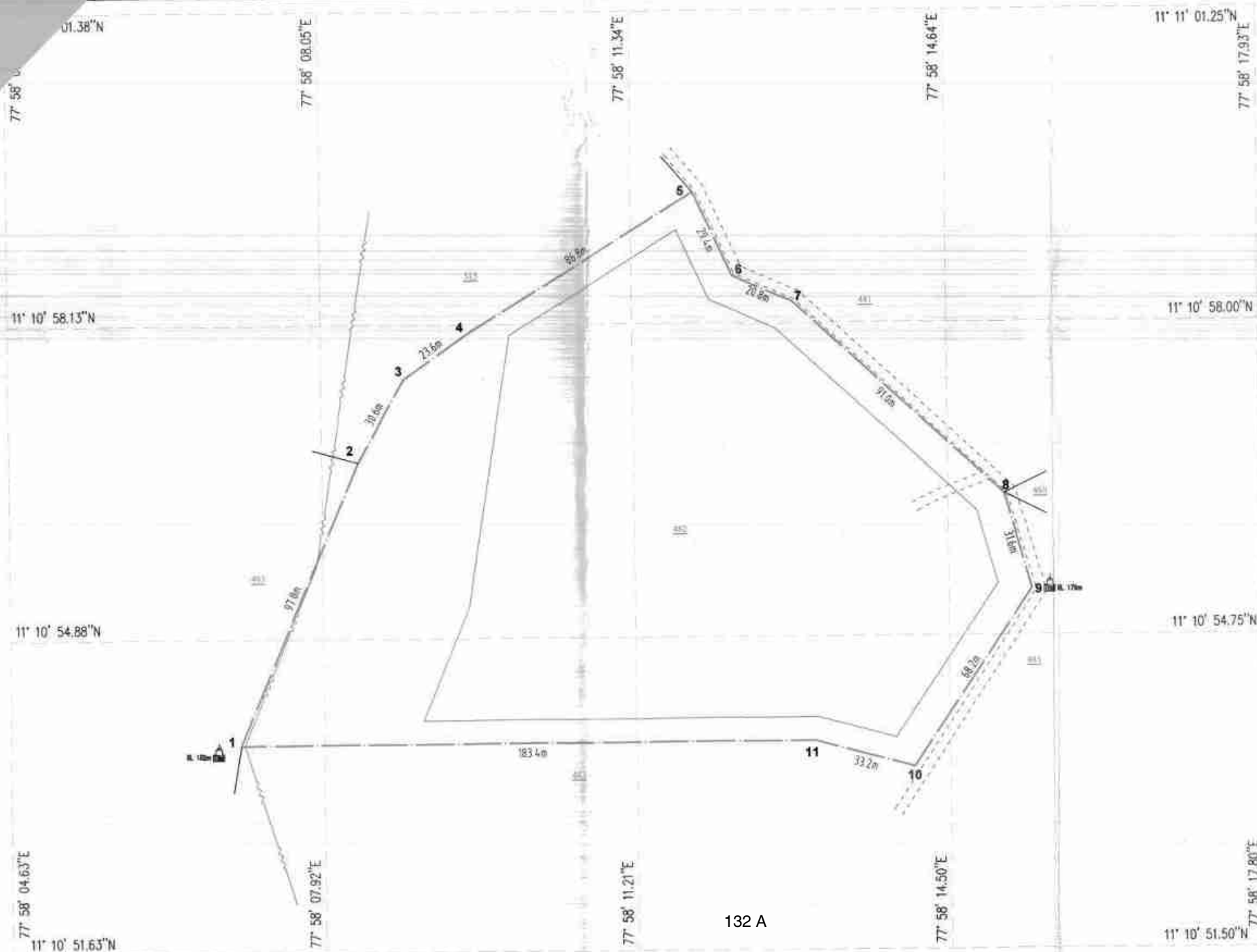


500m RADIUS SATELLITE IMAGE
SCALE 1:5000

PREPARED BY:

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PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE AND THE PLAN AND SECTIONS ARE
PREPARED BASED ON LEASEMAP AUTHENTICATED
BY STATE GOVERNMENT

(Signature)
D.P.THANGARAJU,M.SC,Ph.D.,
QUALIFIED PERSON



BOUNDARY CO-OPERATES

S.N.	LATITUDE	LONGITUDE
1	11° 10' 53.7894"N	77° 58' 07.0960"E
2	11° 10' 56.7055"N	77° 58' 08.3505"E
3	11° 10' 57.5652"N	77° 58' 08.8850"E
4	11° 10' 58.0006"N	77° 58' 09.4920"E
5	11° 10' 59.4554"N	77° 58' 11.9414"E
6	11° 10' 58.5810"N	77° 58' 12.3403"E
7	11° 10' 56.3086"N	77° 58' 12.9592"E
8	11° 10' 56.2813"N	77° 58' 15.1443"E
9	11° 10' 55.2889"N	77° 58' 15.4169"E
10	11° 10' 53.4595"N	77° 58' 14.1465"E
11	11° 10' 53.7462"N	77° 58' 13.1104"E

DATUM : UTM-WGS84

PLATE NO. II

DATE OF SURVEY: 11.05.2022

LESSEE:

Mrs.V.PUNITHA,
W/O.P.VELMANI,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,SALEM DISTRICT.

LOCATION OF QUARRY:

EXTENT : 2.86.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,

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- QUARRY LEASE BOUNDARY
- 7.5m,10m&50m SAFETY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARK
- CART TRACK
- POWER LINE

QUARRY LEASE PLAN

SCALE 1:1000

PREPARED BY:

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PLAN IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE AND THE PLAN AND SETTINGS ARE
PREPARED BASED ON LEASER'S AUTHENTICATED
BY STATE GOVERNMENT

M. MANJULA DEVI, P.S.
QUALIFIED PERSON

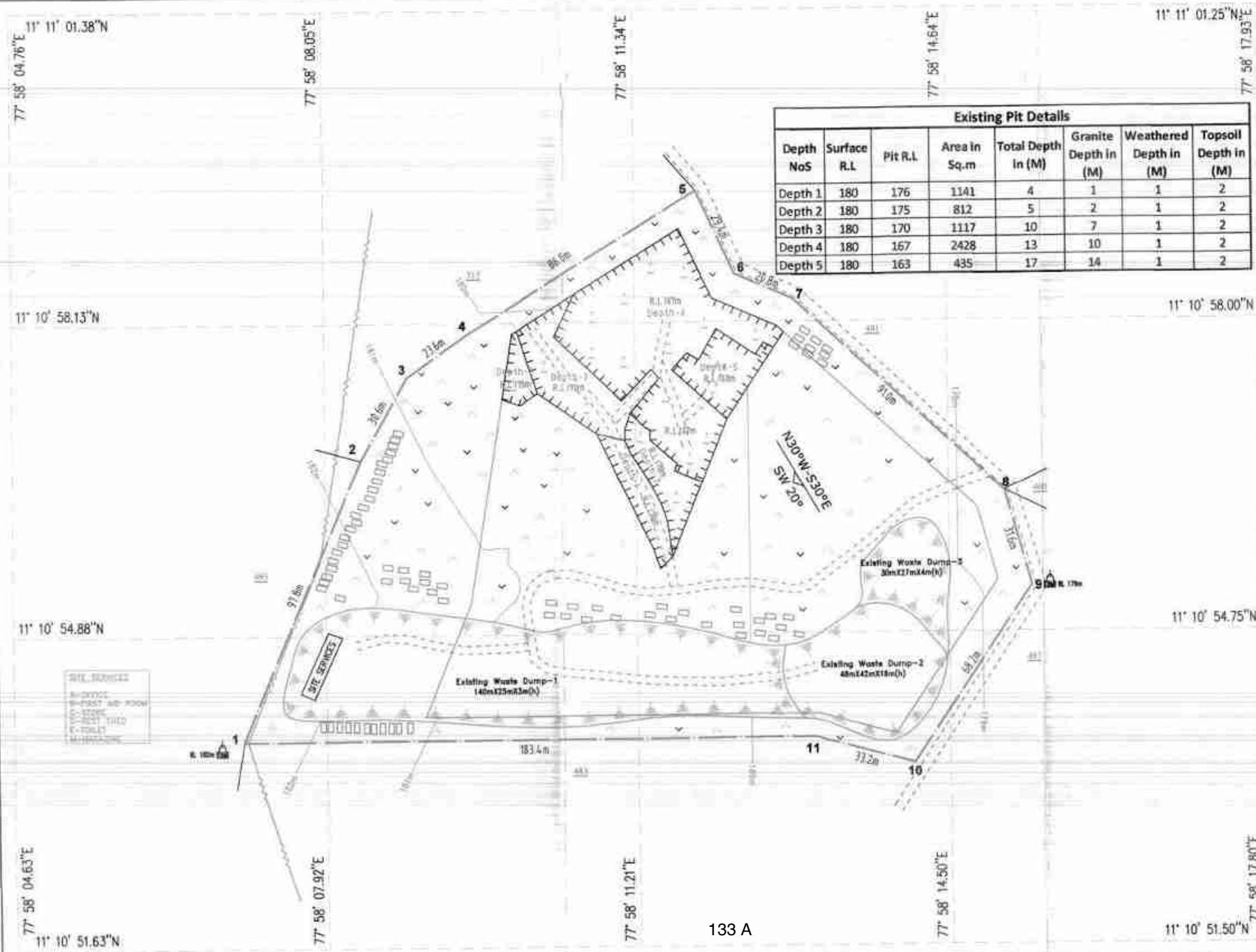


PLATE NO. III
 DATE OF SURVEY: 11.05.2022

LESSEE:
 Mrs. V. PUNITHA,
 W/O. P. VELMANI,
 109, NARASINGHAPURAM POST,
 NETHAJI NAGAR,
 ATTUR TALUK, SALEM DISTRICT.

LOCATION OF QUARRY:
 EXTENT : 2.86.5 Ha,
 S.F. NO : 482,
 VILLAGE : NADANTHAI,
 TALUK : PARAMATHI-VELUR,
 DISTRICT : NAMAKKAL,

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7.5m, 10m & 50m SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
CART TRACK	
POWER LINE	
SCRUB	
TOP SOIL	
WEATHERED ROCK	
STRIKE AND DIP	
QUARRY PIT	
QUARRY ROAD	
ROUGH BLOCKS	
DUMP	
MULTICOLOUR GRANITE	

SURFACE PLAN
 SCALE 1:1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON LEASMAP AUTHENTICATED BY STATE GOVERNMENT

[Signature]
 QUALIFIED PERSON

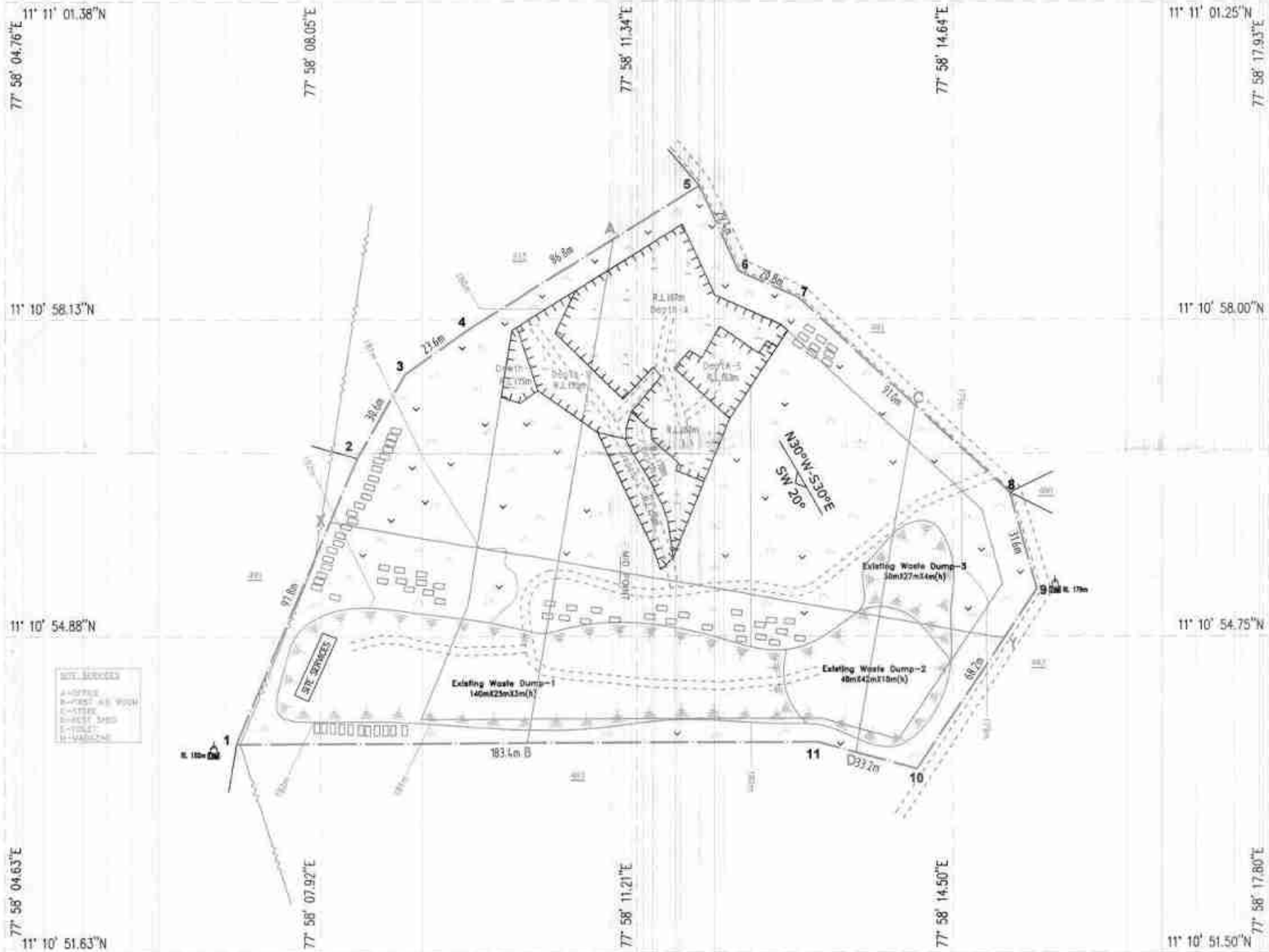


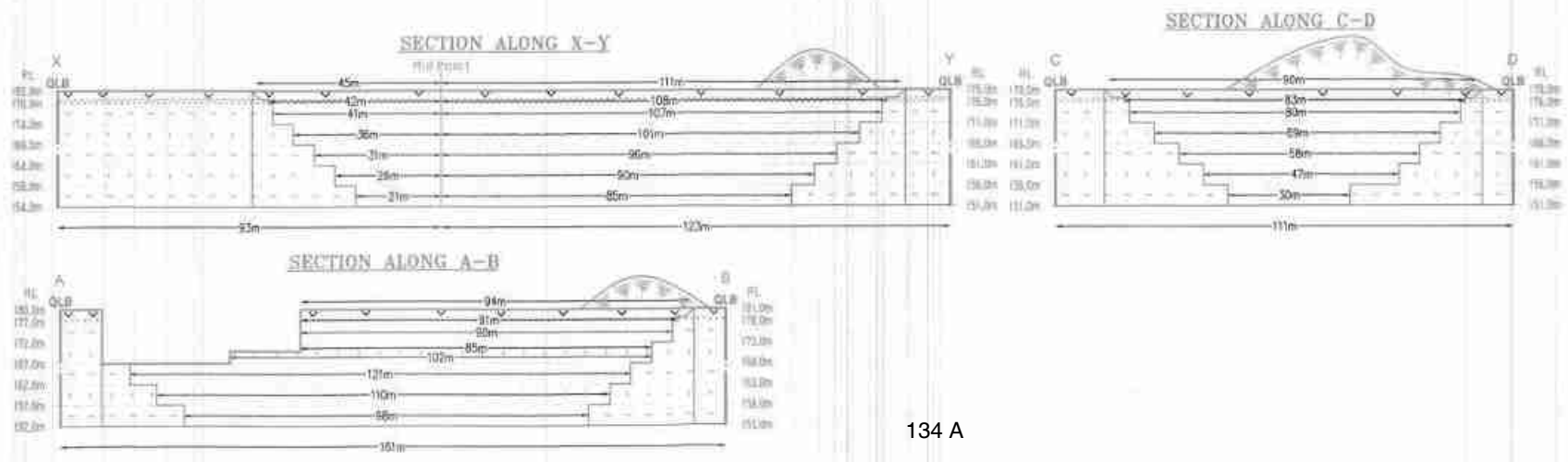
PLATE NO TV
 DATE OF SURVEY: 11.05.2022

LESSEE:
 Mrs.V.PUNITHA,
 W/O.P.VELMANI,
 109,NARASINGHAPURAM POST,
 NETHAJI NAGAR,
 ATTUR TALUK,SALEM DISTRICT.

LOCATION OF QUARRY:
 EXTENT : 2.86.5 Ha,
 S.F.NO : 482,
 VILLAGE : NADANTHAI,
 TALUK : PARAMATHI-VELUR,
 DISTRICT : NAMAKKAL.

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QUARRY LEASE BOUNDARY	---
7.5m,10m&50m SAFETY DISTANCE	---
APPROACH ROAD	---
TEMPORARY BENCH MARK	▲
CART TRACK	---
POWER LINE	---
SCRUB	---
TOP SOIL	---
WEATHERED ROCK	---
STRIKE AND DIP	---
QUARRY PIT	---
QUARRY ROAD	---
ROUGH BLOCKS	---
DUMP	---
MULTICOLOUR GRANITE	---



GEOLOGICAL PLAN AND SECTIONS
 SCALE 1:1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON LEASERMAP AUTHENTICATED BY STATE GOVERNMENT

(Signature)
 QUALIFIED PERSON

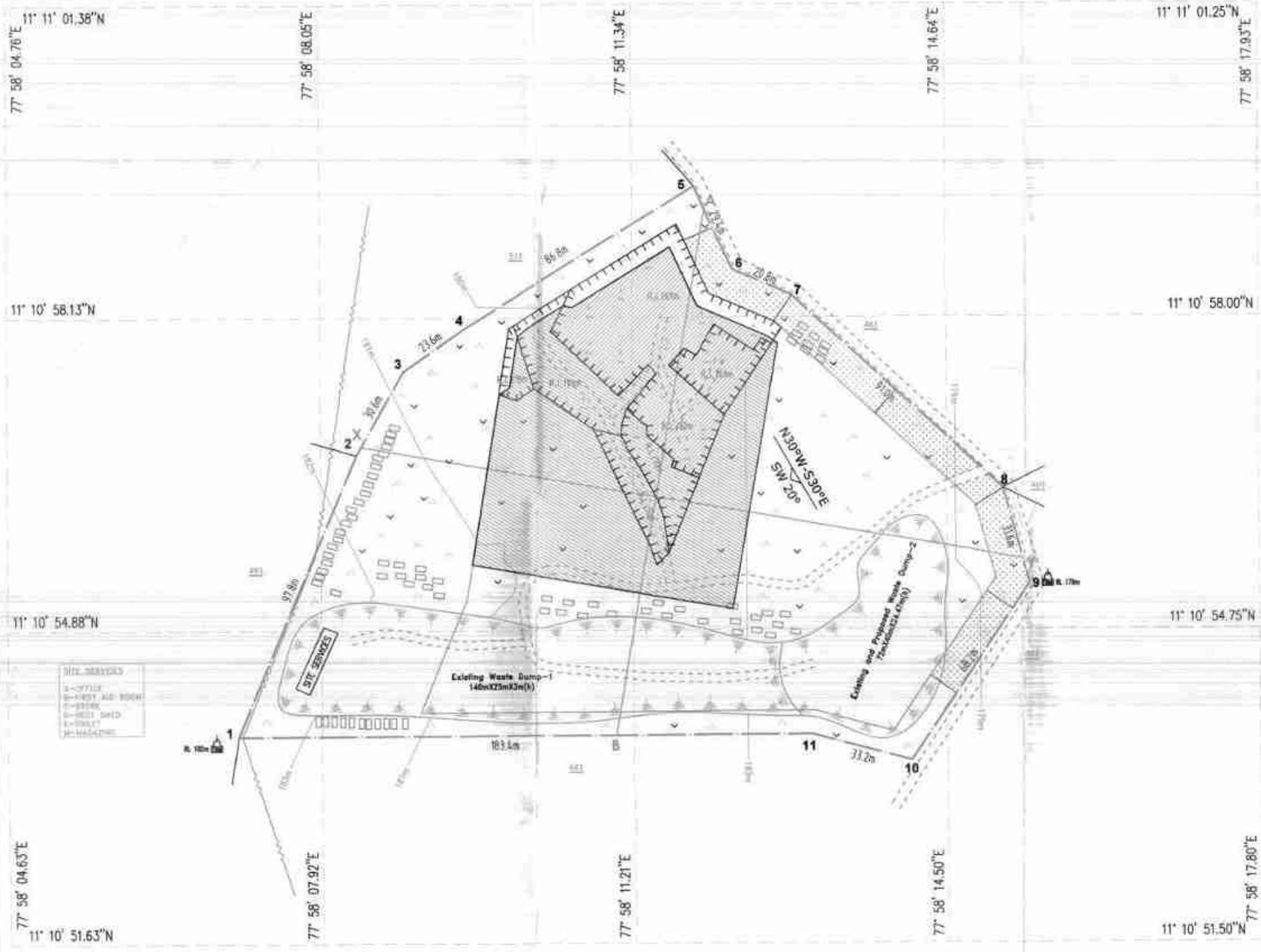


PLATE NO.V
DATE OF SURVEY: 11.05.2022

LESSEE:
Mrs.V.PUNITHA,
W/O.P.VELMANT,
109,NARASINGHAPURAM POST,
NETHAJI NAGAR,
ATTUR TALUK,SALEM DISTRICT.

LOCATION OF QUARRY:
EXTENT : 2.85.5 Ha,
S.F.NO : 482,
VILLAGE : NADANTHAI,
TALUK : PARAMATHI-VELUR,
DISTRICT : NAMAKKAL,

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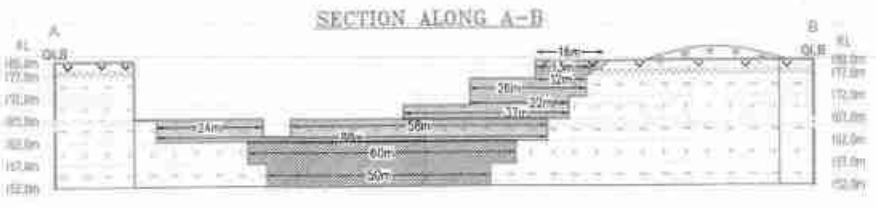
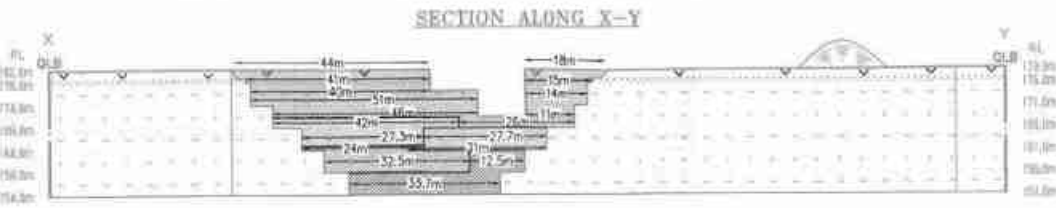
QUARRY LEASE BOUNDARY	
7.5m,10m&50m SAFETY DISTANCE	
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TEMPORARY BENCH MARK	
CART TRACK	
POWER LINE	
SCRUB	
TOP SOIL	
WEATHERED ROCK	
STRIKE AND DIP	
QUARRY PIT	
QUARRY ROAD	
ROUGH BLOCKS	
DUMP	
MULTICOLOUR GRANITE	

YEARWISE DEVELOPMENT AND PRODUCTION PLAN AND SECTIONS
SCALE 1:1000

PREPARED BY:
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SITE SERVICES

□	OFFICE
□	REST AND ROOM
□	STAIR
□	REST SHED
□	TOILET
□	MACHINERY



2022-23 Afforestation	2022-23 EXCAVATION
2023-24 Afforestation	2023-24 EXCAVATION
2024-25 Afforestation	2024-25 EXCAVATION
2025-26 Afforestation	2025-26 EXCAVATION
2026-28 Afforestation	2026-27 EXCAVATION

Handwritten signature and date
COMMISSIONER
COMMISSIONERATE OF GEOLOGY AND MINING,
GUINDY, CHENNAI-600 032.
13/5/2022

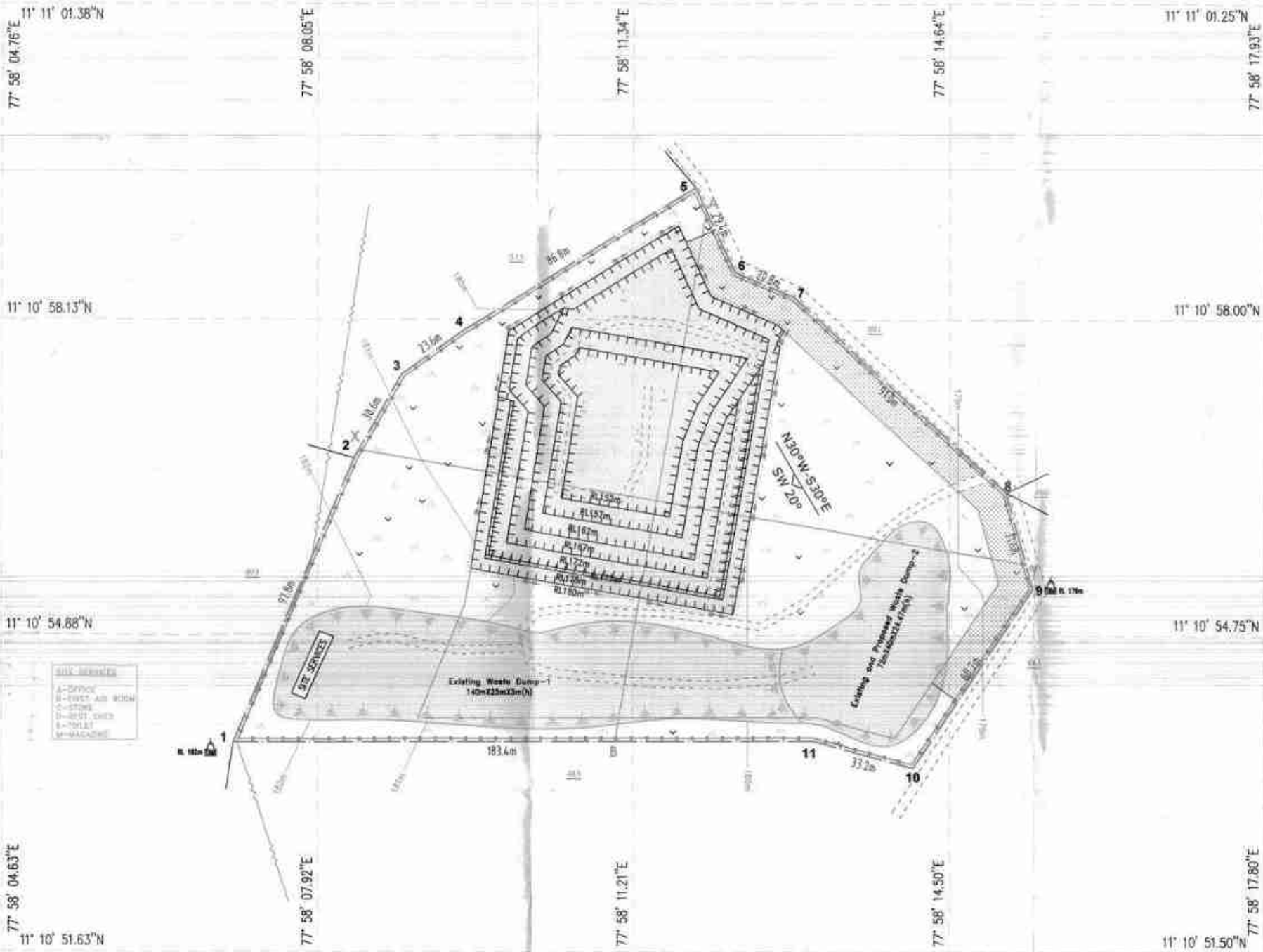


PLATE NO.VII
 DATE OF SURVEY: 11.01.2022

LESSEE:
 Mrs.V.PUNITHA,
 W/O.P.VELMANI,
 109,NARASINGHAPURAM POST,
 NETHAJI NAGAR,
 ATTUR TALUK,SALEM DISTRICT.

LOCATION OF QUARRY:
 EXTENT : 2.86.5 Ha,
 S.F.NO : 482,
 VILLAGE : NADANTHAI,
 TALUK : PARAMATHI-VELUR,
 DISTRICT : NAMAKKAL,

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7.5m,10m&50m SAFETY DISTANCE	
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POWER LINE	
SCRUB	
TOP SOIL	
WEATHERED ROCK	
STRIKE AND DIP	
QUARRY PIT	
QUARRY ROAD	
DUMP	
MULTICOLOUR GRANITE	
BUND/FENCING	
PROPOSED GARLAND DRAIN	

SECTION ALONG X-Y



SECTION ALONG A-B



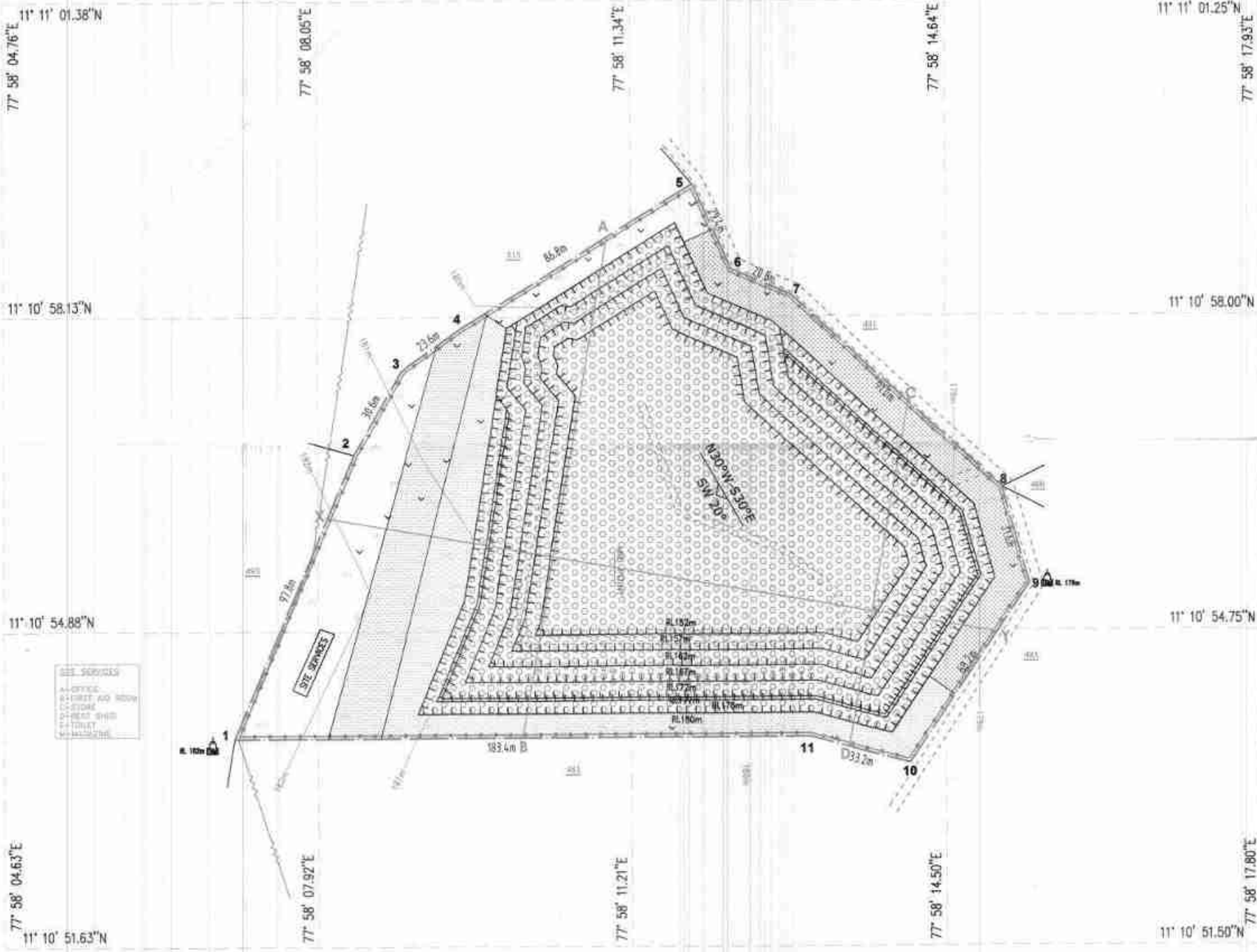
LANDUSE PATTERN

DESCRIPTION	PRESENT AREA(Ha)	AREA TO BE REQUIRED AT THE PRESENT SCHEME PERIOD(Ha)	AREA AT THE END OF LIFE OF QUARRY(Ha)	Color code
AREA UNDER QUARRY	0.44.6	0.39.2	7.99.4	
DUMPS	0.74.0	NIL	BACK FILLING	
INFRASTRUCTURE	NIL	NIL	0.01.0	
ROADS	0.02.0	0.01.0	0.02.0	
GREEN BELT	NIL	0.19.5	0.97.2	
STOCKING BLOCKS	1.85.9	1.06.2	0.25.8	
TOTAL	2.86.5	1.85.9	2.86.5	

PROGRESSIVE QUARRY CLOSURE PLAN AND SECTIONS
 SCALE 1:1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON LEASemap AUTHENTICATED BY STATE GOVERNMENT

(Signature)
 QUALIFIED PERSON



SEE 500/1253
 A-OFFICE
 B-TRUST AND ROAD
 C-ROAD
 D-BENCH MARK
 E-TRUST
 F-TRUST

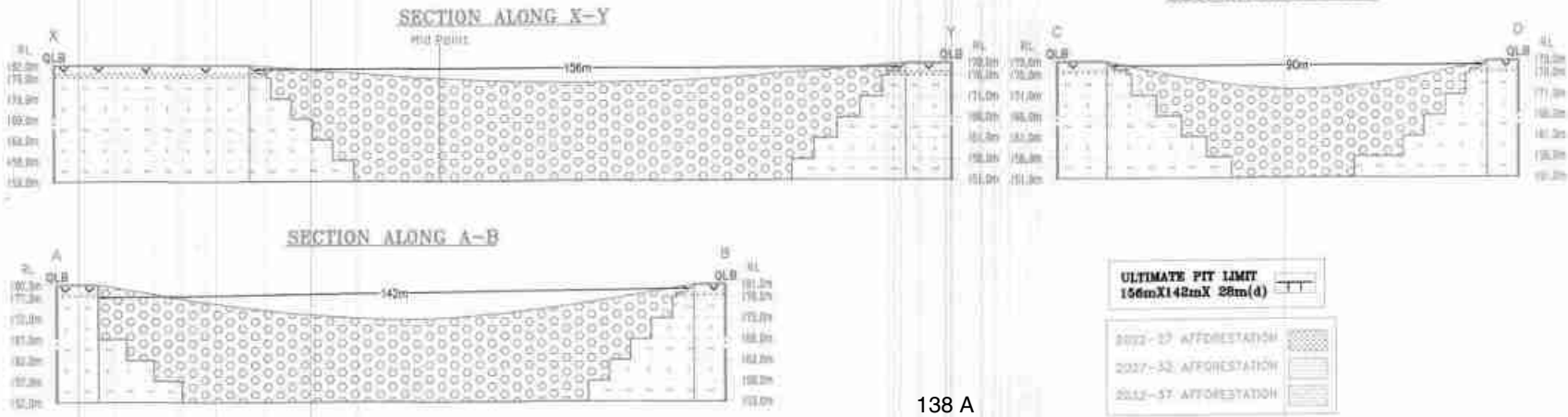
PLATE NO. IX
 DATE OF SURVEY: 11.05.2022

LESSEE:
 Mrs. V. PUNITHA,
 W/O. P. VELMANI,
 109, NARASINGHAPURAM POST,
 NETHAJI NAGAR,
 ATTUR TALUK, SALEM DISTRICT.

LOCATION OF QUARRY:
 EXTENT : 2.86.5 Ha,
 S.F. NO : 482,
 VILLAGE : NADANTHAI,
 TALUK : PARAMATHI-VELUR,
 DISTRICT : NAMAKKAL,

INDEX

QUARRY LEASE BOUNDARY	
7.5m, 10m & 50m SAFETY DISTANCE	
APPROACH ROAD	
TEMPORARY BENCH MARK	
CART TRACK	
POWER LINE	
SCRUB	
TOP SOIL	
WEATHERED ROCK	
STRIKE AND DIP	
QUARRY PIT	
QUARRY ROAD	
BUND/FENCING	
PROPOSED BACK FILLING	
MULTICOLOUR GRANITE	



ULTIMATE PIT LIMIT
 156m X 142m X 28m(d)

2022-23 AFFORESTATION

2027-32 AFFORESTATION

2032-37 AFFORESTATION

CONCEPTUAL PLAN AND SECTIONS
 SCALE 1:1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND THE PLAN AND SECTIONS ARE PREPARED BASED ON THE LEASemap AUTHENTICATED BY STATE GOVERNMENT

(Signature)
 DR. CHANDRAN J. K. S. PH.D.
 QUALIFIED PERSON

Hydrogeological Report for
Multi Colour Granite Quarry Project - 2.86.5Ha,
S.F.Nos. 482,
Nadanthai Village, Paramathivelur Taluk,
Namakkal District, Tamil Nadu State.

HYDROGEOLOGICAL REPORT FOR NADANTHAI

GREYGRANITE QUARRY

INTRODUCTION

Name of the Applicant with Address-

Name of the applicant : **Tmt. V. Punitha**
Address with contact Number: W/o. P. Velmani,
No. 109, Narasinghapuram Post,
Nethaji Nagar, Attur Taluk,
Salem District– 635 203.
Tamil Nadu State.
Mobile : +91 98434 70959

Details of the Area-

Land Classification : Patta Land
Survey No : 482
Extent in Hectares : 2.86.5 hectares
Village : Nadanthai
Taluk : Paramathivelur Taluk,
District : Namakkal District.

The proponent requires detailed Ground Water studies for the Occurrences of Ground water at Grey Granite quarry project site. The objective of the study is to assess the depth of Ground water occurrence and comment on aspects of depth to potential aquifers, aquifer availability and type, possible yields and water quality. For this purpose all available hydrogeological information of the areas has been analyzed, and a geophysical survey was carried out.

The investigations involved hydrogeological, geophysical field investigations and a detailed study in which the available relevant geological and hydrogeological data were collected, analyzed, collated and evaluated within the context of the Proponent requirements.

The data sources consulted were mainly:

- a) Central Ground Water Board (CGWB) Data, TWAD Data
- b) State & District Geological and Hydrogeological Reports and Maps.
- c) Technical reports of the area by various organizations.

1. SCOPE OF THE WORKS –

The scope of works includes:

- Site visits to familiarize with the project areas. Identify any issues that might impact the Ground Water Scenario due to mining activities.
- To obtain, study and synthesize background information including the geology, hydrogeology and existing borehole data, for the purpose of improving the quality of assessment and preparing comprehensive hydrogeological reports,
- To carry out hydrogeological evaluation and geophysical investigations in the selected sites in order to determine potential for groundwater at project site.
- To prepare hydrogeological survey reports in conformity with the provisions of the rules and procedure outlined by the Central Ground Water Board (CGWB), by Assessment of water quality and potential infringement of National standards, Assessment of availability of groundwater and Impact of proposed activity on aquifer, water quality and other abstractors.

2. BACKGROUND INFORMATION

Location

The area is marked in the Survey of India, Topo Sheet No. 58-E/16. The area lies between the Latitudes of 11°10'53.4595"N to 11°10'59.4554"N and Longitudes of 77°58'07.0660"E to 77°58'15.4169"E on WGS datum-1984.

REGIONAL GEOLOGY OF KRISHNAGIRI DISTRICT-

The geological formations of the Krishnagiri district belong mainly to Archaean age along with rock of Proterozoic age. The former is represented by Khondalite Group of rocks, Charnockite Group of rocks, 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 quartzofeldspathic gneiss and hornblende-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 quartzofeldspathic rocks (Champion Gneiss) represent the Kolar group and are found west and southwest of Veppanapalli. Following this there are basic intrusions occurring as dykes.

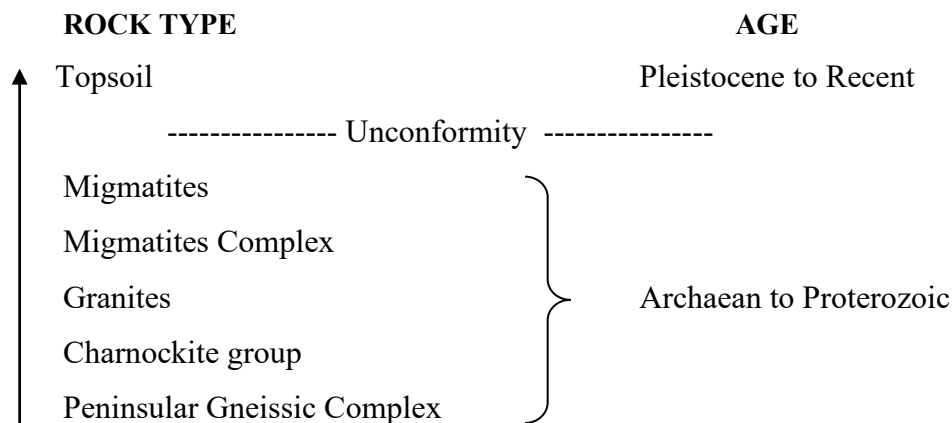
The Charnockite Group occupies a major part of the south-west portion of this district with small bands of Garnetiferous quartzo-feldspathic gneiss, Granite gneiss and dolerite dykes. The North-East and Northern part of the District mainly consist of granite gneiss with small patches of Pink Migmatite,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

The Alkaline Complex is represented by epidote-hornblende gneiss, ultramafics, syenite and carbonatite and these are distributed in the eastern part of the district. Innumerable basic dykes and felsites, quartz, barites and pegmatite veins form part of the Alkali Complex.

STRUCTURAL SETTINGS OF KRISHNAGIRI DISTRICT:

The general geological sequence of the rock types in the area is:-

Order of super position:-



Geomorphology

Krishnagiri district forms part of the upland plateau region with many hill ranges and undulating plains. The western part of the district has hill ranges of Mysore plateau with a chain of undulating hills and deep valleys extending in NNE-SSW direction. The plains of the district have an average elevation of 488 m amsl. The plateau region along the western boundary and the northwestern part of the district has an average elevation of 914 m amsl.

Soils

Soils have been classified into Black soil, mixed soil, red loamy soil, gravelly and sandy soils. Red loamy and sandy soils are predominant in Pochampallitaluk. Vast stretches of loam soils and black soils occur in Krishnagiri district.

3. GEOPHYSICAL INVESTIGATION METHODS

A variety of methods are available to assist in the assessment of geological sub-surface conditions. The main emphasis of the fieldwork undertaken was to determine the thickness and composition of the sub-surface formations and to identify water-bearing zones. This information was principally obtained in the field using, and vertical electrical soundings (VES). The VES probes the resistivity layering below the site of measurement. This method is described below.

Resistivity Method

Vertical electrical soundings (VES) were carried out to probe the condition of the sub-surface and to confirm the existence of deep groundwater. The VES investigates the resistivity layering below the site of measurement.

Basic Principles

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A, expressed as:

$$R = R_s * L/A \text{ (in Ohm)}$$

Where R_s is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

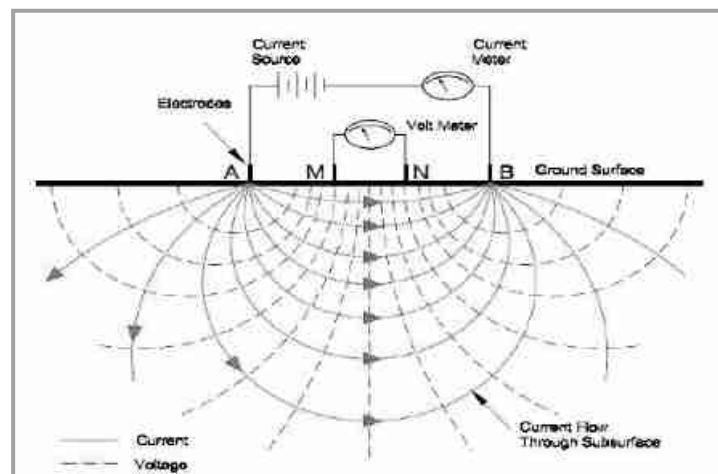
$$R = dV/I \text{ (Ohm)}$$

Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$R_s = (A/L) * (dV/I) \text{ (in Ohm m)}$$

Vertical Electrical Sounding (VES)

When carrying out a resistivity sounding, current is led into the ground by means of two electrodes. With two other electrodes, situated near the center of the array, the potential field generated by the current is measured. From the observations of the current strength and the potential difference, and taking into account the electrode separations, the ground resistivity can be determined. During a resistivity sounding, the separation between the electrodes is step-wise increased (known as a Schlumberger Array), thus causing the flow of current to penetrate greater depths. When plotting the observed resistivity values against depth on double logarithmic paper, a resistivity graph is formed, which depicts the variation of resistivity with depth. This graph can be interpreted with the aid of a computer, and the actual resistivity layering of the subsoil is obtained. The depths and resistivity values provide the hydro geologist with information on the geological layering and thus the occurrence of groundwater.

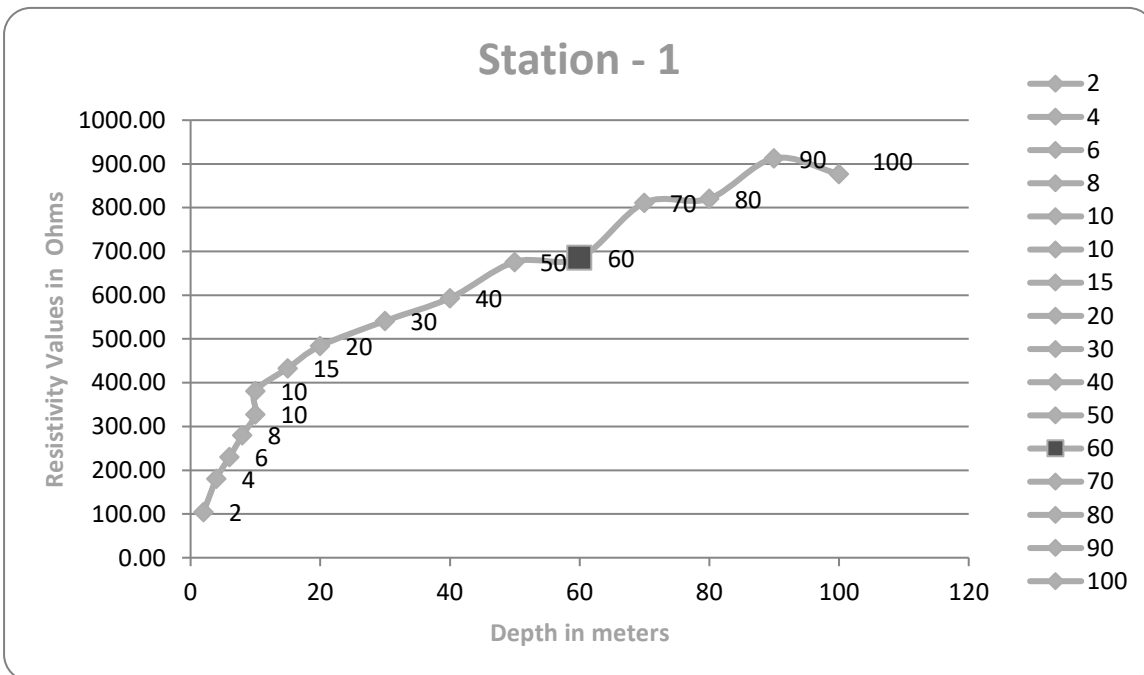


Vertical Electrical Sounding data's and Diagram

Topographical view of Chendarapalli Grey Granite Quarry Lease Area

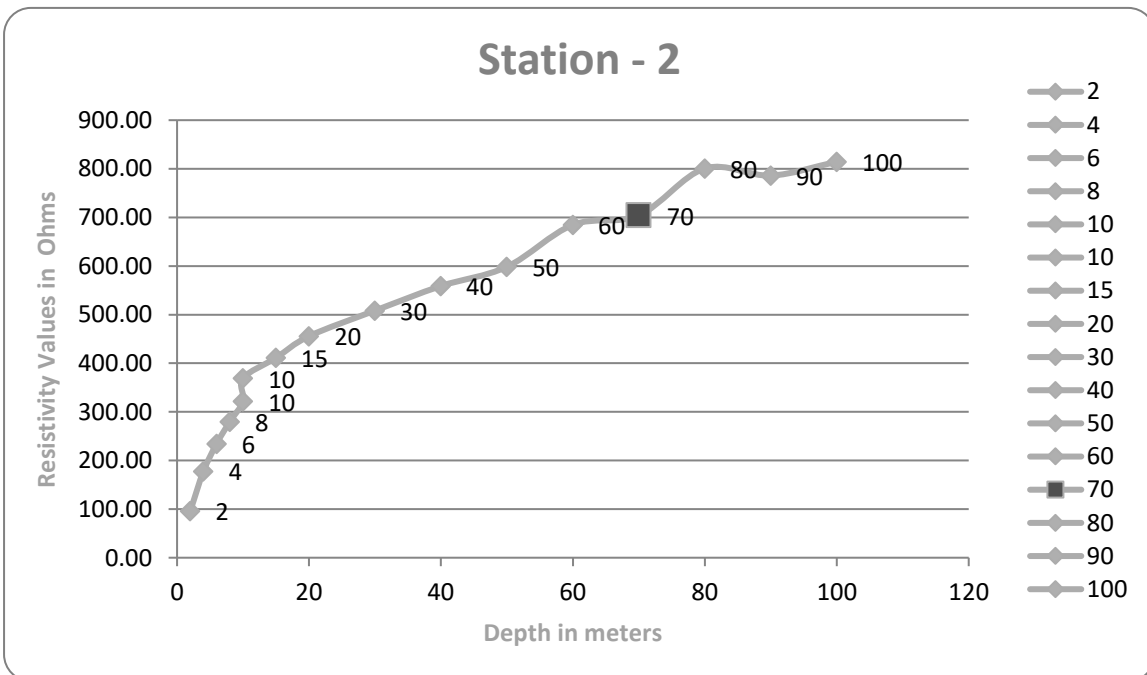


STATION-1					
GPS Coordinates - 11°10'53.88"N 77°58'7.54"E					
S.No	Ab/2(m)	Mn/2(m)	Geometrical factor (G)	Resistance Value in Ohms	Apparent Resistance in Ohms
1	2	1	4.72	22.05	104.80
2	4	1	23.55	7.54	182.3
3	6	1	54.95	4.3	238.5
4	8	1	98.91	2.86	279.92
5	10	1	155.45	2.13	328.00
6	10	5	23.55	16.21	381.27
7	15	5	62.80	6.93	433.32
8	20	5	117.75	4.13	483.95
9	30	5	274.75	1.98	541.26
10	40	5	494.55	1.11	589.6
11	50	5	777.15	0.78	680.1
12	60	5	1122.55	0.71	628
13	70	5	1530.75	0.54	812.6
14	80	5	2001.75	0.43	820.72
15	90	5	2535.55	0.39	912.80
16	100	5	3132.15	0.30	854.9



◆ A vertical electrical Sounding Graph diagram purple level is fracture zone.

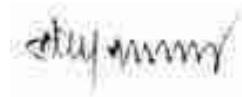
STATION-2					
GPS Coordinates - 11°10'53.50"N 77°58'13.96"E					
S.No	Ab/2(m)	Mn/2(m)	Geometrical factor (G)	Resistance Value in Ohms	Apparent Resistance in Ohms
1	2	1	4.71	21.49	95.85
2	4	1	23.55	7.43	177.80
3	6	1	54.95	4.41	234.64
4	8	1	98.91	2.98	279.92
5	10	1	155.45	2.07	321.78
6	10	5	23.55	14.58	369.03
7	15	5	62.80	7.49	411.34
8	20	5	117.75	3.98	455.69
9	30	5	274.75	1.81	510.3
10	40	5	494.55	1.20	541.8
11	50	5	777.15	0.72	580.3
12	60	5	1122.55	0.63	684.76
13	70	5	1530.75	0.46	704.15
14	80	5	2001.75	0.41	800.70
15	90	5	2535.55	0.39	786.02
16	100	5	3132.15	0.35	845.6



◆ A vertical electrical Sounding Graph diagram purple level is fracture zone.

4. Conclusions –

Based on the available information and the geophysical investigations it is concluded that the project area is considered to have medium groundwater potential. Productive aquifers are expected at depth of 64m to 68m where minor fractures are observed and shallow aquifers are expected above 55-65m BGL. The ultimate pit limit as per the approved Scheme of Mining plan is 19m (RL.472m to RL.453m) which will have no impact on the Ground Water.



Dr. P. Thangaraju, M.Sc., Ph.D.,

Govt. Approved Hydro Geologist

M/s. Geo Exploration and Mining Solutions,

Regd. Office: No. 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004, Tamil Nadu

Mobile: +91 - 94433 56539

E-Mail: ifogeoexploration@gmail.com



अनुज्ञप्ति प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए अनुज्ञप्ति

Licence to possess : (c) for use,explosives of class 1, 2,3,4,5,6 or 7 in a magaz

अनुज्ञप्ति सं. (Licence No.): E/SC/TN/22/S05(E43370)
वार्षिक फीस रूपए (Annual Fee Rs): 4800/-



1. Licence is hereby granted to

M/s Sekar & Company (अधिभोगी / Occupier : Shri R. Selvam), 42, Kallipalayam, Vengarai (Post), P.Velur (Taluk), Town/Village - Vengarai-Post, District-NAMAKKAL, State-Tamil Nadu, Pincode - 638182

को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रास्थिति | Status of licensee : Partnership Firm

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमाम्य है। : possess for use of Slurry Explosives, Safety Fuse, Detonating Fuse, Detonators, -के उपयोग के लिए
Licence is valid only for the following purpose.

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमाम्य है।

Licence is valid for the following kinds and quantity of explosives: -- (क) (a)

क्र. सं. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Slurry Explosives	2,0	0	1000 Kg.
2.	Safety Fuse	6,1	0	20000 Mtrs
3.	Detonating Fuse	6,2	0	10000 Mtrs
4.	Detonators	6,3	0	30000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए] 15 times as above.

(b) Quantity of explosives to be purchased in a calendar month[applicable for licence under article 3(b) and (c)]:

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्त परिसर की पुष्टि होती है। : रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/S05(E43370)
दिनांक (Dated) 21/02/1984
The licensed premises shall conform to the following drawing(s):

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:
Survey No(s). 146/7, ग्राम (Town/Village) : Punjaledayar Malmugam Village,velur Taluk, तालुका (Police Station) : Velur
जिला (District) SALEM राज्य (State) Tamil Nadu पिनकोड (Pincode)
दूरभाष (Phone) ई.मेल (E-Mail) फैक्स (Fax)

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं। : a main magazine room, a lobby and a detonator store room
The licensed premises consist of following facilities.

8. अनुज्ञप्ति समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों के अधीन रहते हुए अनुदत्त की जाती है।
The licensee is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

- उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख 31 मार्च 1986 तक विधिमाम्य रहेगी। This licence shall remain valid till 31st day of March 1986.

यह अनुज्ञप्ति, अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अधिक्रमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंज्ञित की जा सकती है, जहां वह लागू हो।

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

Sd/-

तारीख | The Date - 21/02/1984

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
South Circle, Chennai

Amendments :

- Change in Authorized Signatory/Occupier/Partners/Directors dated : 25/11/2009
- Change in Authorized Signatory/Occupier/Partners/Directors dated : 04/03/2010
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 01/08/2011
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 24/11/2016

Transfers :

- Change in Licensee Name/Address/Status dated : 04/03/2010

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
17/12/2019	31/03/2024	Controller of Explosives, Vellore
		विस्फोटक नियंत्रक, वेल््लूर Controller of Explosives, Vellore

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडित अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.



Dr. S. KALYANASUNDARAM ,I.F.S.(Retd.)
CHAIRMAN

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359974
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.5870/1(a)/ EC.No:3894/2016 dated: 18.11.2016

To
M/s. M.M. Exports
No.77-E, Upstairs
Kaveri Avenue
MDS Nagar
Salem - 636007

Sir,

Sub: SEIAA-TN – Proposed **Multi coloured Granite** quarry located at S.F.No 483/2A, Nadanthai Village,Paramathivelur Taluk, Namakkal District- issue of Environmental Clearance – Reg.

Ref: 1. Your Application for Environmental Clearance dt: 03.11.2016
2. Minutes of the 83th SEAC held on 11.11.2016
3. Minutes of the SEIAA meeting held on 18.11.2016

Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	M/s. M.M. Exports No.77-E, Upstairs Kaveri Avenue MDS Nagar Salem - 636007
2	Location of the Proposed Activity	
	Survey Number	483/2A
	Latitude and Longitude	11°10'46.54"N to 11°10'56.38"N 77°58'09.58"E to 77°58'18.70"E
	Village	Nadanthai
	Taluk	Paramathivelur

CHAIRMAN
SEIAA-TN

	District	Namakkal
3	Proposed Activity	
	i. Minor mineral	Multi coloured Granite
	ii. Mining Lease Area	2.75.5 Ha
	iii. Approved quantity	10260 cu.m of Multi Colored Granite
	iv. Depth of Mining	8m(5m Multi coloured Granite,2m Topsoil & 1m Weathered rock)
	v. Type of mining	Opencast Semi Mechanised Mining
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Letter No.9780/MMB.2/2015-1 dated:01.09.2016 by Additional Chief Secretary to Government Industries(MMB.2) Department.
	viii. Mining plan approval	Commissioner of Geology & Mining, Chennai,Lr.No.3834/MM5/2015dated:20.10.2016
	ix. Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished
5	Man Power requirement per day:	40 Employees
6	Utilities	
	i. Source of Water :	Water vendors/Existing Borehole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	0.3KLD
	b. Industrial	} 0.7KLD
	c. Green Belt & Dust Suppression	
	iii. Power Requirement:	
	a. Domestic Purpose	TNEB
	b. Industrial Purpose	27360 Liters of HSD
7	Cost	
	i. Project Cost	Rs.52.50 Lakhs
	ii. EMP Cost	Rs.3.05 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:-	11.11.2016
	Agenda No:	83-3
10	Date of Review/Discussion by SEIAA and the Remarks:-	
	The proposal was placed before the SEIAA in its 201 Meeting held on 18.11.2016 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Multi coloured Granite subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11	Validity:	
	This Environmental Clearance is granted to Mining of Multi coloured Granite for the production quantity of 10260 cu.m of Multi Colored Granite for the period of 5 Years from the date of execution of the Mining Lease period.	

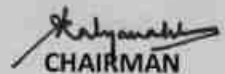
Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.

15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.

29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site
38. Ground water quality monitoring should be conducted once in 3 Months
39. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI..
42. Bunds to be provided at the boundary of the project site.
43. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.

44. At least 10 Neem trees should be planted around the boundary of the quarry site.
45. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
46. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
47. The Project Proponent shall provide solar lighting system to the nearby villages
48. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
49. Rainwater shall be pumped out Via Settling Tank only
50. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
51. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
52. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
53. Safety equipments to be provided to all the employees.
54. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
55. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
56. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
57. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
58. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
59. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
60. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
61. The Project Proponent shall furnish the details of CSR Activity carried out so far before execution of Mining lease.

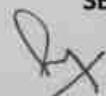

CHAIRMAN
SEIAA-TN



General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.


CHAIRMAN
SEIAA-TN



16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA,TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.


CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
3. The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Namakkal District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. E.I Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.



Dr. S. KALYANASUNDARAM ,I.F.S.(Retd.)
CHAIRMAN

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359974
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.5823/1(a)/ EC.No: 3856/2016 dated: 18.11.2016

To
M/s. M.M. Exports
No.77-E, Upstairs
Kauveri Avenue
MDS Nagar
Salem - 636007



Sir,

Sub: SEIAA-TN – Proposed **Multi coloured Granite** quarry located at S.F.No 492/2, Nadanthai Village,Paramathivelur Taluk, Namakkal District- issue of Environmental Clearance – Reg.

Ref: 1. Your Application for Environmental Clearance dt: 17.10.2016
2. Minutes of the 82th SEAC held on 21.10.2016 & 22.10.2016
3. Minutes of the SEIAA meeting held on 18.11.2016

Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	M/s. M.M. Exports No.77-E, Upstairs Kauveri Avenue MDS Nagar Salem - 636007
2	Location of the Proposed Activity	
	Survey Number	492/2
	Latitude and Longitude	11°10'40.92"N to 11°10'47.91"N 77°58'01.02"E to 77°58'07.32"E
	Village	Nadanthai
	Taluk	Paramathivelur

Kalyanasundaram
CHAIRMAN
SEIAA-TN

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18/11/16

	District	Namakkal
3	Proposed Activity	
	i. Minor mineral	Multi coloured Granite
	ii. Mining Lease Area	2.73.0 Ha
	iii. Approved quantity	9180 cu.m of Multi coloured Granite
	iv. Depth of Mining	13m (2m Topsoil + 1m Weathered rock + 10m Multi Coloured Granite)
	v. Type of mining	Opencast Semi Mechanized Method
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Letter No. 9779/MMB.2/2015-1 dated 28.07.2016 by the Principal Secretary, Industries (MMB.1) Department, Chennai
	viii. Mining plan approval	Commissioner of Geology & Mining, Chennai Letter No. 3833/MM5/2015 dated 03.10.2016
	ix. Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished
5	Man Power requirement per day:	40 Employees
6	Utilities	
	i. Source of Water :	Water vendors/Borehole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	0.3KLD
	b. Industrial	} 0.7KLD
	c. Green Belt & Dust Suppression	
	iii. Power Requirement:	
	a. Domestic Purpose	TNEB
	b. Industrial Purpose	24480 Litres of HSD
7	Cost	
	i. Project Cost	Rs.55.25 Lakhs
	ii. EMP Cost	Rs.3.05 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:-	21.10.2016 & 22.10.2016
	Agenda No:	82-05
10	Date of Review/Discussion by SEIAA and the Remarks:-	
	The proposal was placed before the SEIAA in its 201 st Meeting held on 18.11.2016 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Multi coloured Granite subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11	Validity:	
	The Environmental Clearance is granted to Mining of Multi Coloured Granite for the Production quantity of 9180 cu.m of Multi coloured Granite for the period of 5 Years from the date of execution of the Mining lease period.	


KALPANA
 CHAIRMAN
 SEIAA-TN


 18/11/16

Conditions to be Complied before commencing mining operations:-


1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
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2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
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CHAIRMAN
SEIAA-TN


18/11/16


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CHAIRMAN
SEIAA-TN

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61. The Proponent has to carry out the Resistivity survey through authorized experts/institutes for Ground water table and based on the report, the Assistant/Deputy Director of Department of Geology & mining shall ensure that the depth of mining shall be restricted as per the MMCR, 1959 before execution of the mining lease.


CHAIRMAN
SEIAA-TN



General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.

16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

Kalyanath
CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
3. The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Namakkal District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.



Dr. S. KALYANASUNDARAM ,I.F.S.(Retd.)
CHAIRMAN

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359974
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.4957/EC/1(a)/2805/2016 dated:08.02.2016

To
Tmt. L. Selvi
No.3B, 3rd Cross Power House Colony
Krishnagiri Taluk
Krishnagiri District-635001

Sir,

Sub: SEIAA-TN – Proposed Multi-Colour Granite quarry located at S.F.No 494/1 & 494/2, Nadanthai Village,Paramathivelur Taluk, Namakkal District- issue of Environmental Clearance – Reg.

Ref: 1. Your Application for Environmental Clearance dt: 27.01.2016
2. Minutes of the 72th SEAC held on 04.02.2016,05.02.2016 & 06.02.2016
3. Minutes of the SEIAA meeting held on 08.02.2016

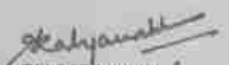
Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	Tmt. L. Selvi No.3B, 3rd Cross Power House Colony Krishnagiri Taluk Krishnagiri District-635001
2	Location of the Proposed Activity	
	Survey Number	494/1 & 494/2
	Latitude and Longitude	11°10'51"N to 11°10'41"N 77°57'51"E to 77°58'01"E
	Village	Nadanthai
	Taluk	Paramathivelur

CHAIRMAN
SEIAA-TN

	District	Namakkal
3	Proposed Activity	
	i. Minor mineral	Multi-Colour Granite
	ii. Mining Lease Area	4.40.5 Ha
	iii. Approved quantity	10260 cu.m of Multi Colour Granite, 12834 cu.m of Topsoil
	iv. Depth of Mining	9 m
	v. Type of mining	Opencast Semi Mechanised Mining
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Letter No.17808/MMB.2/2015-1, dated:30.12.2015 by Additional Chief Secretary to Government
	viii. Mining plan approval	Commissioner of Geology & Mining (i/c), Chennai Lr.No.9730/MM5/2015 dated:22.01.2016
	ix. Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished
5	Man Power requirement per day:	35 Employees
6	Utilities	
	i. Source of Water :	Water vendors/Existing Borehole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	0.3KLD
	b. Industrial	} 0.7KLD
	c. Green Belt & Dust Suppression	
	iii. Power Requirement:	
	a. Domestic Purpose	TNEB
	b. Industrial Purpose	27360 Liters of HSD
7	Cost	
	i. Project Cost	Rs.46.05 Lakhs
	ii. EMP Cost	Rs.3.08 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:- Agenda No:	04.02.2016, 05.02.2016 & 06.02.2016 72-34
10	Date of Review/Discussion by SEIAA and the Remarks:-	
	The proposal was placed before the SEIAA in its 162 th Meeting held on 08.02.2016 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Multi-Colour Granite to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11	Validity:	
	The Environmental Clearance will be coterminous with the mine lease period or limited to a maximum period of 5 Years from the date of issue whichever is earlier.	

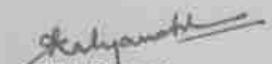

CHAIRMAN
SEIAA-TN

Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.


CHAIRMAN
SEIAA-TN

14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.

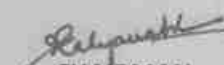

CHAIRMAN
SEIAA-TN

24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that


CHAIRMAN
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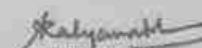
the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.

34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site
38. Ground water quality monitoring should be conducted once in 3 Months
39. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI..
42. Bunds to be provided at the boundary of the project site.
43. Ground water quality monitoring should be conducted once in 3 Months
44. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
45. At least 10 Neem trees should be planted around the boundary of the quarry site.
46. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
47. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
48. The Project Proponent shall provide solar lighting system to the nearby villages
49. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
50. Rainwater shall be pumped out Via Settling Tank only
51. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
52. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
53. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
54. Safety equipments to be provided to all the employees.
55. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai


CHAIRMAN
SEIAA-TN

General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.


CHAIRMAN
SEIAA-TN

16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA,TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.


CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
3. The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Namakkal District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. E1 Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

Dr. S. KALYANASUNDARAM ,I.F.S.(Retd.)
CHAIRMAN



3rd Floor, Panagal Maaligai,
No.1 Jeemis Road, Saidapet,
Chennai-15.
Phone No.044-24359974
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Ir. No. SEIAA-TN/F.No.3767/EC/1(a)/2188/2015 dated:13.10.2015

To
Thiru P.Velmani
Narasingapuram Post,
Nethaji Nagar,
Attur Taluk,
Salem District

Sir,


Sub: SEIAA-TN – Proposed Multi Coloured Granite quarry located at S.F.No 456 & 25/1, Nadanthai & Irrukkur Village, Paramathivelur Taluk, Namakkal District- Issue of Environmental Clearance – Req.

Ref: 1. Your Application for Environmental Clearance dt: 26.08.2015
2. Minutes of the 67th SEAC held on 25.09.2015 & 26.09.2015
3. Minutes of the SEIAA meeting held on 09.10.2015

Details of Minor Mineral Activity:-

This has reference to your application filed. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	Thiru P.Velmani Narasingapuram Post, Nethaji Nagar, Attur Taluk, Salem District
2	Location of the Proposed Activity	
	Survey Number	456 & 25/1
	Latitude and Longitude	11°10'41"N to 11°10'49"N 77°58'19"E to 77°58'28"E
	Village	Nadanthai & Irrukkur
	Taluk	Paramathivelur
	District	Namakkal
3	Proposed Activity	
	1. Minor mineral-	Multi Coloured Granite


CHAIRMAN
SEIAA-TN

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

	ii. Mining Lease Area	4.34.0 Ha
	iii. Approved quantity	15390 cu.m of Multi coloured Granite, 10260 cu.m of waste, 4832 cu.m of topsoil
	iv. Depth of Mining	12 m
	v. Type of mining	Open cast semi mechanized method
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Additional Chief Secretary To Government, Industries (MMB.2) Department, Secretariate 1824/MMB.2/2015-1 dated: 23.03.2015
	viii. Mining plan approval	Commissioner of Geology & Mining, Chennai 3537/MM5/2014 dated: 24.04.2015
	ix. Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished
5	Man Power requirement per day	40 Employees
6	Utilities	
	i. Source of Water :	Water Vendors/Existing bore hole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	0.3KLD
	b. Industrial	0.7KLD
	c. Green Belt & Dust Suppression	
	iii. Power Requirement:	
	a. Domestic Purpose	Nearby Electric Poles (TNEB)
	b. Industrial Purpose	41040 liters Of HSD
7	Cost	
	i. Project Cost	Rs.63.5 Lakhs
	ii. EMP Cost	Rs.3.05 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:- Agenda No:	25.09.2015 & 26.09.2015 67-5
10	Date of Review/Discussion by SEIAA and the Remarks:- The proposal was placed before the SEIAA in its 130th Meeting held on 09.10.2015 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Multi Coloured Granite to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended	
11	Validity: The Environmental Clearance will be coterminous with the mine lease period or limited to a maximum period of 5 Years from the date of Issue whichever is earlier.	

[Signature]
CHAIRMAN
SEIAA-TN

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

Conditions to be Compiled before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
3. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat Union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
4. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
5. The proponent shall ensure that First Aid Box is available at site.
6. The excavation activity shall not alter the natural drainage pattern of the area.
7. The excavated pit shall be restored by the project proponent for useful purposes.
8. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
9. The quarrying operation shall be restricted between 7AM and 5 PM.
10. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
11. A minimum distance of 15 mts. from any civil structure shall be kept from the periphery of any excavation area.
12. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

13. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
14. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
15. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
16. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.

[Signature]
 CHAIRMAN,
 SEIAA-TN

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps:
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
27. Waste oils, used oils generated from the E/M machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be effected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution. .
34. It shall be ensured that the total extent of nearby quarries located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares
35. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site
36. Ground water quality monitoring should be conducted once in 3 Months
37. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
38. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
39. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
40. Bunds to be provided at the boundary of the project site.
41. Ground water quality monitoring should be conducted once in 3 Months
42. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
43. At least 10 Neem trees should be planted around the boundary of the quarry site.
44. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
45. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
46. The Project Proponent shall provide solar lighting system to the nearby villages
47. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
48. Rainwater shall be pumped out Via Settling Tank only
49. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
50. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
51. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.

[Signature]
CHAIRMAN
SEIAA-TN

[Signature]
[Signature]

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the minerals shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.

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CHAIRMAN -
SEIAA-TN

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STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974; the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986; the Public Liability Insurance Act, 1991, along with their amendments; draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

FOOT

[Signature]
CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, ShastriBhawan, New Delhi.
2. The Secretary, Department of Environment and Forests, Government of Tamil Nadu, Tamil Nadu.
3. The Secretary, Department of Mines and Geology, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, PariveshBhawan, CBD-Cum-Office-Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Namakkal District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. E1 Division, Ministry of Environment & Forests, ParvavaranBhawan, New Delhi.
10. Spare.

[Signature]
CHAIRMAN
SEIAA-TN

TEST REPORT

ULR TC606023000008395F

Report Number: GLCS/TR/8660/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2Liters
Sample Name	Surface Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Sample Code	GLCS / 8660	Sample Receipt Date	07.12.2023
Location Name	Thirumanimuthaaru	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	27.12.2023
		Location Co-ordinates	11°10'1.64"N 78°1'6.03"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	6
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	8.09
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1252
5	Turbidity	IS 3025 PART10	NTU	3
6	Total Dissolved Solids	IS 3025 PART16	mg/l	739
7	Total Alkalinity as CaCO ₃	IS 3025 PART 23	mg/l	204
8	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	266.6
9	Calcium as Ca	IS 3025 PART40	mg/l	63.1

For Global Lab and Consultancy Services




Authorised Signatory

L. SUDHAPRIYA
Technical Manager

Page 1 of 3

Note: The test results are only to the sample submitted for test. Any Correction of the test report on full or part shall invalidate the report. Samples are not drawn by us unless otherwise stated. Sample will be retained for 14 days from the date of reporting except in case of regulatory samples or specifically instructed by client. Perishable samples will be discarded immediately after reporting. We do not accept any liability with regard to origin or source from which the samples are extracted. The Laboratory is not responsible for authenticity of photocopied test reports. Any holder of this report is advised that information contained here on reflects the laboratory's finding at the time of its intervention only and within the limits of client instructions. The authenticity of the test reports issued by us can be verified by submitting on E-mail request with report number and report date along with report copy.

TEST REPORT

ULR TC606023000008395F

Report Number: GLCS/TR/8660/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	26.5
11	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	275.9
12	Sulphate as SO ₄ ⁻	IS 3025 PART24	mg/l	47.4
13	Iron as Fe	IS 3025 PART 53	mg/l	0.29
14	Ammonia as NH ₃	IS 3025 PART 34	mg/l	BDL(DL:1.0)
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.33
18	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
19	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
20	Dissolved Oxygen	IS 3025 PART 38	mg/l	6.4
21	Bio-Chemical Oxygen Demand @ 27°C for 3 days	IS 3025 PART 44	mg/l	10.2
22	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	36.4

Note: BDL – Below Detection Limit, DL – Detection Limit.

For Global Lab and Consultancy Services




Authorised Signatory

L. SUDHAPRIYA
Technical Manager

Page 2 of 3

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TEST REPORT

ULR TC606023000008395F

Report Number: GLCS/TR/8660/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
Customer Ref No	4049	Sample Quantity	250 ml
Sample Name	Surface Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Sample Code	GLCS / 8660	Sample Receipt Date	07.12.2023
Location Name	Thirumanimuthaaru	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	14.12.2023
		Location Co-ordinates	11°10'1.64"N 78°1'6.03"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 1622	MPN/100ml	26
2	<i>Escherichia coli</i>	IS 1622	MPN/100ml	<2

Note: MPN- Most Probable Number.



For Global Lab and Consultancy Services


Authorized Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****
Page 3 of 3

Note: The test results are only to the sample submitted for test. Any Correction of the test report on full or part shall invalidate the report. Samples are not drawn by us unless otherwise stated. Sample will be retained for 14 days from the date of reporting except in case of regulatory samples or specifically instructed by client. Perishable samples will be discarded immediately after reporting. We do not accept any liability with regard to origin or source from which the samples are extracted. The Laboratory is not responsible for authenticity of photocopied test reports. Any holder of this report is advised that information contained here on reflects the laboratory's finding at the time of its intervention only and within the limits of client instructions. The authenticity of the test reports issued by us can be verified by submitting on E-mail request with report number and report date along with report copy.

TEST REPORT

Report Number: GLCS/TR/8660/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient - Good
Customer Ref No	4049	Sample Quantity	2Liters
Sample Name	Surface Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Sample Code	GLCS / 8660	Sample Receipt Date	07.12.2023
Location Name	Thirumanimuthaaru	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	27.12.2023
		Location Co-ordinates	11°10'1.64"N 78°1'6.03"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Suspended Solids	IS 3025 PART 17	mg/l	8
2	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
3	Anionic Detergents	IS 13428 Annex K	mg/l	BDL(DL:0.05)
4	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
5	Sulphide	GLCS/SOP/W/66	mg/l	1.6
6	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
9	Selenium as Se	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
10	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.045
11	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Barium as Ba	GLCS/SOP/W/62	mg/l	0.15
15	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL - Below Detection Limit, DL - Detection Limit.



*****End of Report*****

Page 1 of 1

For Global Lab and Consultancy Services


Authorised Signatory

L. SUDHAPRIYA
Technical Manager

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TEST REPORT

ULR TC606023000008396F

Report Number: GLCS/TR/8661/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2Liters
Sample Name	Surface Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Sample Code	GLCS / 8661	Sample Receipt Date	07.12.2023
Location Name	Cauvery River	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	27.12.2023
		Location Co-ordinates	11°9'9.14"N 77°53'13.33"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	7
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	7.93
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1319
5	Turbidity	IS 3025 PART10	NTU	4
6	Total Dissolved Solids	IS 3025 PART16	mg/l	778
7	Total Alkalinity as CaCO ₃	IS 3025 PART 23	mg/l	224
8	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	278.7
9	Calcium as Ca	IS 3025 PART40	mg/l	66.3

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L. SUDHAPRIYA
Technical Manager

Page 1 of 3

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TEST REPORT

ULR TC606023000008396F

Report Number: GLCS/TR/8661/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	27.5
11	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	281.8
12	Sulphate as SO ₄ ⁻	IS 3025 PART 24	mg/l	45.13
13	Iron as Fe	IS 3025 PART 53	mg/l	0.31
14	Ammonia as NH ₃	IS 3025 PART 34	mg/l	BDL(DL:1.0)
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.30
18	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
19	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
20	Dissolved Oxygen	IS 3025 PART 38	mg/l	5.9
21	Bio-Chemical Oxygen Demand @ 27°C for 3 days	IS 3025 PART 44	mg/l	12.0
22	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	44.5

Note: BDL – Below Detection Limit, DL – Detection Limit.

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 2 of 3

Note: The test results are only to the sample submitted for test. Any Correction of the test report on full or part shall invalidate the report. Samples are not drawn by us unless otherwise stated. Sample will be retained for 14 days from the date of reporting except in case of regulatory samples or specifically instructed by client. Perishable samples will be discarded immediately after reporting. We do not accept any liability with regard to origin or source from which the samples are extracted. The Laboratory is not responsible for authenticity of photocopied test reports. Any holder of this report is advised that information contained here on reflects the laboratory's finding at the time of its intervention only and within the limits of client instructions. The authenticity of the test reports issued by us can be verified by submitting on E-mail report with report number and report date along with report copy.



TEST REPORT

ULR TC606023000008396F

Report Number: GLCS/TR/8661/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
Customer Ref No	4049	Sample Quantity	250 ml
Sample Name	Surface Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Sample Code	GLCS / 8661	Sample Receipt Date	07.12.2023
Location Name	Cauvery River	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	14.12.2023
		Location Co-ordinates	11°9'9.14"N 77°53'13.33"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 1622	MPN/100ml	17
2	<i>Escherichia coli</i>	IS 1622	MPN/100ml	<2

Note: MPN- Most Probable Number.

For Global Lab and Consultancy Services



*****End of Report*****

Page 3 of 3


Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

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TEST REPORT

Report Number: GLCS/TR/8661/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2Liters
Sample Name	Surface Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Sample Code	GLCS / 8661	Sample Receipt Date	07.12.2023
Location Name	Cauvery River	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	27.12.2023
		Location Co-ordinates	11°9'9.14"N 77°53'13.33"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Suspended Solids	IS 3025 PART 17	mg/l	11
2	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
3	Anionic Detergents	IS 13428 Annex K	mg/l	BDL(DL:0.05)
4	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
5	Sulphide	GLCS/SOP/W/66	mg/l	2.4
6	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
9	Selenium as Se	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
10	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
11	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
15	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL – Below Detection Limit, DL – Detection Limit.

For Global Lab and Consultancy Services



*****End of Report*****

Page 1 of 1

Authorised Signatory

L. SUDHAPRIYA
Technical Manager

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TEST REPORT

ULR TC606023000008397F

Report Number: GLCS/TR/8662/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8662	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°10'32.95"N 77°57'50.13"E

SI. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.65
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	1085
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	640
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, DL- Detection Limit.



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

Page 1 of 3

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TEST REPORT

ULR TC606023000008397F

Report Number: GLCS/TR/8662/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	188
9	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	238.3
10	Calcium as Ca	IS 3025 PART 40	mg/l	50.1
11	Magnesium as Mg	IS 3025 PART 46	mg/l	27.5
12	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	214.8
13	Sulphate as SO ₄ ²⁻	IS 3025 PART 24	mg/l	46.6
14	Iron as Fe	IS 3025 PART 53	mg/l	0.23
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.26
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, DL- Detection Limit

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 2 of 3

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TEST REPORT

ULR TC606023000008397F

Report Number: GLCS/TR/8662/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	250 ml
Sample Name	Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8662	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	08.12.2023
		Location Coordinates	11°10'32.95"N 77°57'50.13"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	<i>Escherichia coli</i>	IS 15185	Per 100ml	Absent



For Global Lab and Consultancy Services

*****End of Report*****

Page 3 of 3


Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

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TEST REPORT

Report Number: GLCS/TR/8662/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8662	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°10'32.95"N 77°57'50.13"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH ₃)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.031
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services



Page 1 of 2

(Signature)
Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

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TEST REPORT

Report Number: GLCS/TR/8662/2023-24(2)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	0.015
10	Anionic Detergents	IS 13428 Annex k	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services



(Signature)
Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

*****End of Report*****
 Page 2 of 2

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TEST REPORT

ULR TC606023000008398F

Report Number: GLCS/TR/8663/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Mel Sallambur	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8663	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°13'59.85"N 77°59'17.48"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.24
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	1036
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	611
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, DL- Detection Limit.



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Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 3

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197A

TEST REPORT

ULR TC606023000008398F

Report Number: GLCS/TR/8663/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	172.0
9	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	230.2
10	Calcium as Ca	IS 3025 PART 40	mg/l	53.4
11	Magnesium as Mg	IS 3025 PART 46	mg/l	23.5
12	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	210.8
13	Sulphate as SO ₄ ⁻	IS 3025 PART 24	mg/l	37.6
14	Iron as Fe	IS 3025 PART 53	mg/l	0.17
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.23
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, DL- Detection Limit

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 2 of 3

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TEST REPORT

ULR TC606023000008398F

Report Number: GLCS/TR/8663/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasingapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	250 ml
Sample Name	Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Location	Mel Sattambur	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8663	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	08.12.2023
		Location Coordinates	11°13'59.85"N 77°59'17.48"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	<i>Escherichia coli</i>	IS 15185	Per 100ml	Absent



For Global Lab and Consultancy Services

*****End of Report*****

Page 3 of 3


Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

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TEST REPORT

Report Number: GLCS/TR/8663/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Mel Sattambur	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8663	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°13'59.85"N 77°59'17.48"E

SI. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH ₃)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services



Page 1 of 2

Authorised Signatory

L. SUDHAPRIYA

Technical Manager

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TEST REPORT

Report Number: GLCS/TR/8663/2023-24(2)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Anionic Detergents	IS 13428 Annex k	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services




Authorised Signatory
 L. SUDHAPRIYA
 Technical Manager

*****End of Report*****

Page 2 of 2

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201A

TEST REPORT

ULR TC606023000008399F

Report Number: GLCS/TR/8664/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Bore Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8664	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°11'11.92"N 77°57'54.75"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.36
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	909
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	536
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, DL- Detection Limit.



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 3

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202 A

TEST REPORT

ULR TC606023000008399F

Report Number: GLCS/TR/8664/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	148
9	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	193.9
10	Calcium as Ca	IS 3025 PART 40	mg/l	48.5
11	Magnesium as Mg	IS 3025 PART 46	mg/l	17.6
12	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	181.3
13	Sulphate as SO ₄ ⁻	IS 3025 PART 24	mg/l	36.6
14	Iron as Fe	IS 3025 PART 53	mg/l	0.15
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.18
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, DL- Detection Limit

For Global Lab and Consultancy Services



Authorised Signatory

L. SUDHAPRIYA

Technical Manager

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203 A

TEST REPORT

ULR TC606023000008399F

Report Number: GLCS/TR/8664/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	250 ml
Sample Name	Bore Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8664	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	08.12.2023
		Location Coordinates	11°11'11.92"N 77°57'54.75"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	<i>Escherichia coli</i>	IS 15185	Per 100ml	Absent



For Global Lab and Consultancy Services


Authorised Signatory

L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

Page 3 of 3

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TEST REPORT

Report Number: GLCS/TR/8664/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Bore Well Water -1	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Near Project Area	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8664	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°11'11.92"N 77°57'54.75"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH ₃)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note: BDL - Below Detection Limit, DL - Detection Limit;

For Global Lab and Consultancy Services



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(Signature)
Authorised Signatory

L. SUDHAPRIYA
Technical Manager

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205 A

TEST REPORT

Report Number: GLCS/TR/8664/2023-24(2)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Anionic Detergents	IS 13428 Annex k	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services




Authorised Signatory
 L. SUDHAPRIYA
 Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

ULR TC606023000008400F

Report Number: GLCS/TR/8665/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Bore Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Kabilarmalai	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8665	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°8'46.57"N 77°56'43.20"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.49
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	928
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	547
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, DL- Detection Limit.



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

TEST REPORT

ULR TC606023000008400F

Report Number: GLCS/TR/8665/2023-24(1)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	156
9	Total Hardness as CaCO ₃	IS 3025 PART 21	mg/l	197.9
10	Calcium as Ca	IS 3025 PART 40	mg/l	56.6
11	Magnesium as Mg	IS 3025 PART 46	mg/l	13.7
12	Chloride as Cl ⁻	IS 3025 PART 32	mg/l	189.2
13	Sulphate as SO ₄ ⁻	IS 3025 PART 24	mg/l	34.7
14	Iron as Fe	IS 3025 PART 53	mg/l	0.15
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl ₂	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.17
18	Nitrate as NO ₃	IS 3025 PART 34	mg/l	BDL(DL:2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, DL- Detection Limit



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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208 A

TEST REPORT

ULR TC606023000008400F

Report Number: GLCS/TR/8665/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasingapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	250 ml
Sample Name	Bore Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/M/SOP-05
Location	Kabilarmalai	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8665	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	08.12.2023
		Location Coordinates	11°8'46.57"N 77°56'43.20"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	<i>Escherichia coli</i>	IS 15185	Per 100ml	Absent



For Global Lab and Consultancy Services


Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

Page 3 of 3

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TEST REPORT

Report Number: GLCS/TR/8665/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Good
TRF No.	4049	Sample Quantity	2liters
Sample Name	Bore Well Water -2	Sampled by	Laboratory
Sample Description	Liquid	Sampling Method	GLCS/SOP/W/028
Location	Kabilarmalai	Sample Receipt Date	07.12.2023
Sample Code	GLCS / 8665	Date of Analysis	07.12.2023
Sample Receipt Date	05.12.2023	Date of Completion	27.12.2023
		Location Coordinates	11°8'46.57"N 77°56'43.20"E

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH ₃)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.016
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note: BDL - Below Detection Limit, DL - Detection Limit;

For Global Lab and Consultancy Services



Page 1 of 2


Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

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210 A

TEST REPORT

Report Number: GLCS/TR/8665/2023-24(2)

Report Date: 28.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	0.039
10	Anionic Detergents	IS 13428 Annex k	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
13	Chromium as Cr ⁶⁺	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note: BDL – Below Detection Limit, DL – Detection Limit;

For Global Lab and Consultancy Services



Authorised Signatory

L. SUDHAPRIYA

Technical Manager

*****End of Report*****

Page 2 of 2

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211 A

TEST REPORT

ULR TC606023000008401F

Report Number: GLCS/TR/8666/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -1	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8666	Sample Receipt Date	07.12.2023
Location Name	Core Zone	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°10'55.41"N 77°58'14.98"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	1.47
2	pH	IS 2720 PART 26	-	5.01
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	210
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	18.6
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.02
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	2.0

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 2

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TEST REPORT

ULR TC606023000008401F

Report Number: GLCS/TR/8666/2023-24(1)

Report Date: 28.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	1.2
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	9.1
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	18.2
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.01
11	Sand	GLCS/SOP/S/015	%	46.46
12	Slit	GLCS/SOP/S/015	%	44.51
13	Clay	GLCS/SOP/S/015	%	15.03
14	Water Holding Capacity	GLCS/SOP/S/016	%	31.0
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	137.9
16	Chloride	GLCS/SOP/S/004	meq/l	8.1



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8666/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -1	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8666	Sample Receipt Date	07.12.2023
Location Name	Core Zone	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°10'55.41"N 77°58'14.98"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	34
2	Manganese as Mn	USEPA Method	mg/kg	9.76
3	Zinc as Zn	USEPA Method	mg/kg	27.82
4	Cadmium as Cd	USEPA Method	mg/kg	11.47
5	Chromium as Cr 6+	USEPA Method	mg/kg	21.72
6	Copper as Cu	USEPA Method	mg/kg	4.15
7	Lead as Pb	USEPA Method	mg/kg	0.73
8	Iron as Fe	USEPA Method	mg/kg	1.95
9	Organic Carbon	GLCS/SOP/S/003	%	0.85
10	Boron as B	USEPA Method	mg/kg	3.66



For Global Lab and Consultancy Services

*****End of Report*****

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Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

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214 A

TEST REPORT

ULR TC606023000008402F

Report Number: GLCS/TR/8667/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -2	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8667	Sample Receipt Date	07.12.2023
Location Name	Surampalayam	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°11'16.41"N 77°57'49.84"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.06
2	pH	IS 2720 PART 26	-	6.02
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	230
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	19.4
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.19
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	2.2



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 2

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TEST REPORT

ULR TC606023000008402F

Report Number: GLCS/TR/8667/2023-24(1)

Report Date: 28.12.2023

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	1.4
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	13.3
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.1
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.06
11	Sand	GLCS/SOP/S/015	%	40.22
12	Slit	GLCS/SOP/S/015	%	46.63
13	Clay	GLCS/SOP/S/015	%	13.15
14	Water Holding Capacity	GLCS/SOP/S/016	%	35.0
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	200.0
16	Chloride	GLCS/SOP/S/004	meq/l	9.2



For Global Lab and Consultancy Services


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8667/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient - Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -2	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8667	Sample Receipt Date	07.12.2023
Location Name	Surampalayam	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°11'16.41"N 77°57'49.84"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	37.0
2	Manganese as Mn	USEPA Method	mg/kg	11.03
3	Zinc as Zn	USEPA Method	mg/kg	23.11
4	Cadmium as Cd	USEPA Method	mg/kg	14.36
5	Chromium as Cr 6+	USEPA Method	mg/kg	13.74
6	Copper as Cu	USEPA Method	mg/kg	6.45
7	Lead as Pb	USEPA Method	mg/kg	0.62
8	Iron as Fe	USEPA Method	mg/kg	17.28
9	Organic Carbon	GLCS/SOP/S/003	%	1.19
10	Boron as B	USEPA Method	mg/kg	2.71

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*****End of Report*****

Page 1 of 1


Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

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TEST REPORT

ULR TC606023000008403F

Report Number: GLCS/TR/8668/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -3	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8668	Sample Receipt Date	07.12.2023
Location Name	Kabilarmalai	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°8'33.75"N 77°56'46.16"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.19
2	pH	IS 2720 PART 26	-	6.11
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	290
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	17.3
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.51
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	3.0

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 2

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TEST REPORT

ULR TC606023000008403F

Report Number: GLCS/TR/8668/2023-24(1)

Report Date: 28.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	1.8
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	13.9
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	22.4
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.21
11	Sand	GLCS/SOP/S/015	%	32.21
12	Slit	GLCS/SOP/S/015	%	47.25
13	Clay	GLCS/SOP/S/015	%	20.54
14	Water Holding Capacity	GLCS/SOP/S/016	%	40.8
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	213.2
16	Chloride	GLCS/SOP/S/004	meq/l	10.1



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L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8668/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -3	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8668	Sample Receipt Date	07.12.2023
Location Name	Kabilarmalai	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°8'33.75"N 77°56'46.16"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	43
2	Manganese as Mn	USEPA Method	mg/kg	11.80
3	Zinc as Zn	USEPA Method	mg/kg	26.50
4	Cadmium as Cd	USEPA Method	mg/kg	13.97
5	Chromium as Cr 6+	USEPA Method	mg/kg	21.44
6	Copper as Cu	USEPA Method	mg/kg	14.21
7	Lead as Pb	USEPA Method	mg/kg	1.20
8	Iron as Fe	USEPA Method	mg/kg	26.98
9	Organic Carbon	GLCS/SOP/S/003	%	1.27
10	Boron as B	USEPA Method	mg/kg	BDL (DL:0.5)

Note: BDL – Below Detection Limit, DL – Detection Limit;

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*****End of Report*****

Page 1 of 1

(Signature)
Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

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TEST REPORT

ULR TC606023000008404F

Report Number: GLCS/TR/8669/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nandanthal Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -4	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8669	Sample Receipt Date	07.12.2023
Location Name	Mel Sattambar	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°13'55.38"N 77°59'13.38"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	1.47
2	pH	IS 2720 PART 26	-	5.92
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	220
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	17.3
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.41
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	1.6

For Global Lab and Consultancy Services




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L. SUDHAPRIYA
Technical Manager

Page 1 of 2

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TEST REPORT

ULR TC606023000008404F

Report Number: GLCS/TR/8669/2023-24(1)

Report Date: 28.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	0.8
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	15.5
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.9
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.05
11	Sand	GLCS/SOP/S/015	%	31.11
12	Slit	GLCS/SOP/S/015	%	45.78
13	Clay	GLCS/SOP/S/015	%	23.11
14	Water Holding Capacity	GLCS/SOP/S/016	%	39.0
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	163.0
16	Chloride	GLCS/SOP/S/004	meq/l	9.3



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Authorised Signatory
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Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8669/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient - Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -4	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8669	Sample Receipt Date	07.12.2023
Location Name	Mel Sattambar	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°13'55.38"N 77°59'13.38"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	42.0
2	Manganese as Mn	USEPA Method	mg/kg	10.10
3	Zinc as Zn	USEPA Method	mg/kg	25.59
4	Cadmium as Cd	USEPA Method	mg/kg	11.51
5	Chromium as Cr 6+	USEPA Method	mg/kg	23.72
6	Copper as Cu	USEPA Method	mg/kg	10.33
7	Lead as Pb	USEPA Method	mg/kg	0.70
8	Iron as Fe	USEPA Method	mg/kg	27.94
9	Organic Carbon	GLCS/SOP/S/003	%	0.85
10	Boron as B	USEPA Method	mg/kg	2.35

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*****End of Report*****

Page 1 of 1


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TEST REPORT

ULR TC606023000008405F

Report Number: GLCS/TR/8670/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -5	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8670	Sample Receipt Date	07.12.2023
Location Name	Paramathi	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°9'10.56"N 78°1'1.20"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.10
2	pH	IS 2720 PART 26	-	5.04
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	190
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	17.2
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.13
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	1.4

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

Page 1 of 2

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TEST REPORT

ULR TC606023000008405F

Report Number: GLCS/TR/8670/2023-24(1)

Report Date: 28.12.2023

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	0.6
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	15.1
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	18.4
10	Bulk Density	GLCS/SOP/S/017	g/cc	0.90
11	Sand	GLCS/SOP/S/015	%	32.35
12	Slit	GLCS/SOP/S/015	%	44.10
13	Clay	GLCS/SOP/S/015	%	23.55
14	Water Holding Capacity	GLCS/SOP/S/016	%	37.2
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	137.9
16	Chloride	GLCS/SOP/S/004	meq/l	8.7



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Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8670/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem - 636 108.		Site Address: Lease Area - 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient - Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -5	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8670	Sample Receipt Date	07.12.2023
Location Name	Paramathi	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°9'10.56"N 78°1'1.20"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	39.0
2	Manganese as Mn	USEPA Method	mg/kg	9.75
3	Zinc as Zn	USEPA Method	mg/kg	24.72
4	Cadmium as Cd	USEPA Method	mg/kg	11.11
5	Chromium as Cr 6+	USEPA Method	mg/kg	22.90
6	Copper as Cu	USEPA Method	mg/kg	9.98
7	Lead as Pb	USEPA Method	mg/kg	0.68
8	Iron as Fe	USEPA Method	mg/kg	26.99
9	Organic Carbon	GLCS/SOP/S/003	%	1.22
10	Boron as B	USEPA Method	mg/kg	2.27

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*****End of Report*****

Page 1 of 1

 Authorised Signatory

 L. SUDHAPRIYA
 Technical Manager

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TEST REPORT

ULR TC606023000008406F

Report Number: GLCS/TR/8671/2023-24(1)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -6	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8671	Sample Receipt Date	07.12.2023
Location Name	Thidumal	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°11'42.65"N 77°55'20.98"E

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.50
2	pH	IS 2720 PART 26	-	6.22
3	Specific Electrical Conductivity	IS 14767 : 2000	µS/cm	310
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	17.1
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.07
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	3.2

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

Page 1 of 2

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227A

TEST REPORT

ULR TC606023000008406F

Report Number: GLCS/TR/8671/2023-24(1)

Report Date: 28.12.2023

SI. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	1.8
8	Sulphate as SO ₄	GLCS/SOP/S/009	mg/100g	17.0
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	22.46
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.19
11	Sand	GLCS/SOP/S/015	%	32.24
12	Slit	GLCS/SOP/S/015	%	47.55
13	Clay	GLCS/SOP/S/015	%	20.21
14	Water Holding Capacity	GLCS/SOP/S/016	%	41.0
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	238.3
16	Chloride	GLCS/SOP/S/004	meq/l	10.6

For Global Lab and Consultancy Services




Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

Report Number: GLCS/TR/8671/2023-24(2)

Report Date: 28.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.	
Attention	-	Sample Receipt Condition	Ambient – Good
Customer Ref No	4049	Sample Quantity	2 kg
Sample Name	Soil -6	Sampled by	Laboratory
Sample Description	Powder	Sampling Method	GLCS/SOP/S/014
Sample Code	GLCS / 8671	Sample Receipt Date	07.12.2023
Location Name	Thidumal	Date of Analysis	07.12.2023
Sampling Date	05.12.2023	Date of Completion	28.12.2023
		Location Co-ordinates	11°11'42.65"N 77°55'20.98"E

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permeability	By Permeameter	%	43
2	Manganese as Mn	USEPA Method	mg/kg	10.67
3	Zinc as Zn	USEPA Method	mg/kg	26.78
4	Cadmium as Cd	USEPA Method	mg/kg	12.56
5	Chromium as Cr 6+	USEPA Method	mg/kg	17.54
6	Copper as Cu	USEPA Method	mg/kg	1.66
7	Lead as Pb	USEPA Method	mg/kg	BDL (DL:0.5)
8	Iron as Fe	USEPA Method	mg/kg	22.99
9	Organic Carbon	GLCS/SOP/S/003	%	1.45
10	Boron as B	USEPA Method	mg/kg	1.19

Note: BDL – Below Detection Limit, DL – Detection Limit;

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*****End of Report*****

Page 1 of 1


Authorised Signatory
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 Technical Manager

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TEST REPORT ULR-TC606023000008497F

Report Number: GLCS/TR/8653/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8653	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN1 - Core Zone	Location Co-ordinates	11°10'56.16"N 77°58'14.54"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.35	30.9	36.7	34.70
2	7.35	31.6	39.8	37.40
3	8.35	30.4	38.5	36.12
4	9.35	32.5	37.7	35.84
5	10.35	33.3	38.9	36.95
6	11.35	35.5	42.5	40.28
7	12.35	36.6	45.5	43.02
8	13.35	35.4	46.9	44.19
9	14.35	35.1	44.8	42.23
10	15.35	34.9	45.8	43.13
11	16.35	35.6	46.1	43.46
12	17.35	34.2	45.7	42.99
13	18.35	31.7	37.9	35.82
14	19.35	30.5	36.4	34.38
15	20.35	32.5	35.8	34.46



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Page 1 of 2


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Technical Manager

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TEST REPORT

ULR-TC606023000008497F

Report Number: GLCS/TR/8653/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8653	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN1 - Core Zone	Location Co-ordinates	11°10'56.16"N 77°58'14.54"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.35	31.5	38.5	36.28
17	22.35	30.9	37.5	35.35
18	23.35	31.4	36.9	34.97
19	0.35	32.5	37.2	35.46
20	1.35	30.7	36.9	34.82
21	2.35	31.4	36.1	34.36
22	3.35	32.5	38.8	36.70
23	4.35	30.7	36.9	34.82
24	5.35	31.1	37.4	35.30
Day Mean dB(A)				38.83
Night Mean dB(A)				35.22



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L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT

ULR-TC606023000008498F

Report Number: GLCS/TR/8654/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8654	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN2 – Near Project Area	Location Co-ordinates	11°10'48.77"N 77°58'22.95"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.50	36.9	47.1	44.49
2	7.50	35.5	45.9	43.27
3	8.50	32.5	38.5	36.46
4	9.50	41.5	49.9	47.48
5	10.50	43.2	52.6	50.06
6	11.50	44.9	55.1	52.49
7	12.50	43.6	55.2	52.48
8	13.50	44.2	53.9	51.33
9	14.50	43.9	51.4	49.10
10	15.50	40.2	50.6	47.97
11	16.50	31.1	36.5	34.59
12	17.50	30.9	35.5	33.78
13	18.50	30.7	36.1	34.19
14	19.50	32.5	37.4	35.61
15	20.50	31.9	36.9	35.08



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Page 1 of 2


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TEST REPORT
ULR-TC606023000008498F

Report Number: GLCS/TR/8654/2023-24

Report Date: 30.12.2023

Issued To: V.Puniitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8654	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN2 – Near Project Area	Location Co-ordinates	11°10'48.77"N 77°58'22.95"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.50	30.4	35.5	33.66
17	22.50	30.5	36.3	34.30
18	23.50	30.7	37.1	34.99
19	0.50	31.2	39.5	37.09
20	1.50	34.1	40.2	38.14
21	2.50	35.9	41.6	39.62
22	3.50	37.5	43.6	41.54
23	4.50	39.1	45.1	43.06
24	5.50	38.5	49.2	46.54
Day Mean dB(A)				43.43
Night Mean dB(A)				37.50

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*****End of Report*****

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Technical Manager

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TEST REPORT ULR-TC606023000008499F

Report Number: GLCS/TR/8655/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8655	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN3 – Surampalayam	Location Co-ordinates	11°11'19.33"N 77°57'56.45"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.20	31.4	38.5	36.26
2	7.20	33.6	37.9	36.26
3	8.20	35.5	41.5	39.46
4	9.20	40.2	51.4	48.71
5	10.20	37.8	52.5	49.63
6	11.20	40.5	52.6	49.85
7	12.20	41.9	53.6	50.87
8	13.20	38.5	50.9	48.13
9	14.20	37.4	47.5	44.89
10	15.20	36.2	51.1	48.23
11	16.20	40.1	52.9	50.11
12	17.20	41.5	54.1	51.32
13	18.20	43.6	55.9	53.14
14	19.20	44.8	56.6	53.87
15	20.20	33.6	45.2	42.48



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Page 1 of 2


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TEST REPORT
ULR-TC606023000008499F

Report Number: GLCS/TR/8655/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8655	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN3 – Surampalayam	Location Co-ordinates	11°11'19.33"N 77°57'56.45"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.20	30.5	40.1	37.54
17	22.20	31.4	37.5	35.44
18	23.20	30.9	36.9	34.86
19	0.20	30.7	37.4	35.23
20	1.20	31.2	38.9	36.57
21	2.20	30.9	36.1	34.24
22	3.20	30.2	35.5	33.61
23	4.20	31.4	36.7	34.81
24	5.20	30.9	37.1	35.02
			Day Mean dB(A)	45.66
			Night Mean dB(A)	34.97



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L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT
ULR-TC606023000008500F

Report Number: GLCS/TR/8656/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.	Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.
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Attention	-	Sampling Condition	Good - Active
TRF No	4049	Sampled by	Laboratory
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014
Sample Description	Ambient Noise	Sample Code	GLCS/8656
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023
		Date of Completion	27.12.2023

Location Name	AN4 – Kabilarmalai	Location Co-ordinates	11°8'34.63"N 77°56'45.84"E
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S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.45	32.6	45.9	43.09
2	7.45	33.9	44.7	42.04
3	8.45	35.5	41.2	39.22
4	9.45	33.6	39.1	37.17
5	10.45	31.7	36.6	34.81
6	11.45	35.8	49.2	46.38
7	12.45	43.5	52.1	49.65
8	13.45	42.9	51.6	49.14
9	14.45	41.6	52.6	49.92
10	15.45	39.9	49.5	46.94
11	16.45	41.5	51.9	49.27
12	17.45	40.5	52.6	49.85
13	18.45	38.9	55.8	52.88
14	19.45	32.9	38.9	36.86
15	20.45	30.8	36.6	34.60



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Page 1 of 2

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TEST REPORT ULR-TC606023000008500F

Report Number: GLCS/TR/8656/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Aitur Salem – 636 108.	Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.
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Attention	-	Sampling Condition	Good - Active
TRF No	4049	Sampled by	Laboratory
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014
Sample Description	Ambient Noise	Sample Code	GLCS/8656
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023
Sampling Date	04.12.2023 - 05.12.2023	Date of Analysis	07.12.2023
		Date of Completion	27.12.2023
Location Name	AN4 – Kabilarmalai	Location Co-ordinates	11°8'34.63"N 77°56'45.84"E

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.45	31.5	38.5	36.28
17	22.45	30.6	37.4	35.21
18	23.45	31.4	39.5	37.12
19	0.45	30.9	36.6	34.62
20	1.45	30.6	37.8	35.55
21	2.45	32.4	39.7	37.43
22	3.45	31.1	38.5	36.22
23	4.45	32.3	40.5	38.10
24	5.45	33.6	45.5	42.76
		Day Mean dB(A)		43.14
		Night Mean dB(A)		37.13

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Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT ULR-TC606023000008501F

Report Number: GLCS/TR/8657/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Altur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8657	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN5 – Mel Sattambur	Location Co-ordinates	11°13'55.74"N 77°59'13.03"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.15	36.6	42.5	40.48
2	7.15	36.5	43.6	41.36
3	8.15	35.5	46.7	44.01
4	9.15	36.1	48.5	45.73
5	10.15	40.9	50.9	48.30
6	11.15	39.5	48.5	46.00
7	12.15	38.4	47.2	44.73
8	13.15	40.1	49.5	46.96
9	14.15	37.5	46.3	43.83
10	15.15	36.9	45.5	43.05
11	16.15	35.5	44.4	41.92
12	17.15	34.7	47.2	44.43
13	18.15	33.6	44.3	41.64
14	19.15	34.7	41.7	39.48
15	20.15	33.5	41.4	39.04



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L. SUDHAPRIYA
Technical Manager

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TEST REPORT

ULR-TC606023000008501F

Report Number: GLCS/TR/3657/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8657	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN5 – Mel Sattambur	Location Co-ordinates	11°13'55.74"N 77°59'13.03"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.15	33.1	39.5	37.39
17	22.15	32.5	37.8	35.91
18	23.15	31.7	36.6	34.81
19	0.15	30.8	35.8	33.98
20	1.15	32.6	38.1	36.17
21	2.15	31.4	37.9	35.77
22	3.15	32.7	38.6	36.58
23	4.15	33.6	37.8	36.19
24	5.15	34.7	39.1	37.43
		Day Mean dB(A)		46.21
		Night Mean dB(A)		36.26



For Global Lab and Consultancy Services

(Signature)
Authorised Signatory
L. SUDHAPRIYA
 Technical Manager

*****End of Report*****

Page 2 of 2

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TEST REPORT
ULR-TC606023000008502F

Report Number: GLCS/TR/8658/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8658	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN6 – Paramathi	Location Co-ordinates	11°9'11.03"N 78°1'1.95"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.45	35.5	43.3	40.96
2	7.45	36.1	45.6	43.05
3	8.45	37.4	45.5	43.12
4	9.45	38.5	51.1	48.32
5	10.45	40.5	58.9	55.95
6	11.45	42.9	56.2	53.39
7	12.45	43.5	55.8	53.04
8	13.45	45.5	54.7	52.18
9	14.45	44.7	53.6	51.12
10	15.45	43.6	55.2	52.48
11	16.45	38.5	47.2	44.74
12	17.45	37.9	49.1	46.41
13	18.45	35.1	46.6	43.89
14	19.45	34.9	46.3	43.59
15	20.45	33.6	44.4	41.46



For Global Lab and Consultancy Services

Page 1 of 2

L. Sudhapriya
Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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TEST REPORT
ULR-TC606023000008502F

Report Number: GLCS/TR/8658/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area -- 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8658	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN6 – Paramathi	Location Co-ordinates	11°9'11.03"N 78°1'1.95"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.45	32.8	40.5	38.17
17	22.45	31.9	39.5	37.19
18	23.45	30.5	38.1	35.79
19	0.45	31.4	37.4	35.36
20	1.45	30.6	36.2	34.25
21	2.45	30.4	36.1	34.12
22	3.45	31.6	37.4	35.40
23	4.45	31.2	36.3	34.46
24	5.45	33.6	39.5	37.48
		Day Mean dB(A)		46.99
		Night Mean dB(A)		35.80



For Global Lab and Consultancy Services

L. Sudhapriya
Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****
Page 2 of 2

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TEST REPORT
ULR-TC606023000008503F

Report Number: GLCS/TR/8659/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No.109, Narasinghapuram Post, Nethaji Nagar, Attur Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8659	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN7 – Thidumal	Location Co-ordinates	11°11'42.20"N 77°55'22.94"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	6.15	36.2	44.5	42.09
2	7.15	34.4	43.9	41.35
3	8.15	32.1	41.9	39.32
4	9.15	40.6	48.5	46.14
5	10.15	41.8	51.1	48.57
6	11.15	40.6	53.5	50.71
7	12.15	38.5	46.9	44.48
8	13.15	41.5	49.5	47.13
9	14.15	42.8	51.1	48.69
10	15.15	43.6	54.4	51.74
11	16.15	41.2	52.9	50.17
12	17.15	41.5	50.7	48.18
13	18.15	39.8	47.9	45.52
14	19.15	30.9	39.5	37.05
15	20.15	31.4	38.5	36.26



For Global Lab and Consultancy Services

Page 1 of 2


Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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TEST REPORT

ULR-TC606023000008503F

Report Number: GLCS/TR/8659/2023-24

Report Date: 30.12.2023

Issued To: V.Punitha, W/o. Velumani, No. 109, Narasinghapuram Post, Nethaji Nagar, Aituru Salem – 636 108.		Site Address: Lease Area – 2.86.0 Ha. S.F.No : 482, Nadanthai Village, Paramathi Velur Taluk, Namakkal District.		
Attention	-	Sampling Condition	Good - Active	
TRF No	4049	Sampled by	Laboratory	
Sample Name	Noise Level Monitoring	Sampling Method	GLCS/SOP/N/014	
Sample Description	Ambient Noise	Sample Code	GLCS/8659	
Sampling Time	Every 60 minutes	Sample Receipt Date	07.12.2023	
Sampling Date	05.12.2023 - 06.12.2023	Date of Analysis	07.12.2023	
		Date of Completion	27.12.2023	
Location Name	AN7 – Thidumal	Location Co-ordinates	11°11'42.20"N 77°55'22.94"E	
S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
16	21.15	30.5	36.6	34.38
17	22.15	31.4	37.4	34.74
18	23.15	30.9	38.5	35.27
19	0.15	32.4	37.1	36.44
20	1.15	30.9	38.5	35.02
21	2.15	31.1	39.6	36.22
22	3.15	31.5	38.1	37.22
23	4.15	32.5	39.5	36.15
24	5.15	33.1	44.5	37.39
			Day Mean dB(A)	43.91
			Night Mean dB(A)	35.87



For Global Lab and Consultancy Services

(Signature)
Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

Page 2 of 2

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LABORATORY | CONSULTANCY | SUSTAINABILITY

S.F.No.92/3A2, Geetha Nagar,

Alagapuram Pudur,

Salem - 636 016. Tamil Nadu.

Phone: 0427 - 2970989 / +91 70944 53636

E-Mail: lab@glcs.in

Web: www.glcs.in

SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ1 – Core Zone
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5755,5762,6178,6185,6526, 6533, 6757,6764,7125,7132,7434, 7441,7665,7672,7968,7975,8355,8362,8639,8646,9085,9092,9384,9391,9685,9692		
Location Coordinates	11°10'54.60"N 77°58'10.05"E		
Report Date	08.01.2024		

Date	Period, hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.00am - 7.00am	41.1	20.8	6.8	16.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.05am - 7.05am	41.6	21.2	6.2	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.00am - 7.00am	42.8	22.5	4.1	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.10am - 7.10am	42.1	21.3	4.9	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.10am - 7.10am	40.2	19.6	4.4	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	7.20am - 7.20am	40.4	20.0	5.4	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.00am - 7.00am	41.6	19.6	5.6	18.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.10am - 7.10am	40.7	22.1	6.4	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.00am - 7.00am	40.3	19.6	7.0	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	7.10am - 7.10am	40.8	20.4	4.6	19.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.00am - 7.00am	42.3	22.5	BDL(DL:4)	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.05am - 7.05am	41.6	21.7	6.2	19.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.00am - 7.00am	42.8	21.6	4.9	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.10am - 7.10am	40.9	19.6	5.9	17.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.00am - 7.00am	42.1	22.0	6.9	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.10am - 7.10am	41.8	20.8	5.8	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.00am - 7.00am	44.9	23.3	4.2	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.10am - 7.10am	43.1	17.9	5.2	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	7.30am-7.30am	44.0	24.2	4.9	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	7.40am - 7.40am	43.7	22.9	7.4	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.00am - 7.00am	42.9	22.1	BDL(DL:4)	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.05am - 7.05am	41.7	21.2	6.3	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	7.15am - 7.15am	42.4	22.9	BDL(DL:4)	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	7.25am - 7.25am	43.2	23.3	7.1	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.00am - 7.00am	42.9	21.2	7.1	23.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.10am - 7.10am	43.9	22.5	4.9	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by





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Web: www.glcs.in

SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ1 – Core Zone
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5755,5762,6178,6185,6526, 6533, 6757,6764,7125,7132,7434, 7441,7665,7672,7968,7975,8355,8362,8639,8646,9085,9092,9384,9391,9685,9692		
Location Coordinates	11°10'54.60"N 77°58'10.05"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)	
02.10.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	7.05am - 7.05am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	7.05am - 7.05am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	7.30am-7.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	7.05am - 7.05am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	7.15am - 7.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	7.00am - 7.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	7.10am - 7.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



*****End of Report*****
Page 2 of 2

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L. SUDHAPRIYA
Technical Manager



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S.F.No.92/3A2, Geetha Nagar,

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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasingapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ2 – Near Project Area
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5756,5763,6179,6186,6527, 6534,6758, 6765,7126,7133, 7435,7442,7666,7673, 7969,7976,8356,8363,8640,8647,9086,9093,9385,9392,9686,9693		
Location Coordinates	11° 10' 49.17" N 77° 58' 22.24" E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.15am - 7.15am	41.6	21.6	6.5	19.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.20am - 7.20am	41.4	21.7	6.2	18.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.20am - 7.20am	43.7	23.7	7.3	18.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.25am - 7.25am	41.8	22.5	6.3	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.30am - 7.30am	40.6	20.4	BDL(DL:4)	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	7.35am - 7.35am	41.3	20.4	5.7	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.20am - 7.20am	39.8	18.3	6.2	18.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.25am - 7.25am	42.6	19.8	5.1	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.20am - 7.20am	40.7	18.7	5.2	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	7.25am - 7.25am	39.2	17.9	4.4	18.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.15am - 7.15am	41.7	21.2	BDL(DL:4)	22.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.20am - 7.20am	40.8	20.4	5.4	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.20am - 7.20am	40.4	19.6	BDL(DL:4)	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.25am - 7.25am	39.2	17.9	6.4	18.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.20am - 7.20am	41.9	21.2	5.2	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.25am - 7.25am	40.4	19.6	BDL(DL:4)	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.15am - 7.15am	43.1	22.9	6.1	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.30am - 7.30am	42.2	21.2	6.1	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	7.45am - 7.45am	43.7	22.9	5.5	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	7.55am - 7.55am	42.2	22.0	7.1	19.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.15am - 7.15am	41.1	21.6	4.9	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.20am - 7.20am	40.3	20.4	5.7	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	7.45am - 7.45am	41.6	20.8	BDL(DL:4)	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	7.55am - 7.55am	41.4	20.8	4.7	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.20am - 7.20am	41.3	20.4	4.9	22.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.25am - 7.25am	40.2	20.4	5.8	22.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ2 – Near Project Area
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5756,5763,6179,6186,6527, 6534,6758, 6765,7126,7133, 7435,7442,7666,7673, 7969,7976,8356,8363,8640,8647,9086,9093,9385,9392,9686,9693		
Location Coordinates	11°10'49.17"N 77°58'22.24"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)	
02.10.2023	7.15am - 7.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	7.30am - 7.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	7.35am - 7.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	7.15am - 7.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	7.15am - 7.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	7.30am - 7.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	7.45am - 7.45am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	7.55am - 7.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	7.15am - 7.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	7.45am - 7.45am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	7.55am - 7.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	7.20am - 7.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	7.25am - 7.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



*****End of Report*****

Page 2 of 2

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L. SUDHAPRIYA
Technical Manager

SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ3 - Surampalayam
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5757,5764,6180,6187,6528,6535,6759,6766,7127,7134,7436,7443, 7667, 7674,7970,7977,8357,8364,8641,8648,9087,9094,9386,9393,9687,9694		
Location Coordinates	11° 11' 19.29"N 77° 57' 55.72"E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.35am - 7.35am	42.2	21.2	7.1	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.40am - 7.40am	42.4	21.8	6.9	18.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.40am - 7.40am	40.9	22.1	7.1	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.50am - 7.50am	40.9	21.4	4.4	18.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.55am - 7.55am	41.7	20.8	6.2	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	8.15am - 8.15am	41.4	20.8	4.1	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.40am - 7.40am	40.1	19.6	4.6	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.50am - 7.50am	43.4	20.4	6.7	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.40am - 7.40am	41.1	20.0	4.6	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	7.50am - 7.50am	39.9	17.5	7.0	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.35am - 7.35am	40.8	20.4	6.1	23.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.40am - 7.40am	39.6	19.6	7.7	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.40am - 7.40am	41.2	19.2	BDL(DL:4)	19.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.50am - 7.50am	40.1	19.2	7.5	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.40am - 7.40am	40.2	20.4	6.3	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.50am - 7.50am	39.3	18.3	4.9	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.40am - 7.40am	42.7	21.6	BDL(DL:4)	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.50am - 7.50am	41.6	20.4	4.7	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	8.15am - 8.15am	42.3	21.2	4.2	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	8.25am - 8.25am	41.9	20.8	6.6	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.35am - 7.35am	40.3	20.4	5.2	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.40am - 7.40am	39.7	18.7	4.1	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	8.10am - 8.10am	40.1	20.0	6.3	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	8.20am - 8.20am	40.5	19.6	BDL(DL:4)	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.40am - 7.40am	40.8	19.6	5.2	22.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.50am - 7.50am	39.7	16.7	5.2	22.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthal village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ3 - Surampalayam
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5757,5764,6180,6187,6528,6535,6759,6766,7127,7134,7436,7443, 7667, 7674,7970,7977,8357,8364,8641,8648,9087,9094,9386,9393,9687,9694		
Location Coordinates	11°11'19.29"N 77°57'55.72"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
02.10.2023	7.35am - 7.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
03.10.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
09.10.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
10.10.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
16.10.2023	7.55am - 7.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
17.10.2023	8.15am - 8.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
23.10.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
24.10.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
30.10.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
31.10.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
06.11.2023	7.35am - 7.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
07.11.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
13.11.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
14.11.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
20.11.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
21.11.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
27.11.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
28.11.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
04.12.2023	8.15am - 8.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
05.12.2023	8.25am - 8.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
11.12.2023	7.35am - 7.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
12.12.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
18.12.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
19.12.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
25.12.2023	7.40am - 7.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
26.12.2023	7.50am - 7.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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*****End of Report*****

Page 2 of 2

L. SUDHAPRIYA
Technical Manager

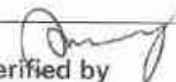
SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ4 - Kabilarmalai
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5758,5765,6181,6188,6529,6536,6760,6767, 7128,7135,7437,7444,7668,7675,7971,7978, 8358,8365,8642,8649,9088, 9095,9387,9394,9688, 9695		
Location Coordinates	11° 8' 35.01" N 77° 56' 46.28" E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.05am - 8.05am	42.9	21.7	6.3	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	8.10am - 8.10am	43.9	20.0	5.2	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	8.10am - 8.10am	41.4	21.2	7.9	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	8.20am - 8.20am	42.2	22.5	6.0	18.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	8.10am - 8.10am	41.1	20.0	4.9	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	8.35am - 8.35am	42.3	20.0	5.9	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	8.10am - 8.10am	42.6	20.4	4.1	19.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	8.20am - 8.20am	41.0	19.6	5.4	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	8.10am - 8.10am	40.8	20.4	6.0	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.20am - 8.20am	38.6	17.9	BDL(DL:4)	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.05am - 8.05am	42.3	22.1	5.4	23.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	8.10am - 8.10am	41.1	19.2	4.6	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	8.10am - 8.10am	40.6	20.0	7.2	22.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	8.20am - 8.20am	39.6	18.3	BDL(DL:4)	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	8.10am - 8.10am	40.6	19.6	7.4	19.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	8.20am - 8.20am	38.9	17.5	5.5	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	8.00am - 8.00am	41.6	20.4	6.9	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	8.10am - 8.10am	40.3	20.4	6.4	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	8.40am - 8.40am	41.7	20.8	5.2	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	8.50am - 8.50am	40.1	20.0	6.3	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.15am - 8.15am	39.6	19.5	6.6	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	8.10am - 8.10am	38.9	17.5	4.9	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	8.40am - 8.40am	39.2	19.6	6.8	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	8.50am - 8.50am	38.8	17.5	5.7	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	8.10am - 8.10am	39.3	18.3	4.7	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	8.20am - 8.20am	38.0	17.9	6.3	23.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

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LABORATORY | CONSULTANCY | SUSTAINABILITY

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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ4 - Kabilarmalai
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5758,5765,6181,6188,6529,6536,6760,6767, 7128,7135,7437,7444,7668,7675,7971,7978, 8358,8365,8642,8649,9088, 9095,9387,9394,9688, 9695		
Location Coordinates	11°8'35.01"N 77°56'46.28"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
02.10.2023	8.05am - 8.05am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
03.10.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
09.10.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
10.10.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
16.10.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
17.10.2023	8.35am - 8.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
23.10.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
24.10.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
30.10.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
31.10.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
06.11.2023	8.05am - 8.05am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
07.11.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
13.11.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
14.11.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
20.11.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
21.11.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
27.11.2023	8.00am - 8.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
28.11.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
04.12.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
05.12.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
11.12.2023	8.15am - 8.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
12.12.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
18.12.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
19.12.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
25.12.2023	8.10am - 8.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
26.12.2023	8.20am - 8.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



*****End of Report*****

Verified by

L. SUDHAPRIYA
Technical Manager

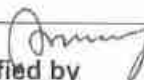
SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ5 - Mel Sattambur
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5759,5766,6182,6189,6530,6537,6761, 6768, 7129,7136,7438,7445,7669,7676, 7972,7979,8359,8366,8643, 8650,9089,9096,9388,9395,9689,9696		
Location Coordinates	11° 13' 56.00" N 77° 59' 13.54" E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.30am - 8.30am	43.6	22.9	6.8	18.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	8.35am - 8.35am	43.6	22.8	5.4	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	8.40am - 8.40am	42.6	22.1	4.4	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	8.50am - 8.50am	42.7	21.9	BDL(DL:4)	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	8.40am - 8.40am	41.3	21.7	4.9	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	8.50am - 8.50am	42.8	21.3	5.4	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	8.40am - 8.40am	40.5	20.4	4.4	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	8.50am - 8.50am	41.8	22.5	6.2	19.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	8.40am - 8.40am	42.2	21.6	5.7	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.50am - 8.50am	38.0	18.3	5.2	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.30am - 8.30am	41.5	21.6	BDL(DL:4)	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	8.35am - 8.35am	40.2	18.3	6.2	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	8.40am - 8.40am	41.2	20.8	7.0	18.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	8.50am - 8.50am	40.0	17.9	BDL(DL:4)	19.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	8.40am - 8.40am	39.0	19.1	6.6	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	8.50am - 8.50am	38.1	16.7	BDL(DL:4)	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	8.30am - 8.30am	40.7	20.0	6.1	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	8.40am - 8.40am	39.9	18.3	4.9	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	9.00am - 9.00am	40.9	19.6	4.7	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	9.10am - 9.10am	39.3	19.6	6.1	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.30am - 8.30am	38.4	17.5	7.4	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	8.35am - 8.35am	37.1	16.7	BDL(DL:4)	19.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	9.00am - 9.00am	38.4	17.5	6.0	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	9.10AM - 9.10AM	39.1	18.3	4.9	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	8.40am - 8.40am	38.6	18.3	6.9	22.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	8.50am - 8.50am	37.5	17.5	4.9	24.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by 





Committed to Precision

LABORATORY | CONSULTANCY | SUSTAINABILITY

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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthal village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ5 – Mel Sattambur
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5759,5766,6182,6189,6530,6537,6761, 6768, 7129,7136,7438,7445,7669,7676, 7972,7979,8359,8366,8643, 8650,9089,9096,9388,9395,9689,9696		
Location Coordinates	11°13'56.00"N 77°59'13.54"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
02.10.2023	8.30am - 8.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
03.10.2023	8.35am - 8.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
09.10.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
10.10.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
16.10.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
17.10.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
23.10.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
24.10.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
30.10.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
31.10.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
06.11.2023	8.30am - 8.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
07.11.2023	8.35am - 8.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
13.11.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
14.11.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
20.11.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
21.11.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
27.11.2023	8.30am - 8.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
28.11.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
04.12.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
05.12.2023	9.10am - 9.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
11.12.2023	8.30am - 8.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
12.12.2023	8.35am - 8.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
18.12.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
19.12.2023	9.10AM - 9.10AM	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
25.12.2023	8.40am - 8.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
26.12.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards



*****End of Report*****

Page 2 of 2

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L. SUDHAPRIYA
Technical Manager



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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ6 - Paramathi
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5760,5767,6183,6190,6531,6538,6762, 6769,7130,7137,7439,7446,7670, 7677,7973,7980,8360,8367,86448651, 9090,9097,9389,9396,9690,9697		
Location Coordinates	11°9'11.05"N 78°1'1.50"E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.55am - 8.55am	43.2	22.5	6.8	18.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	9.00am - 9.00am	44.0	20.8	6.3	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	9.00am - 9.00am	41.5	20.4	7.9	19.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	9.15am - 9.15am	41.5	21.3	7.1	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	9.00am - 9.00am	41.6	21.2	4.9	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	9.15am - 9.15am	42.4	22.5	5.7	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	9.00am - 9.00am	43.4	20.8	BDL(DL:4)	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	9.15am - 9.15am	43.6	23.7	6.4	19.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	9.00am - 9.00am	42.3	21.7	6.2	19.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.50am - 8.50am	38.0	18.3	5.2	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.55am - 8.55am	40.3	20.8	5.1	19.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	9.00am - 9.00am	39.7	17.9	4.9	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	9.00am - 9.00am	39.7	18.7	4.4	18.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	9.15am - 9.15am	38.2	17.1	5.1	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	9.00am - 9.00am	38.9	17.5	7.1	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	9.15am - 9.15am	37.5	17.1	4.6	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	8.50am - 8.50am	40.0	19.6	5.8	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	9.00am - 9.00am	38.8	17.9	7.4	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	9.30am - 9.30am	39.4	19.2	6.1	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	9.40am - 9.40am	38.1	17.9	5.8	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.55am - 8.55am	37.6	16.2	6.8	22.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	9.00am - 9.00am	36.2	15.8	6.6	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	9.30am - 9.30am	37.5	16.7	5.2	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	9.40am - 9.40am	36.2	16.7	4.4	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	9.00am - 9.00am	37.4	17.5	6.8	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	9.15am - 9.15am	36.1	16.2	6.6	23.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ6 - Paramathi
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5760,5767,6183,6190,6531,6538,6762, 6769,7130,7137,7439,7446,7670, 7677,7973,7980,8360,8367,86448651, 9090,9097,9389,9396,9690,9697		
Location Coordinates	11°9'11.05"N 78°1'1.50"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)
02.10.2023	8.55am - 8.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
03.10.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
09.10.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
10.10.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
16.10.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
17.10.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
23.10.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
24.10.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
30.10.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
31.10.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
06.11.2023	8.55am - 8.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
07.11.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
13.11.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
14.11.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
20.11.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
21.11.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
27.11.2023	8.50am - 8.50am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
28.11.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
04.12.2023	9.30am - 9.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
05.12.2023	9.40am - 9.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
11.12.2023	8.55am - 8.55am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
12.12.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
18.12.2023	9.30am - 9.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
19.12.2023	9.40am - 9.40am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
25.12.2023	9.00am - 9.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
26.12.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



*****End of Report*****

Page 2 of 2

Verified by

L. SUDHAPRIYA
Technical Manager

SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ7 - Thidumal
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5761,5768,6184,6191, 6532, 6539, 6763,6770,7131,7138,7440, 7447,7671,7678,7974, 7981,8361, 8368,8645,8652,9091,9098,9390,9397,9691,9698		
Location Coordinates	11°11'41.42"N 77°55'25.38"E		
Report Date	08.01.2024		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	9.15am - 9.15am	44.1	20.4	6.9	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	9.20am - 9.20am	41.8	21.2	4.6	17.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	9.25am - 9.25am	40.3	20.8	7.9	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	9.35am - 9.35am	42.6	22.5	7.6	18.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	9.25am - 9.25am	42.3	19.6	6.4	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	9.35am - 9.35am	43.3	21.6	4.4	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	9.25am - 9.25am	39.6	21.2	4.6	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	9.35am - 9.35am	42.2	22.5	4.9	22.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	9.25am - 9.25am	42.9	22.1	6.5	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	9.35am - 9.35am	41.0	20.8	5.4	19.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	9.15am - 9.15am	41.9	21.2	4.3	19.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	9.20am - 9.20am	39.1	17.5	7.5	19.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	9.25am - 9.25am	38.3	18.3	6.2	17.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	9.35am - 9.35am	37.9	16.6	BDL(DL:4)	24.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	9.25am - 9.25am	37.6	17.9	4.7	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	9.35am - 9.35am	36.3	16.3	7.1	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	9.20am - 9.20am	39.6	18.3	6.6	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	9.30am - 9.30am	37.6	16.7	7.1	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	10.0am - 10.00am	38.1	18.3	7.1	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	10.10am - 10.10am	37.7	17.5	6.0	24.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	9.15am - 9.15am	39.4	18.3	7.1	22.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	9.20am - 9.20am	38.6	17.0	4.7	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	10.00am - 10.00am	36.4	15.8	7.4	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	10.10am - 10.10am	35.1	15.8	5.5	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	9.25am - 9.25am	36.5	16.6	5.5	22.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	9.35am - 9.35am	35.0	15.8	6.3	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



Verified by



Committed to Precision

LABORATORY | CONSULTANCY | SUSTAINABILITY

S.F.No.92/3A2, Geetha Nagar,

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SUMMARY REPORT

Issued To	V.Punitha, W/o.Velmani, No.109, Narasinghapuram post, Nethaji nagar, Attur, Salem - 636108.		
Site Location	Lease Area :2.86.0 Ha S.F.No.482, Nadanthai village,Paramathi velur Taluk, Namakkal District.		
Sampling Method	GLCS/SOP/AAQ/015	Sample Drawn by	Laboratory
Sample Name	Air Quality Monitoring	Sampling Location	AAQ7 - Thidumal
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sample Code	GLCS/5761,5768,6184,6191, 6532, 6539, 6763,6770,7131,7138,7440, 7447,7671,7678,7974, 7981,8361, 8368,8645,8652,9091,9098,9390,9397,9691,9698		
Location Coordinates	11°11'41.42"N 77°55'25.38"E		
Report Date	08.01.2024		

Date	Period. hrs	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)	Pb (µg/m ³)	
02.10.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	9.20am - 9.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	9.20am - 9.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	9.20am - 9.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	9.30am - 9.30am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	10.0am - 10.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	10.10am - 10.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	9.15am - 9.15am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	9.20am - 9.20am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	10.00am - 10.00am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	10.10am - 10.10am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	9.25am - 9.25am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	9.35am - 9.35am	BDL (DL:1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.



*****End of Report*****

Page 2 of 2

Verified by

L. SUDHAPRIYA
Technical Manager



National Accreditation Board for Education and Training



Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaita Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

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 opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.